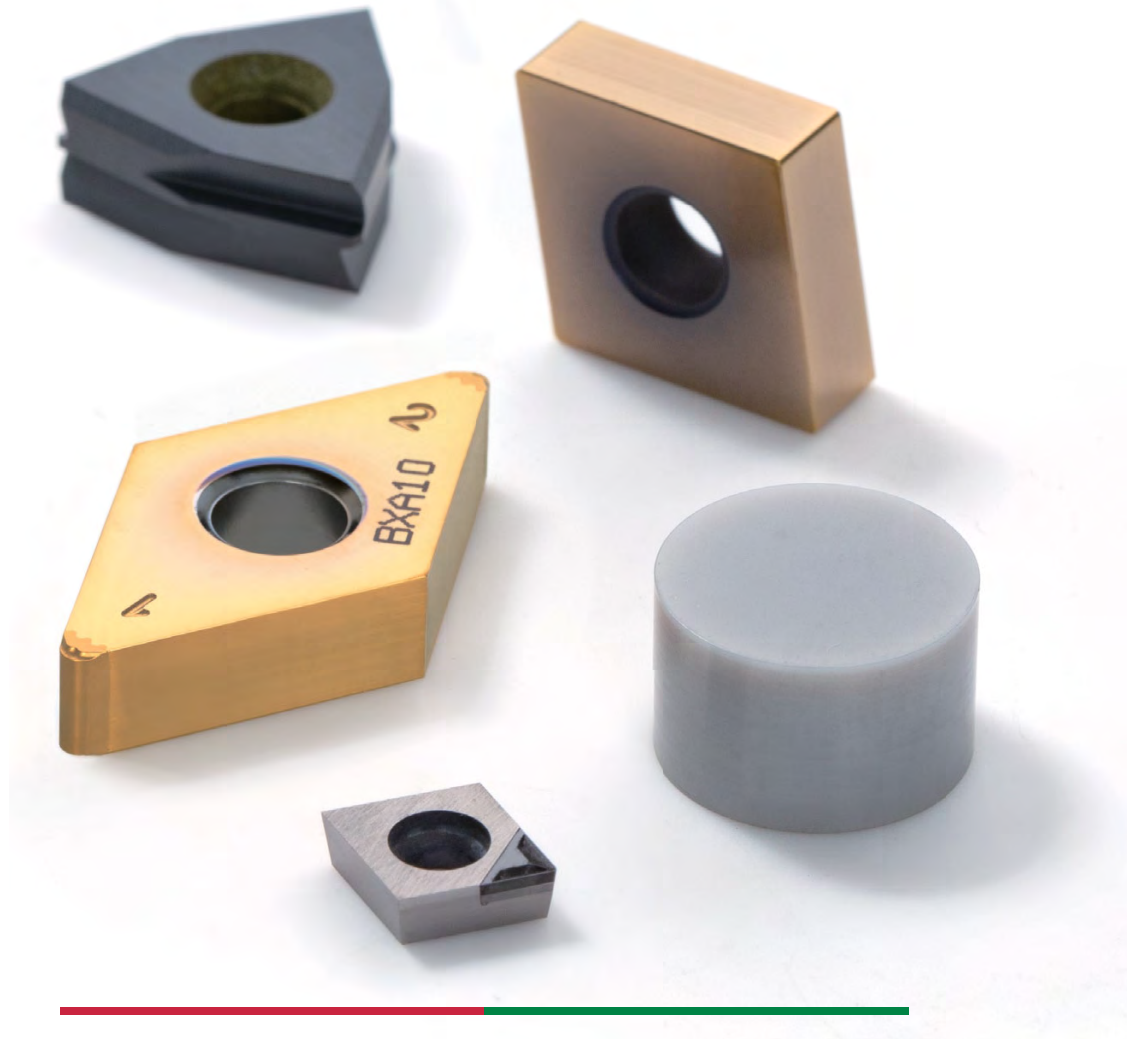


CBN CERAMIC SP CO



ADVANCED
MATERIALS
SOLUTIONS

INCH ver.

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-36

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-121

**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-97

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

S

CBN-113

**Guidelines
for Turning**
Solutions

THE NECESSITY OF ADVANCED TOOL MATERIALS BEYOND CARBIDE

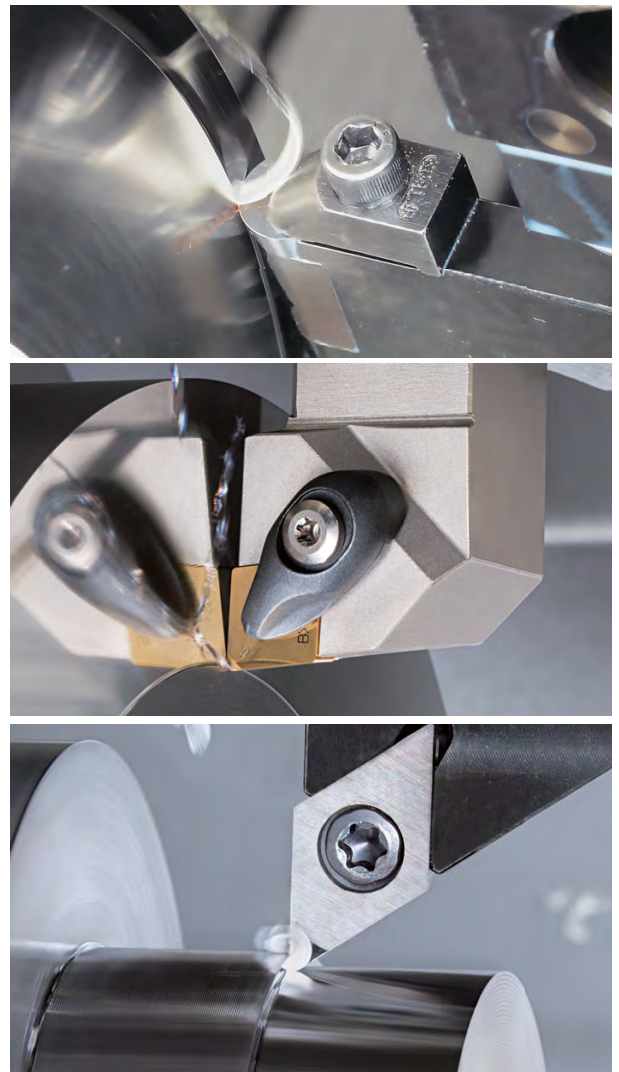
Ceramic, CBN, and PCD for Modern Machining Applications

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

(GRAY 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 requiring high wear resistance.

Abrasive nature causes rapid tool wear on standard carbide.

Recommended Tool Materials

Ceramic:

Excellent wear resistance in continuous, high-speed cuts.

Ideal for large-volume machining of Gray 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 and finishing.



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.

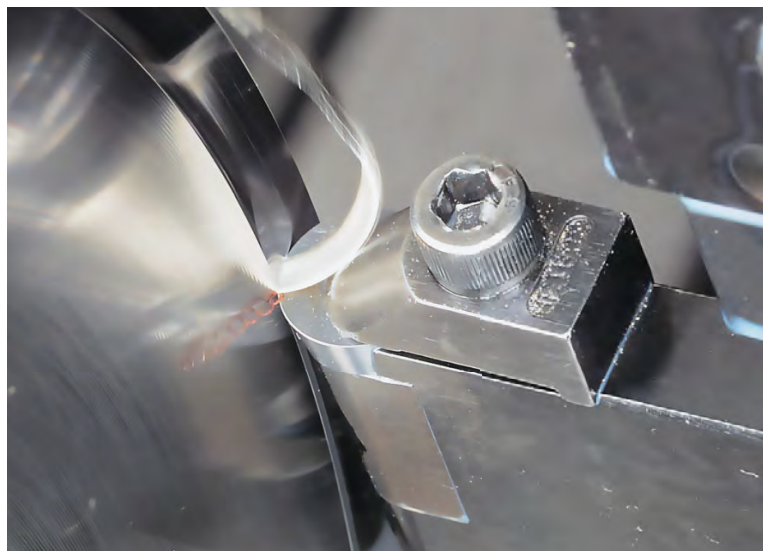
Enables high-speed machining with long tool life.

Delivers excellent surface finish and dimensional control.



ADVANCED

MATERIALS SOLUTIONS



CERAMIC

SOLUTIONS



CBN

SOLUTIONS



PCD

SOLUTIONS

Ceramic



Turning

Grooving

Milling

Turning

Grooving

Milling

Hardened Materials

Turning

CBN

Turning

Grooving

Turning

Milling

Turning

Sintered metal

Turning

PCD

Turning

Grooving

Milling

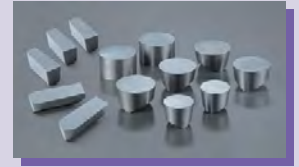
Non-Ferrous Materials

Superalloy machining

BIDEMICS - Game Changer

- 1600SFM Speed Capability
- Double tool life at whisker's speed range

JX1



■ Features

- Up to 1600SFM 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

JP2/120



■ 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

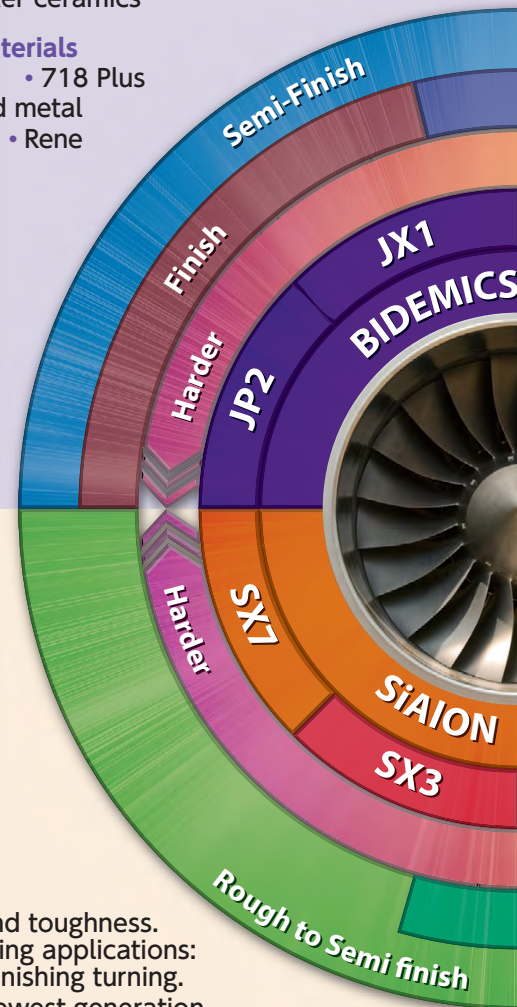
- Excellent wear resistance and toughness. Wide range of HRSA machining applications: Roughing with scale - semi finishing turning.
- Able to machine even the newest generation of HRSA work materials (like Rene) as well as most common HRSA materials; such as Inconel 718.

■ Work Materials

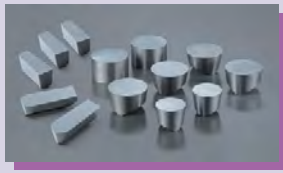
- Inco 718 • 718 Plus
- Powdered metal • Inco 625
- Rene

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

WA1/533



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.

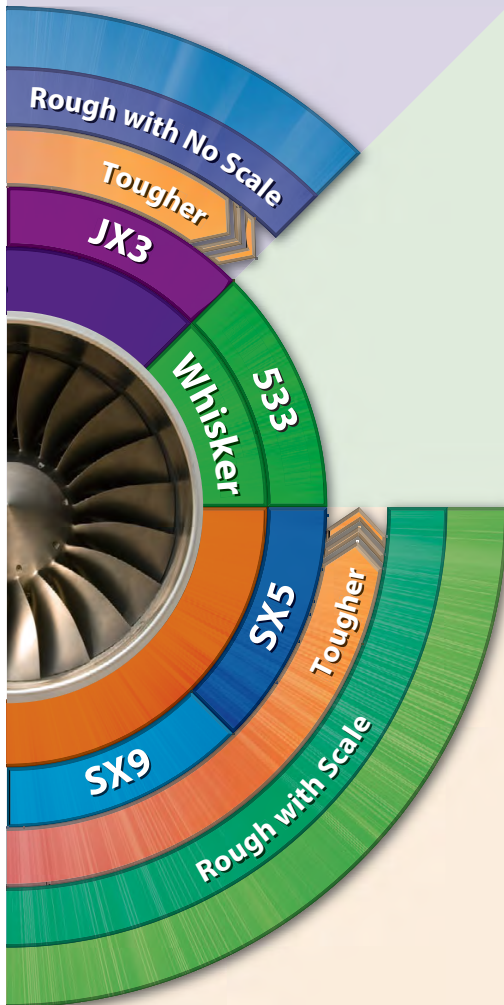
SX9

Features

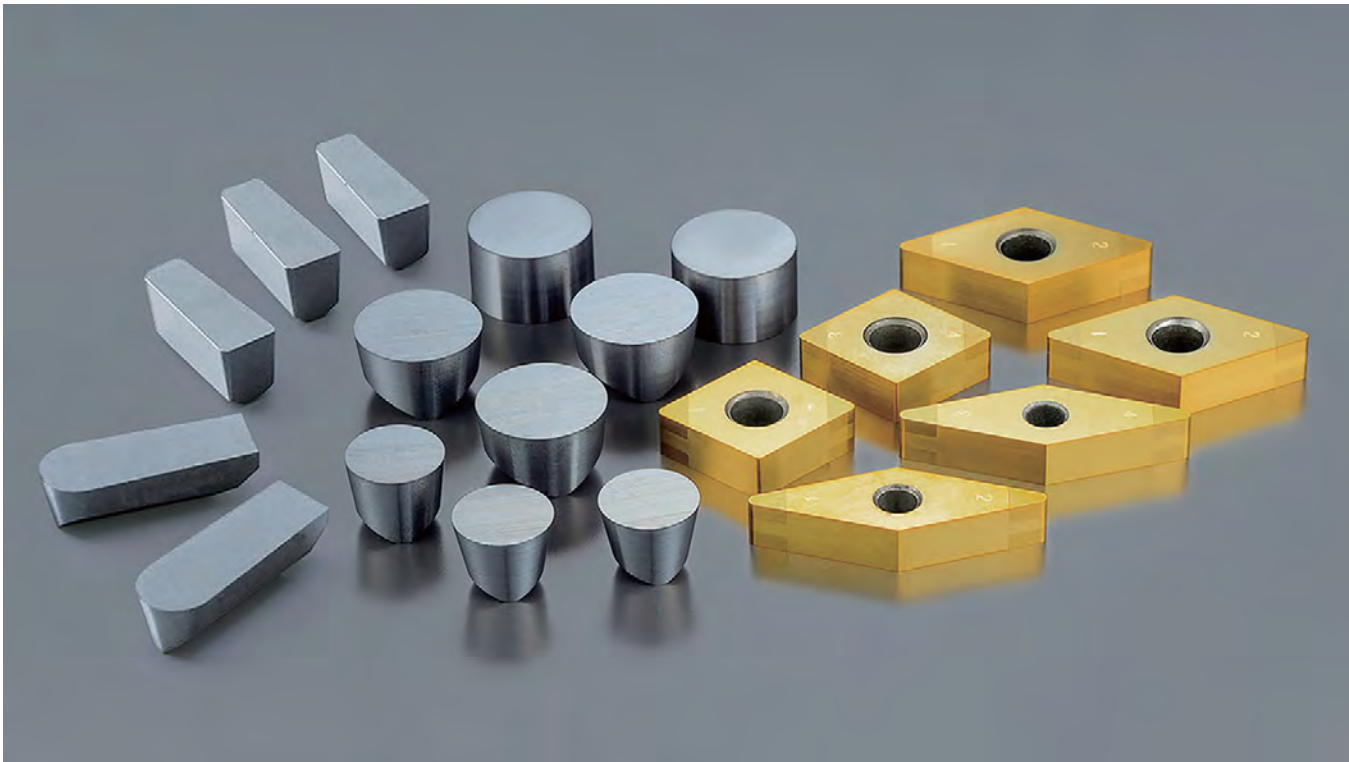
- Extreme toughness makes higher feed and heavier DOC machining possible
- Best grade for machining Inco 718 with scale

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.

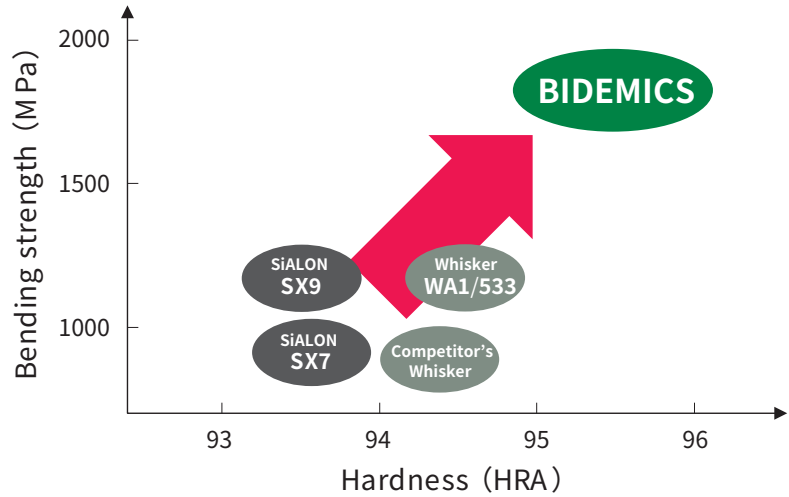
Insert grade, applications, and features

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

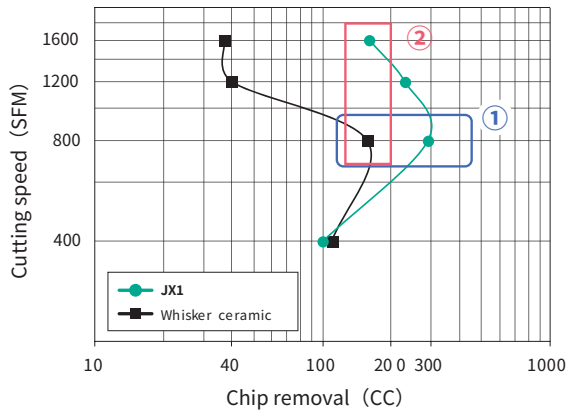


Physical properties

Grade	Hardness HRA	Bending Strength MPa	Thermal Conductivity W/m · K
JX1	95.5	1,800	40
WA1/533	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.

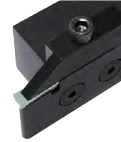
Chips break easily at higher cutting speeds vs the typically continuous chips of HRSA materials. The result is more efficient chip removal.

Recommended Cutting Conditions

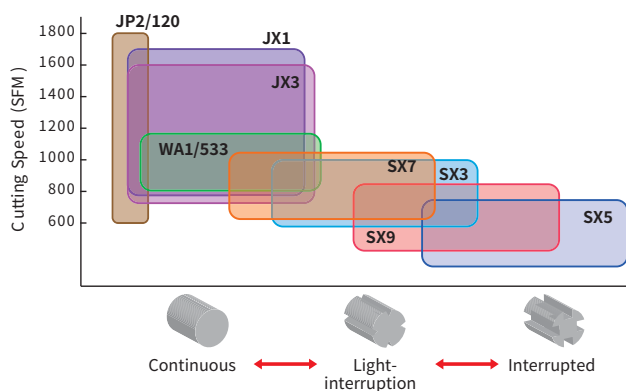
Grade	Work material	Application	Process	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	Coolant
JX1	Heat-resistant alloys	Turning	Rough (no scale)	600-1600	.006-.012	.040-.100	WET
JX3			Semi-finishing	600-1600	.004-.010	.020-.080	WET
120	Heat-resistant alloys	Turning	Finishing	180-1700	.002-.008	.004-.030	WET
JP2			Finishing	180-1700	.004-.010	.010-.040	WET

Superalloy machining

Insert grades

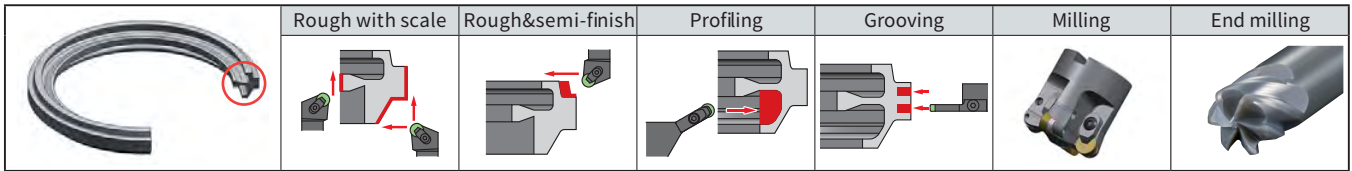
Category	Grade	Attributes	Applications						
			Scale	No scale	Profiling	Finishing	Grooving	Milling	End milling
									
BIDEMICS	JX1	Special grade with higher speed and longer tool life potential							
	JP2/120	Special grade for finish turning							
	JX3	Added toughness in BIDEMICS							
Whisker	WA1 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



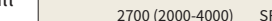
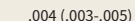
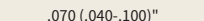
	Grade	Rough with Scale	Rough	Semi-Finishing	Finishing
BIDEMICS	JP2/120				
	JX1				
	JX3				
Whisker	WA1 533				
SiAlON	SX7				
	SX3				
	SX9				
	SX5				

Application



Cutting conditions

Application	Grade	Work material	Cutting speed					Feed					Depth of cut					Coolant
			600	800	1000	1200	1400	1600	.004	.008	.012	.016	.020	.020	.040	.060	.080	
 Rough with Scale	SX5	Waspaloy	650 (600-800) SFM					.012 (.008-.014) IPR					.080 (.040-.200)"					WET 
	SX9	Inco718	650 (600-800) SFM					.012 (.008-.014) IPR					.080 (.040-.200)"					
	SX3	Overall	800 (600-900) SFM					.008 (.004-.009) IPR					.080 (.040-.200)"					
 Rough no Scale	JX1 JX3	Overall	700-1300 (600-1600) SFM					.008 (.005-.011) IPR					.070 (.040-.100)"					WET 
	SX9 SX3 SX7	Overall	700 (600-900) SFM					.009 (.006-.012) IPR					.080 (.040-.100)"					
	WA1/533	Overall	800 (600-1000) SFM					.008 (.005-.010) IPR					.070 (.040-.100)"					
 Profiling & Semi-Finish	JX1 JX3	Overall	700-1500 (600-1600) SFM					.008 (.004-.010) IPR					.060 (.040-.080)"					WET 
	SX3 SX7	Overall	800 (600-900) SFM					.008 (.005-.010) IPR					.060 (.040-.080)"					
	WA1/533	Overall	800 (600-1100) SFM					.008 (.004-.010) IPR					.060 (.040-.080)"					
 Finishing	JP2/120	Overall	700-1600 (600-1700) SFM					.004 (.002-.007) IPR					.010 (.005-.030)"					WET 
 Grooving	JX1 JX3	Overall	1200 (600-1600) SFM					.003 (.002-.004) IPR					When using SX7 / SX3 / SX5, increase feed rates 100% vs. Whisker Ceramics					WET 
	SX5	Waspaloy	700 (600-800) SFM					.006 (.003-.007) IPR										
	SX3 SX7	Overall	750 (600-900) SFM					.0045 (.003-.006) IPR										
	WA1/533	Overall	800 (600-1100) SFM					.003 (.002-.004) IPR										

Application	Grade	Work material	Cutting speed					Feed					Depth of cut					Coolant
			1500	2000	2500	3000	3500	4000	.002	.003	.004	.005	.006	.020	.040	.060	.080	
	SX3 SX7	Overall																DRY 
	SX9	Overall																
	SX9	Overall																DRY 
																		

Superalloys
Turning
Grooving
Milling

Cast Iron
Turning
Grooving
Milling

Hardened Materials
Turning
Grooving
Milling

CBN
Turning
Grooving
Milling

Cast Iron
Turning
Milling

Superalloys
Turning

Sintered metal
Turning

PCD
Turning
Grooving
Milling

Non-Ferrous Materials
Turning
Grooving
Milling

Superalloy machining

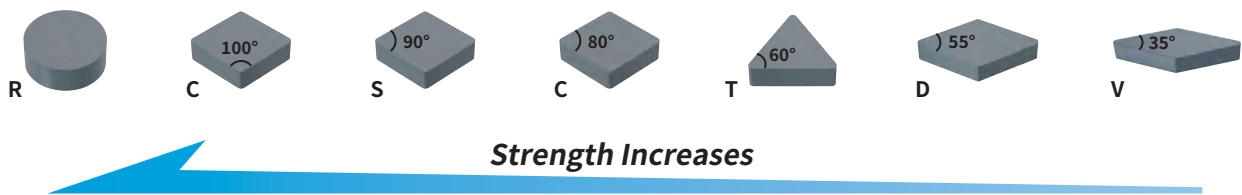
Key Points in Machining

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.

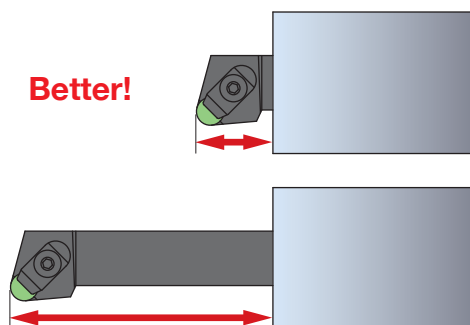


Selection of corner R with superior strength

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.

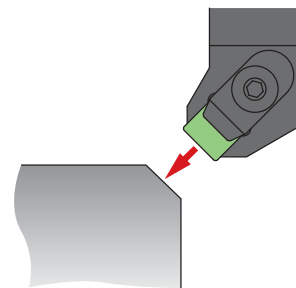
Minimize the amount of overhang

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.



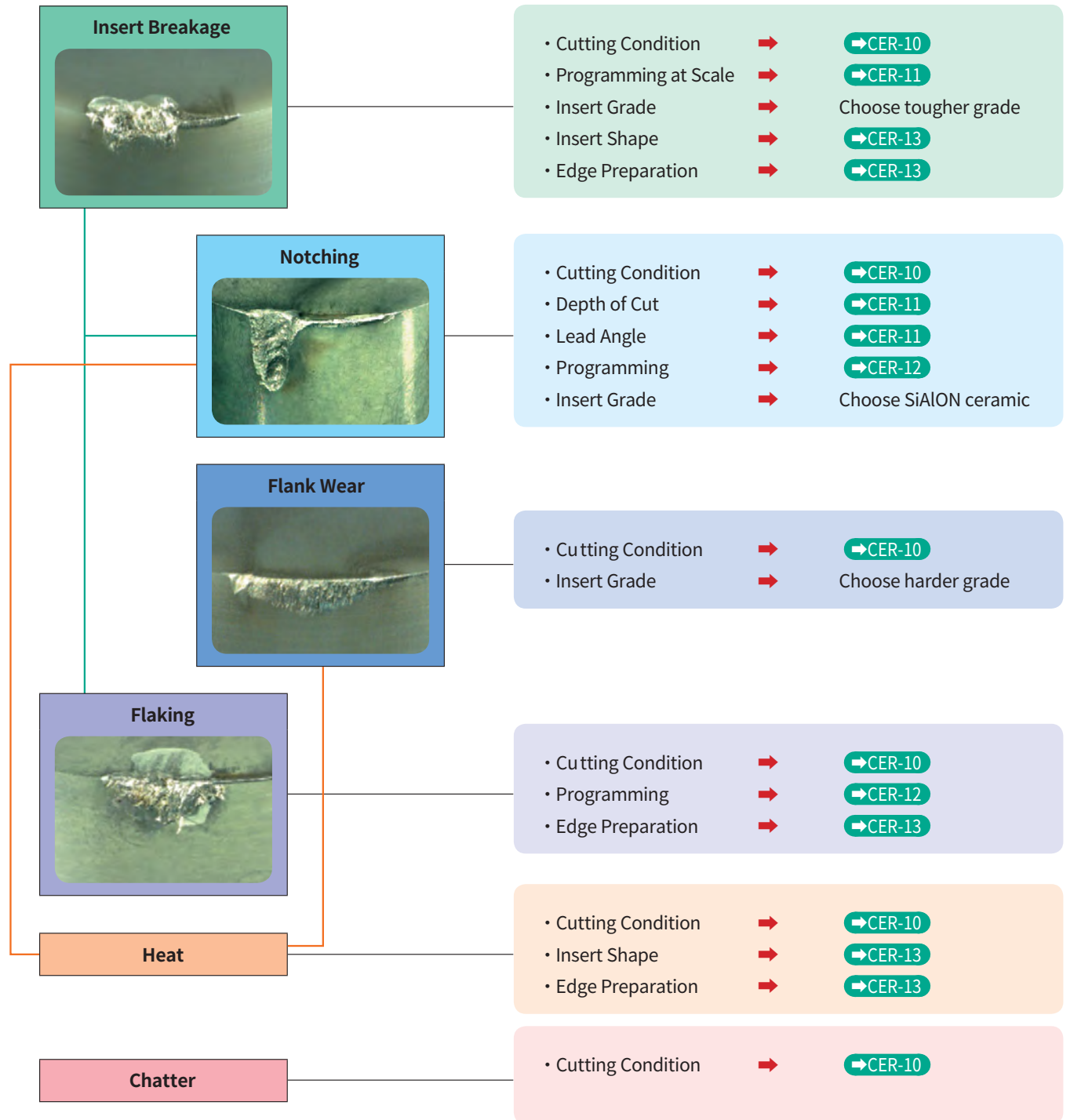
Coolant

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

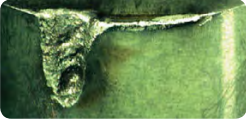
Sharp edge preparation is required when machining superalloys, but in the case of ceramic inserts, minute angle chamfering or round honing is better for wear resistance, especially border wear resistance.

Troubleshooting



Troubleshooting / Heat-resistant alloy machining

Adjustment of cutting conditions

		Cutting speed (SFM)		Feed rate (IPR)		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

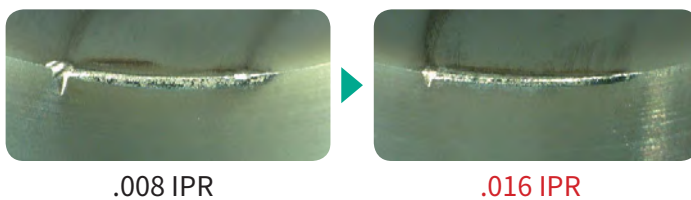
● 2nd Choice

Result

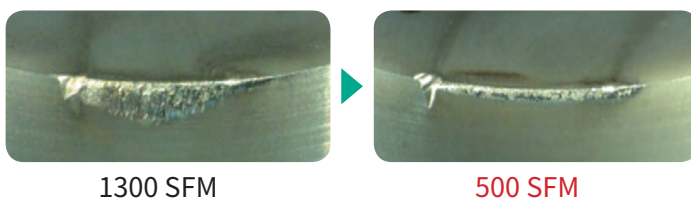
r_a WA1 : Increase cutting speed



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

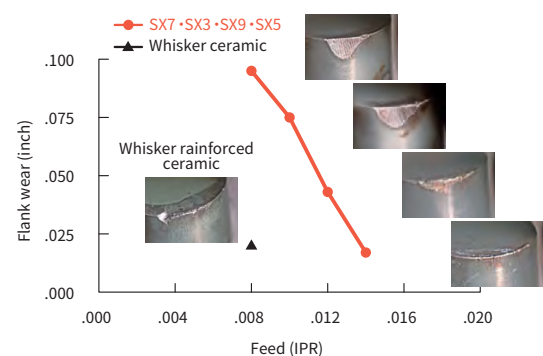


r_c SX7 • SX3 • SX9 • SX5 : Decrease cutting speed



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

Feed rate increased decreases wear amount of SiAlON



Cutting condition

Work material : Inco718
Insert shape : RNG45

Cutting Speed : 800 SFM
Depth of Cut : .08 0"
WET

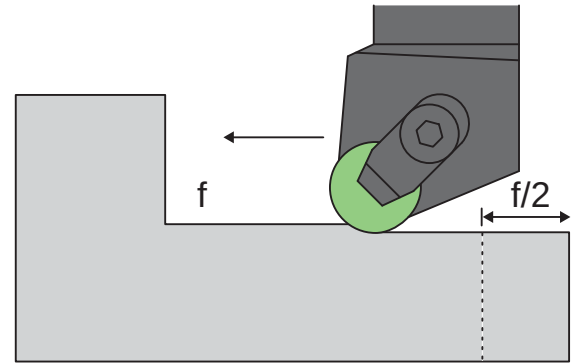
When using the SX7 & SX3 & SX9 & SX5, increased feed is necessary to increase the wear resistance of the tool. By increasing the feed rate and taking advantage of the high tool material strength of the SX7 & SX3 & SX9 & SX5, the number of times the tool and workpiece material rub against each other can 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.

Machining with scale

If inserts break in the early stages of scale machining, high cutting speeds and feed rates may be the cause.

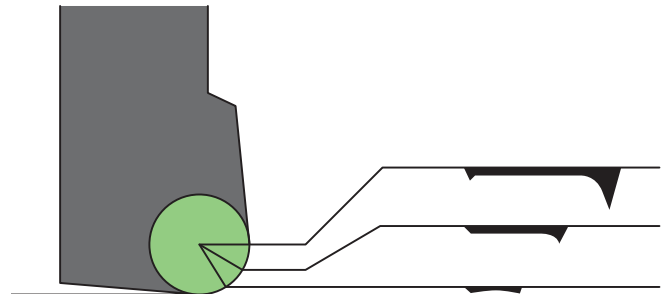
Understanding the hardness of the work material is the key to a successful cutting process. Many machining operators do not know the hardness of their work material. This causes them to spend a lot of time finding the optimum cutting conditions for test machining. The higher the hardness of the work material, the lower the cutting speed should be. Also, where there is scale on the workpiece surface, the cutting speed and feed rate must be reduced by 25%. By changing the machining program in this way, excessive tool damage can be reduced.



Depth of cut

As shown in the figure on the right, as the depth of cut increases, the amount of wear, especially border wear, increases. In order to reduce border wear and extend tool life, it is necessary to control the depth of cut.

The table below shows the maximum depth of cut for RN inserts and the maximum depth of cut by corner R size. Please refer to these values to determine the depth of cut.



Recommended depth of cut

IC size of RN insert	Max. depth of cut	*Corner R size	Max. depth of cut
1/4	.060...Less	1/32	.008...Less
3/8	.090...Less	3/64	.012...Less
1/2	.125...Less	1/16	.016...Less
1	.250...Less	3/32	.024...Less

The optimum depth of cut is 5-15% of the insert diameter.

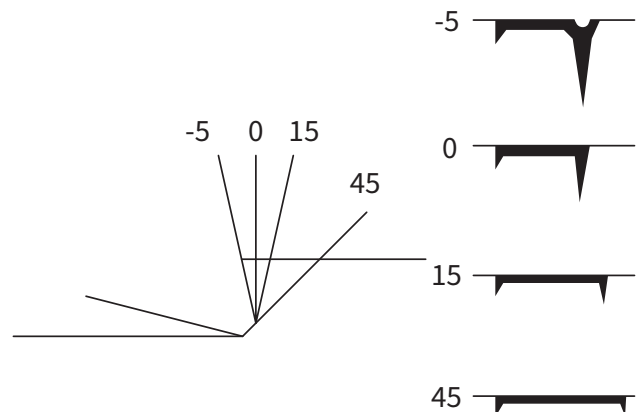
*In case of lead angle: 0°

Lead angle

In the machining of heat-resistant alloys, the larger the lead angle, the less wear is likely to occur. Also, the larger the lead angle, the more cutting resistance is distributed over a wider area of the insert, which reduces border wear and at the same time improves tool life and workpiece surface roughness.

In addition, the larger the lead angle, the better the chip control. In the case of the SX9 inserts, which have excellent chip resistance, higher feed rates reduce wear and machining time.

Effect of lead angle on wear pattern

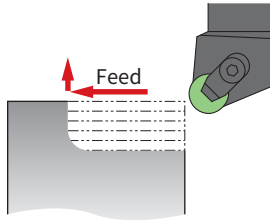


Troubleshooting / Heat-resistant alloy machining

Programming

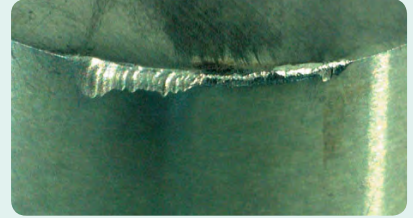
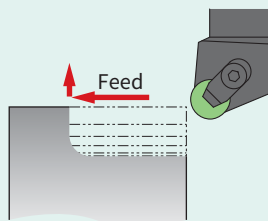
Rough

Same Depth of Cut



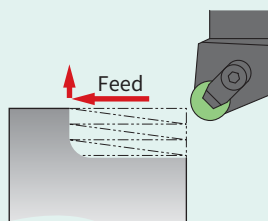
Note)
Notch wear on the insert cutting edge as shown is the result of multiple passes being taken at the same depth of cut. This type of wear will minimize tool life. The following programming examples will help to minimize this mode of failure.

Varying Depth of Cut



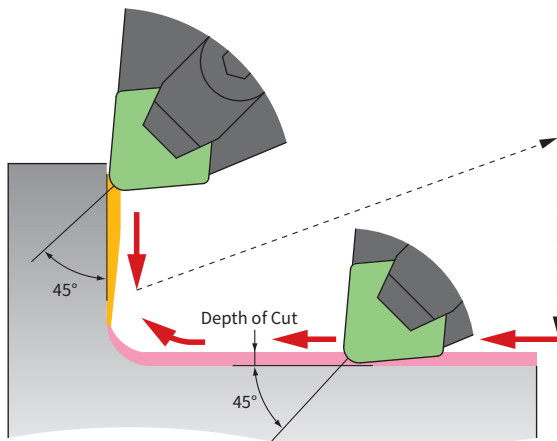
Note) Roughing while varying the depth of cut reduces notch wear because the point at which notch wear occurs changes each time.

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

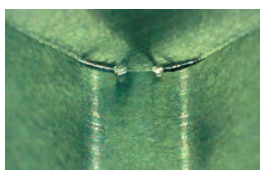


• $\alpha = 45^\circ$

Insert radius	DOC
1/64"	.005"
1/32"	.009"
3/64"	.014"
1/16"	.018"
3/32"	.028"
1/8"	.037"

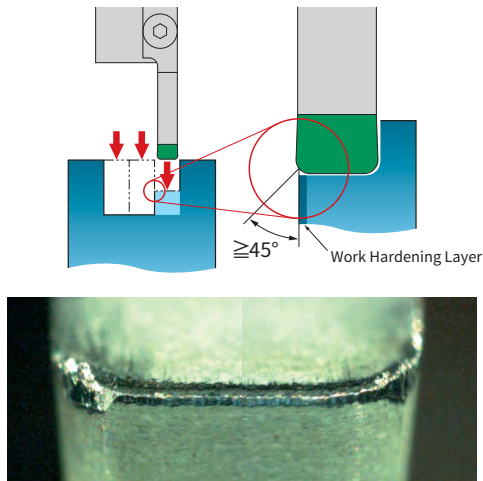
Note) The correct procedure is to take more material off during the previous roughing application. Then remove the amount of stock suitable for the nose radius of the insert by staying **below the 45° mark of the corner radius.** This will minimize notching and allow a cut from both directions.

Depth of Cut

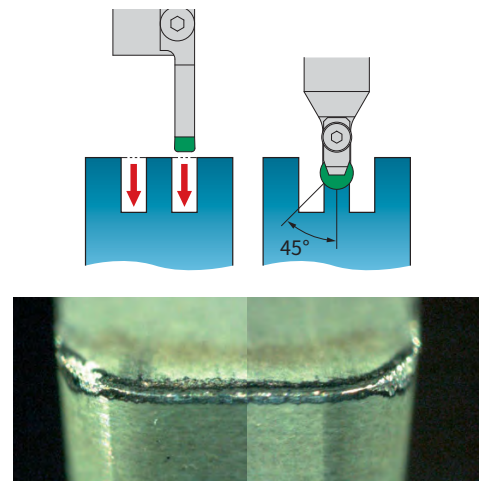


Better

Application



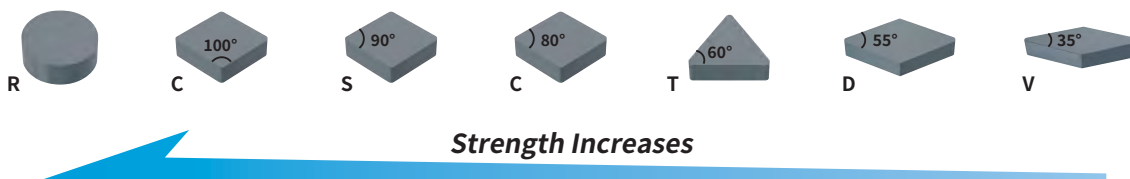
Change to



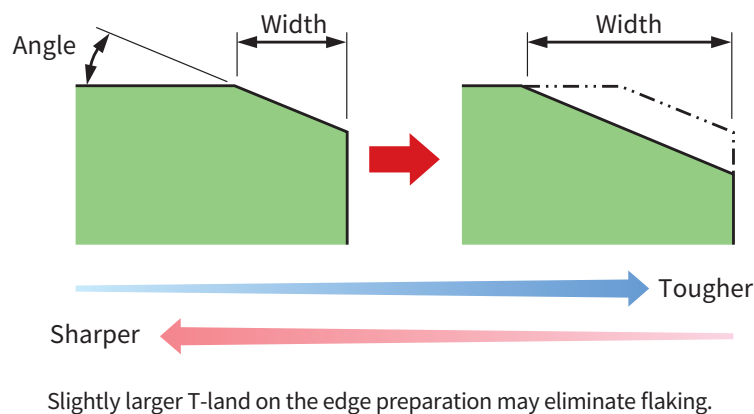
When grooving in multiple passes:
When grooving a final pass, the cutting edge contacts the workhardened area.
This causes chipping of the corner radius and border wear.

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.

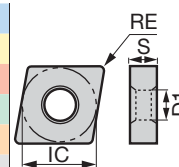
- Increase cutting speed and reduce feed rate.
- Change to an insert grade with higher hardness.
- Change to an insert with a smaller inscribed circle or smaller corner radius.
- Change the cutting edge treatment to the sharpest possible shape.
- Change to a positive insert.
- Reduce the lead angle.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

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

CN



**Rhombic, 80°
with hole**

[illegible]

Application	Chipbreaker			Designation	Whisker		SiAlON										Dimension (in)					
					533	WA1			SX3	SX9												
	Inch		Metric																RE	IC	S	D1
Roughing to medium cutting	-	CNGA432E02	CNGA120408E004		●			●	●										0.031	0.500	0.187	0.203
		CNGA432T0220	CNGA120408T00520		●	●		●	●										0.031	0.500	0.187	0.203
		CNGA433E02	CNGA120412E004		●			●	●										0.047	0.500	0.187	0.203
		CNGA433T0220	CNGA120412T00520		●	●		●	●										0.047	0.500	0.187	0.203
		CNGA434E02	CNGA120416E004		●			●	●										0.063	0.500	0.187	0.203
		CNGA434T0220	CNGA120416T00520		●	●		●	●										0.063	0.500	0.187	0.203

● : Line up

C

D

B

S

T

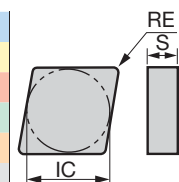
V

W

CN



**Rhombic, 80°
without hole**

[illegible][illegible]

● : Line up



More info

Superalloys

Grooving

Milling

urning

Tw

Groo

g
Tur

ling

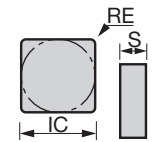
CER-15

SN



**Square
without hole**

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

[illegible]

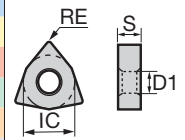
● : Line up

WN



**Trigon, 80°
with hole**

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

[illegible]

● : Line up



More info

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

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

[illegible]

C

D.

R

S

T

Round,
without hole
Positive 7°

[illegible]

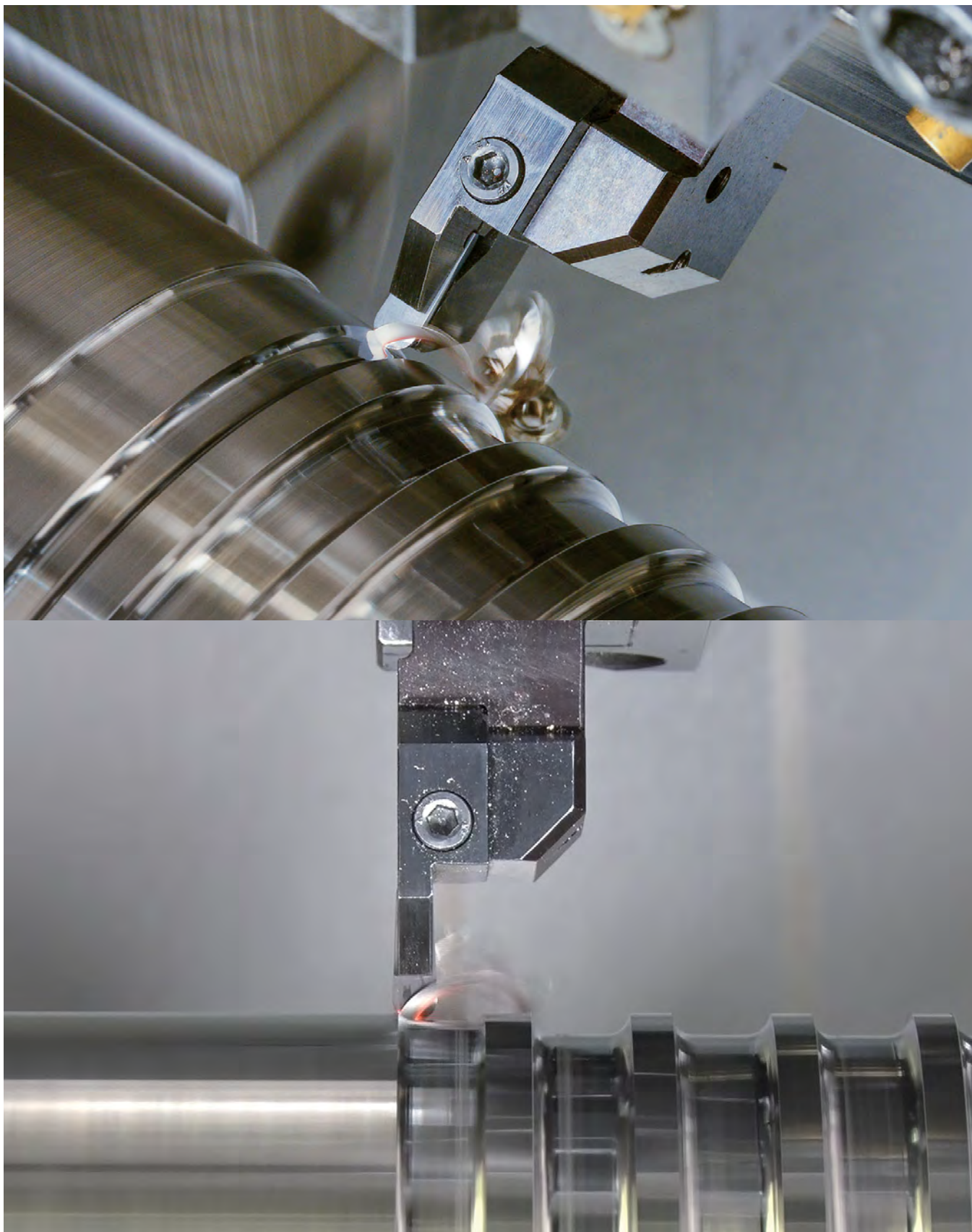
Application	Chipbreaker		Designation	material								Dimension (in)				
				Whisker		SiAlON			Bidemics							
				533	WA1	SX3	SX5	SX7	SX9	JX1	JX3	RE	IC	S	D	
Roughing to medium cutting	-	Inch	Metric	533	WA1	SX3	SX5	SX7	SX9	JX1	JX3	RE	IC	S	D	
		RCGX230E02	RCGX060400E004	●		●	●	●	●	●	●		-	0.250	0.187	-
		RCGX230T0220	RCGX060400T00520			●					●		-	0.250	0.187	-
		RCGX230T0420	RCGX060400T01020	●		●	●	●	●	●	●		-	0.250	0.187	-
		RCGX240E02	RCGX060600E004	●		●	●	●	●	●	●		-	0.250	0.250	-
		RCGX240T0220	RCGX060600T00520			●					●		-	0.250	0.250	-
		RCGX240T0420	RCGX060600T01020	●	●	●	●	●	●	●	●		-	0.250	0.250	-
		RCGX350E02	RCGX090700E004	●		●	●	●	●	●	●		-	0.375	0.313	-
		RCGX350T0220	RCGX090700T00520			●					●			0.375	0.313	-
		RCGX350T0420	RCGX090700T01020	●	●	●	●	●	●	●	●		-	0.375	0.313	-
		RCGX450E02	RCGX120700E004	●		●	●	●	●	●	●		-	0.500	0.313	-
		RCGX450T0220	RCGX120700T00520			●					●		-	0.500	0.313	-
RCGX450T0420	RCGX120700T01020	●	●	●	●	●	●	●	●		-	0.500	0.313	-		



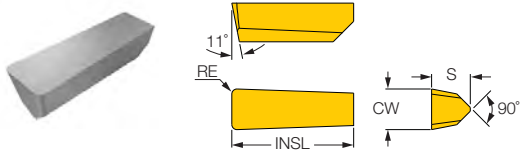
CER-18

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 (mm)	CW (in)	RE (in)	Whisker		SiAlON			Bidemics	INSL (in)	S (in)
					533	WA1	533	WA1	533	WA1		
Inch	Metric				533	WA1	533	WA1	533	WA1		
VGW4125-1E02	VGW4125-1E004	3.175	0.125	0.016	●		●		●		0.500	0.178
VGW4125-1EA02X	VGW4125-1EM04X	3.175	0.125	0.016				●	●		0.500	0.178
VGW4125-1T0220	VGW4125-1T00520	3.175	0.125	0.016			●	●	●		0.500	0.178
VGW4125-2E02	VGW4125-2E004	3.175	0.125	0.031	●		●			●	0.500	0.178
VGW4125-2EA02X	VGW4125-2EM04X	3.175	0.125	0.031				●	●		0.500	0.178
VGW4125-2T0220	VGW4125-2T00520	3.175	0.125	0.031			●	●	●		0.500	0.178
VGW41561-E02	VGW4156-1E004	3.962	0.156	0.016	●	●	●			●	0.500	0.178
VGW4156-1EA02X	VGW4156-1EM04X	3.962	0.156	0.016				●	●		0.500	0.178
VGW4156-1T0220	VGW4156-1T00520	3.962	0.156	0.016			●	●	●		0.500	0.178
VGW4156-2E02	VGW4156-2E004	3.962	0.156	0.031	●	●	●			●	0.500	0.178
VGW4156-2EA02X	VGW4156-2EM04X	3.962	0.156	0.031				●	●		0.500	0.178
VGW4156-2T0220	VGW4156-2T00520	3.962	0.156	0.031			●	●	●		0.500	0.178
VGW4187-1E02	VGW4187-1E004	4.75	0.187	0.016	●		●			●	0.500	0.178
VGW4187-1EA02X	VGW4187-1EM04X	4.75	0.187	0.016				●	●		0.500	0.178
VGW4187-1T0220	VGW4187-1T00520	4.75	0.187	0.016			●	●	●		0.500	0.178
VGW4187-2E02	VGW4187-2E004	4.75	0.187	0.031	●		●			●	0.500	0.178
VGW4187-2EA02X	VGW4187-2EM04X	4.75	0.187	0.031				●	●		0.500	0.178
VGW4187-2T0220	VGW4187-2T00520	4.75	0.187	0.031			●	●	●		0.500	0.178
VGW6250-1E02	VGW6250-1E004	6.35	0.250	0.016	●		●			●	0.750	0.238
VGW6250-1EA02X	VGW6250-1EM04X	6.35	0.250	0.016				●	●		0.750	0.238
VGW6250-1T0220	VGW6250-1T00520	6.35	0.250	0.016			●	●	●		0.750	0.238
VGW6250-2E02	VGW6250-2E004	6.35	0.250	0.031	●		●			●	0.750	0.238
VGW6250-2EA02X	VGW6250-2EM04X	6.35	0.250	0.031				●	●		0.750	0.238
VGW6250-2T0220	VGW6250-2T00520	6.35	0.250	0.031			●	●	●		0.750	0.238
VGW8375-2E02	VGW8375-2E004	9.525	0.375	0.031	●		●			●	1.000	0.327
VGW8375-2EA02X	VGW8375-2EM04X	9.525	0.375	0.031				●	●		1.000	0.327
VGW8375-2T0220	VGW8375-2T00520	9.525	0.375	0.031			●	●	●		1.000	0.327

● : Line up

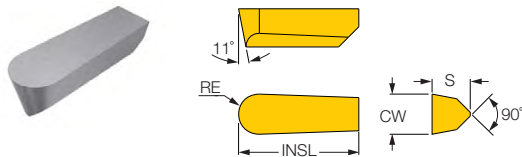


More info

[illegible]

INSERT

VGW-R



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

★ : First choice
☆ : Second choice

Designation		CW (mm)	CW (in)	RE (in)	Whisker		SiAlON			Bidemics		INSL (in)	S (in)
					533		SX3	SX7	SX9	JX3			
Inch	Metric												
VGW4125-RE02	VGW4125-RE004	3.175	0.125	0.063	●		●			●		0.500	0.178
VGW4125-REA02X	VGW4125-REM04X	3.175	0.125	0.063				●	●			0.500	0.178
VGW4125-RT0220	VGW4125-RT00520	3.175	0.125	0.063			●	●	●			0.500	0.178
VGW4156-RE02	VGW4156-RE004	3.962	0.156	0.078	●		●			●		0.500	0.178
VGW4156-REA02X	VGW4156-REM04X	3.962	0.156	0.078				●	●			0.500	0.178
VGW4156-RT0220	VGW4156-RT00520	3.962	0.156	0.078			●	●	●			0.500	0.178
VGW4187-RE02	VGW4187-RE004	4.75	0.187	0.094	●		●			●		0.500	0.178
VGW4187-REA02X	VGW4187-REM04X	4.75	0.187	0.094				●	●			0.500	0.178
VGW4187-RT0220	VGW4187-RT00520	4.75	0.187	0.094			●	●	●			0.500	0.178
VGW6250-RE02	VGW6250-RE004	6.35	0.250	0.125	●		●			●		0.750	0.238
VGW6250-REA02X	VGW6250-REM04X	6.35	0.250	0.125				●	●			0.750	0.238
VGW6250-RT0220	VGW6250-RT00520	6.35	0.250	0.125			●	●	●			0.750	0.238
VGW8375-RE02	VGW8375-RE004	9.525	0.375	0.188	●		●			●		1.000	0.327
VGW8375-REA02X	VGW8375-REM04X	9.525	0.375	0.188				●	●			1.000	0.327
VGW8375-RT0220	VGW8375-RT00520	9.525	0.375	0.188			●	●	●			0.750	0.238

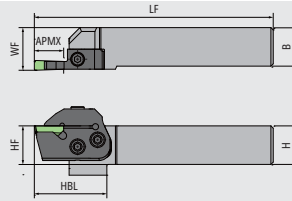
● : Line up



More info

GBVR...

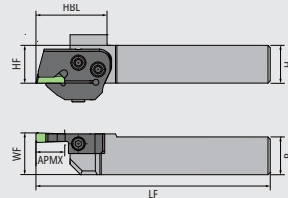
VGW.. series/For straight shank toolholder



Inch	APMX	H	B	LF	HBL	WF	HF	Holder	Insert
GBVR-VGW4-3T09	0.375	1.000	1.000	5.311	0.965	0.567	1.000	GTWPR16-IN-H	VGW4125
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPR20-IN-H	VGW4156
GBVR-VGW4-4T14	0.562	1.000	1.000	5.311	0.965	0.567	1.000	GTWPR16-IN-H	VGW4156
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPR20-IN-H	VGW4187
GBVR-VGW6-6T14	0.562	1.000	1.000	5.311	0.965	0.567	1.000	GTWPR16-IN-H	VGW6250
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPR20-IN-H	VGW6250
GBVR-VGW6-6T19	0.750	1.000	1.000	5.311	0.965	0.567	1.000	GTWPR16-IN-H	VGW6250
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPR20-IN-H	VGW6250
GBVR-VGW8-8T28	1.125	1.000	1.000	5.311	0.965	0.567	1.000	GTWPR16-IN-H	VGW8375
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPR20-IN-H	VGW8375
Metric	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	VGW4156
		32	32	163.6	–	34.2	32	GTWPR3232-H	VGW4156
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	VGW4187
		32	32	170	–	34.3	32	GTWPR3232-H	VGW4187
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	VGW6250
		32	32	170	–	34.7	32	GTWPR3232-H	VGW6250
GBVR-VGW6-6T19	19.05	20	20	130	51	22.6	20	GTWPR2020-H	VGW6250
		25	25	155	47	27.6	25	GTWPR2525-H	VGW6250
		32	32	175	–	34.6	32	GTWPR3232-H	VGW6250
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	VGW8375
		32	32	182.7	–	35.3	32	GTWPR3232-H	VGW8375

GBVL...

VGW.. series/For straight shank toolholder



Inch	APMX	H	B	LF	HBL	WF	HF	Holder	Insert
GBVL-VGW4-3T09	0.375	1.000	1.000	5.311	0.965	0.567	1.000	GTWPL16-IN-H	VGW4125
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPL20-IN-H	VGW4156
GBVL-VGW4-4T14	0.562	1.000	1.000	5.311	0.965	0.567	1.000	GTWPL16-IN-H	VGW4156
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPL20-IN-H	VGW4187
GBVL-VGW6-6T14	0.562	1.000	1.000	5.311	0.965	0.567	1.000	GTWPL16-IN-H	VGW6250
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPL20-IN-H	VGW6250
GBVL-VGW6-6T19	0.750	1.000	1.000	5.311	0.965	0.567	1.000	GTWPL16-IN-H	VGW6250
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPL20-IN-H	VGW6250
GBVL-VGW8-8T28	1.125	1.000	1.000	5.311	0.965	0.567	1.000	GTWPL16-IN-H	VGW8375
		1.250	1.250	6.311	0.000	0.817	1.250	GTWPL20-IN-H	VGW8375
Metric	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	VGW4156
		32	32	163.6	–	34.2	32	GTWPL3232-H	VGW4156
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	VGW4187
		32	32	170	–	34.3	32	GTWPL3232-H	VGW4187
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	VGW6250
		32	32	170	–	34.7	32	GTWPL3232-H	VGW6250
GBVL-VGW6-6T19	19.05	20	20	130	51	22.6	20	GTWPL2020-H	VGW6250
		25	25	155	47	27.6	25	GTWPL2525-H	VGW6250
		32	32	175	–	34.6	32	GTWPL3232-H	VGW6250
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	VGW8375
		32	32	182.7	–	35.3	32	GTWPL3232-H	VGW8375



More info

Reference pages: Insert → CER-21, 22

Ceramic Milling

S Superalloy



CERAMATIC / Ceramic Endmill

CER



Series	Features	DC (inch)	CICT	APMX (inch)	Pages
RCE.. series	For HRSA materials - High-speed machining of heat-resistant alloy is possible by utilizing the sialon ceramic grade "SX9" with excellent wear resistance. - Compared to carbide end mills, high-efficiency machining can achieve over 10 times the performance	φ.315 - 1/2	4,6 flute	- 3/8	A11 H05



Recommend Cutting Conditions for HRSA material

Application	Grade	φ D _c	Flute	Cutting Speed (SFM)			Feed (IPT)	Depth of cut (a _p —inch)	Width of cut (a _e —inch)	Coolant
				500	2000	3500				
Face Milling 	SX9	3/8"	4/6				.0012	.056	—	DRY
		1/2"						.075		
		5/8"						.094		
		3/4"						.113		
		8mm						.047		
		10mm						.059		
		12mm						.071		
		16mm						.094		
		20mm						.118		
Side Milling 	SX9	3/8"	4/6				.0012	.187	.037	DRY
		1/2"						.250	.050	
		5/8"						.313	.063	
		3/4"						.375	.075	
		8mm						.157	.031	
		10mm						.197	.039	
		12mm						.236	.047	
		16mm						.315	.063	
		20mm						.394	.079	
Slotting 	SX9	3/8"	4				.0012	.094	—	DRY
		1/2"						.125		
		5/8"						.156		
		8mm						.079		
		10mm						.098		
		12mm						.118		
		16mm						.157		
		3/8"						.056		
	SX9	1/2"	6				.0012	.075	—	DRY
		5/8"						.094		
		8mm						.047		
		10mm						.059		
		12mm						.071		
		16mm						.094		

Superalloys
Turning
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

JRF Milling Cutter

Introducing a New Paradigm in Ceramic-Embedded Cutters

NTK Achieves Industry-First Triple-Blade Configuration with Ceramic Negative Inserts for $\phi .630''$ 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

JRF Cutter (Negative insert)	Conventional (Positive insert)

High-Efficiency Machining with 3,4 and 5 insert design at $\phi .630''$ - Supports Maximum Table Feed of 283ipm!

Economical with Double-Sided Negative Inserts

● Usable Corner

JRF Cutter (Negative insert)	Conventional (Positive insert)

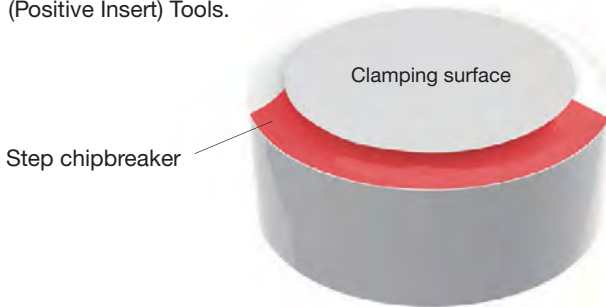


Heat-Resistant Alloys [aircraft parts/generator parts]

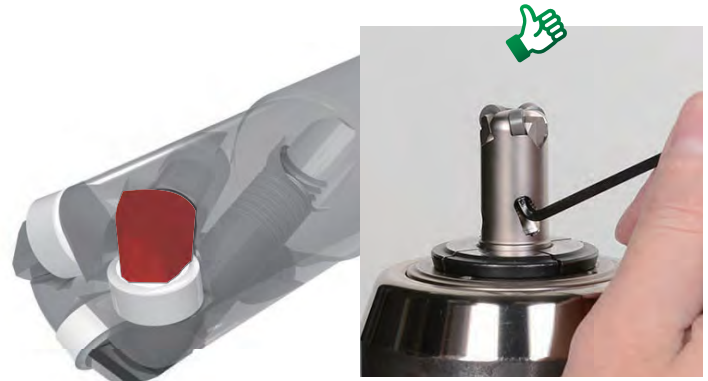
Superalloys
Turning
Grooving
Milling
Cast Iron
Turning
Grooving
Milling

Extended Lifespan Chipbreaker

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



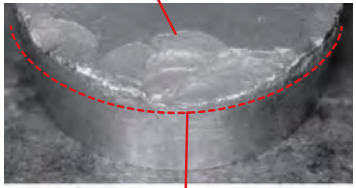
Prevent Insert Movement During Machining with Increased Clamping Force



Hardened Materials
Turning
CBN

Hardened Materials
Turning
Grooving

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

	JRF Cutter (Negative insert)	Competitor (Positive insert)	
Number of teeth	3 ($\phi .630''$)	2 ($\phi .630''$)	
Table feed (ipm)	88	59	
Edge Damage			

Cast Iron
Turning
Milling

Superalloys
Turning

Sintered metal
Turning

PCD
Non-Ferrous Materials
Turning
Grooving

Workpiece Material	Waspaloy (Combustion Casing)
Cutting Speed (sfm)	1640 (10,000rpm)

Feed per tooth (ipt)	.0030"
D.O.C.(inch)	.0197

Recommended Machining Parameters

Grade	Workpiece Material	Machining process	Cutting conditions			DRY	WET
			Cutting Speed (sfm)	Feed (ipt)	D.O.C. (inch)		
SX3 SX9	HRSA	Milling	1300 - 2300 – 3280	.0032 - .0039 - .0047	- .0394	●	×

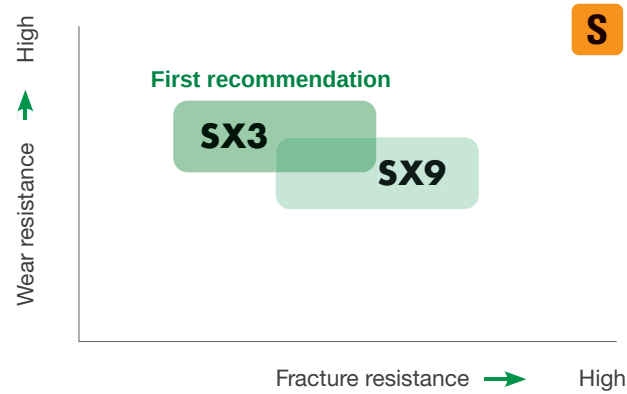
Material-Specific Characteristics

SX3

The First Recommended Material for Machining Heat-Resistant Alloys with Ceramics: Balancing Wear Resistance and Fracture Resistance.

SX9

Ceramic Material Prioritizing Fracture Resistance



Case study

Waspaloy (Combustion Casing)

	JRF Cutter	Conventional
Grade	SX9 Negative insert	SX9 Positive insert
Number of teeth	5 (ϕ 1.250")	3 (ϕ 1.250")
Speed (sfm)	2624 (8,000rpm)	2624 (8,000rpm)
Feed per tooth (ipt)	.0020	.0020
Table feed (ipm)	78	47
D.O.C. (inch)	.0394	.0394
Tool life	2 pass	1 pass
Number of usable corners	8	5

A bar chart with 'Table feed (ipm)' on the y-axis, ranging from 0 to 80. The 'JRF Cutter' bar is green and reaches 78. The 'Conventional' bar is grey and reaches 47.

1.7 Times Efficiency

32% Reduction in Tooling Costs

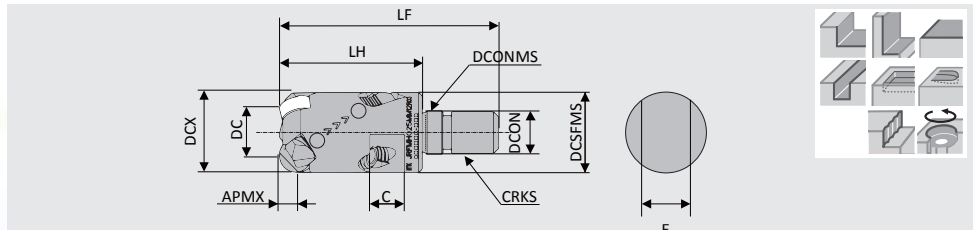
Insert Price ÷ Number of Corners (tool life)
x Number of inserts



JRF Modular type

TUNGFLEX shank x Modular type JRF cutter, Dia. 0.625" - 1.250" (16 - 32 mm) with RNGF negative insert

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



Metric	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

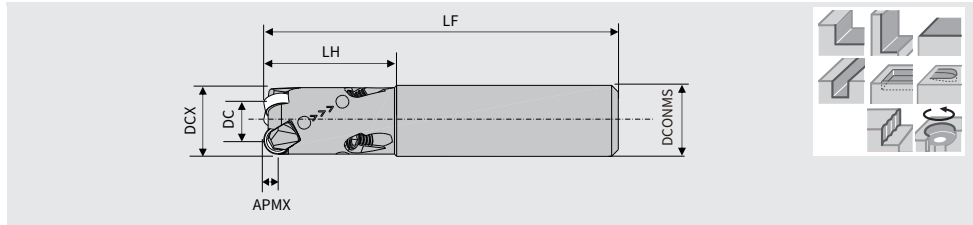
Designation	Cap screw	Wedge screw	Wrench	Wrench (sold separately)
JRFMH016MM08R03	HCS3P050	HWS3P050	LW-2.5	(DL-025-08-JRF)
JRFMH020MM10R03	HCS3P050	HWS3P050	LW-2.5	(DL-025-08-JRF)
JRFMH025MM12R03	HCS5P080	HWS5P080	LW-4.0	(DL-040-20-JRF)
JRFMH025MM12R04	HCS3P050	HWS3P050	LW-2.5	(DL-025-20-JRF)
JRFMH032MM16R03	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.0.625" - 1.250" (16 - 32 mm) with RNGF negative insert

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



Inch	APMX	DC	DCX	CICT	DCONMS	LF	LH	WT(lb)	Insert
JRFIH0625E0625R03	0.039	0.375	0.625	3	0.625	3.160	1.191	0.243	RNGF22...
JRFIH075E075R03	0.039	0.500	0.750	3	0.750	4.000	1.638	0.463	RNGF23...
JRFIH100E100R03	0.039	0.625	1.000	3	1.000	4.000	1.638	0.772	RNGF33...
JRFIH100E100R04	0.039	0.750	1.000	4	1.000	4.000	1.638	0.794	RNGF23...
JRFIH125E125R03	0.039	0.750	1.250	3	1.250	4.725	1.969	1.455	RNGF43...
JRFIH125E125R04	0.039	0.875	1.250	4	1.250	4.725	1.969	1.455	RNGF33...
JRFIH125E125R05	0.039	0.875	1.250	5	1.250	4.725	1.969	1.455	RNGF33...
Metric	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 (Inch)

Designation	Cap screw	Wedge screw	Wrench	Wrench (sold separately)
JRFIH0625E0625R03	HCS3P050	HWS3P050	LW-2.5S	(DL-025-08-JRF)
JRFIH075E075R03	HCS3P050	HWS3P050	LW-2.5S	(DL-025-08-JRF)
JRFIH100E100R03	HCS5P080	HWS5P080	LW-4.0	(DL-040-20-JRF)
JRFIH100E100R04	HCS3P050	HWS3P050	LW-2.5	(DL-025-20-JRF)
JRFIH125E125R03	HCS5P080	HWS5P080	LW-4.0	(DL-040-20-JRF)
JRFIH125E125R04	HCS5P080	HWS5P080	LW-4.0	(DL-040-20-JRF)
JRFIH125E125R05	HCS3P050	HWS3P050	LW-2.5	(DL-025-20-JRF)

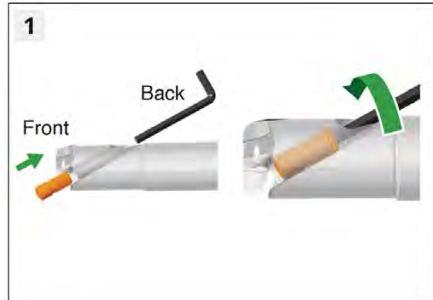
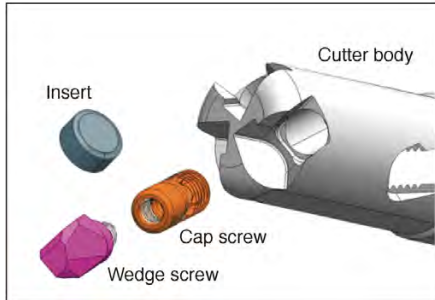
SPARE PARTS (Metric)

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

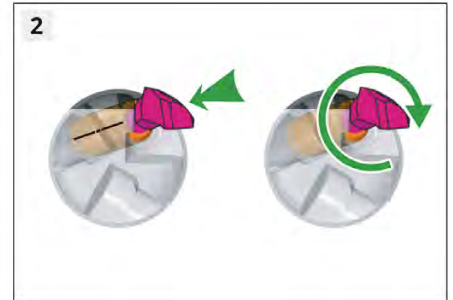


More info

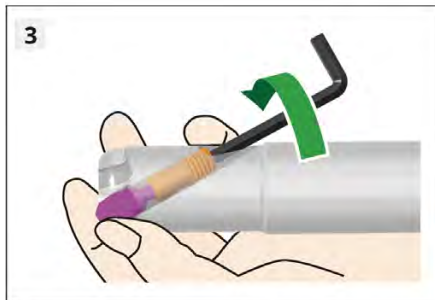
JRF cutter parts installation manual



1
Insert the cap screw from the front, insert a hex wrench from the back side, and rotate it **360 degrees (1 turn)**.

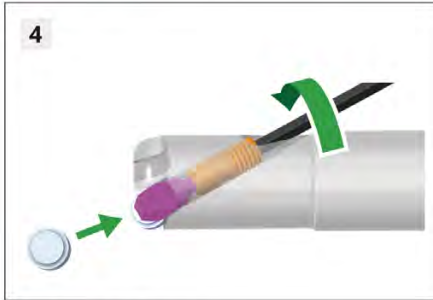


2
Insert the wedge screw into the cap screw and rotate it **360 degrees (1 turn)** by hand.



3
Hold the wedge screw and tighten the cap screw with the hex wrench **until it stops, then loosen it 360 degrees (1 turn) ***.

*Loosen 360° for insert space



4
First, insert the insert. Then, insert the torque wrench from the back side and **tighten to the specified torque value**.



Video explanation

Shank type Designation	Modular type Designation	Recommended tightening torque*	Cap screw	Wedge screw
JRFMH016E160R03	JRFMH016MM08R03	2N·m	HCS3P050	HWS3P050
JRFIH0625E0625R03				
JRFMH020E200R03	JRFMH020MM10R03			
JRFIH075E075R03				
JRFMH025E250R04	JRFMH025MM12R04			
JRFIH100E100R04		4N·m	HCS5P080	HWS5P080
JRFMH032E320R05	JRFMH032MM16R05			
JRFIH125E125R05				
JRFMH025E250R03	JRFMH025MM12R03			
JRFIH100E100R03				
JRFMH032E320R03	JRFMH032MM16R03	4N·m	HCS5P080	HWS5P080
JRFIH125E125R03				
JRFMH032E320R04	JRFMH032MM16R04			
JRFIH125E125R04				

※If the recommended cutting conditions or tightening torque are exceeded, the insert, cutter body, cap screw, or wedge screw may be damaged. Please ensure machining is performed within the specified recommended range.

INSERT

RNGF-HNF



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

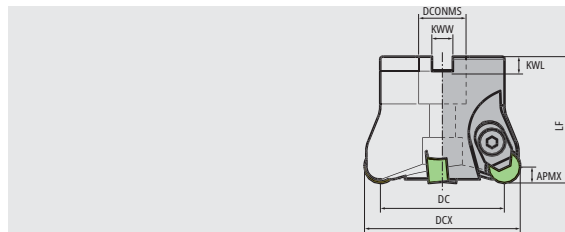
★ : First choice
☆ : Second choice

Designation		SiAlON		IC (in)	S (in)
		SX3	SX9		
Inch	Metric				
RNGF220E02-HNF	RNGF060300E-HNF	●	●	0.250	0.125
RNGF230E02-HNF	RNGF060400E-HNF	●	●	0.250	0.187
RNGF330E02-HNF	RNGF090400E-HNF	●	●	0.375	0.187
RNGF430E02-HNF	RNGF120400E-HNF	●	●	0.500	0.187

● : Line up

JRNMW Arbor type Cutter

JRNMW Arbor type Cutter For HRSA materials



GAMP = -5°, GAMF = -10°

Inch	APMX	DC	DCX	CICT	DCONMS	KWL	KWW	LF	WT(lbs)	Insert
RNIW200S075R04-43	0.126	1.500	2.000	4	0.750	0.217	0.315	2.000	0.992	RN**43..
RNIW200S075R03	0.126	1.500	2.000	3	0.750	0.217	0.315	2.000	0.992	RN**45..
RNIW250S075R04	0.126	2.000	2.500	4	0.750	0.217	0.315	2.000	1.301	RN**45..
RNIW300S100R05	0.126	2.500	3.000	5	1.000	0.236	0.378	2.000	1.609	RN**45..
RNIW400S125R06	0.126	3.500	4.000	6	1.250	0.300	0.510	2.000	4.211	RN**45..
Metric	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	Clamp screw	Wrench
RNIW200S075R04-43	AMS-6T	AOB-6S-T30	-
RNIW***S... / 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 (in)	S (in)
		SX3	SX9		
Inch	Metric				
RNGN450E02	RNGN120700E004	●	●	0.500	0.313
RNGN450T0220	RNGN120700T00520	●	●	0.500	0.313
RNGN450T0420	RNGN120700T01020	●	●	0.500	0.313

● : Line up

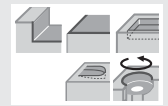
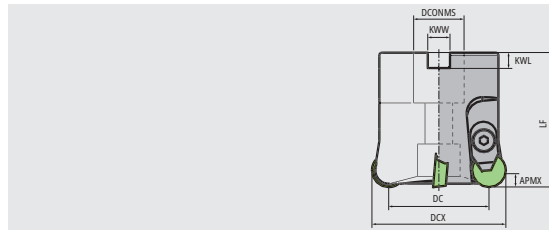


More info

JRPMW Arbor type Cutter

JRPMW Arbor type Cutter For HRSA materials

GAMP = 5°, GAMF = -2.5° - -5°



Inch	APMX	DC	DCX	CICT	DCONMS	KWL	KWW	LF	WT(lb)	Insert
RPIW200S075R04	0.126	1.500	2.000	4	0.750	0.217	0.315	2.000	0.904	RP**43..
RPIW300S100R05	0.126	2.500	3.000	5	1.000	0.236	0.378	2.000	2.006	RP**43..
RPIW400S125R06	0.126	3.500	4.000	6	1.250	0.299	0.500	2.000	4.211	RP**43..
Metric	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...

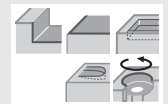
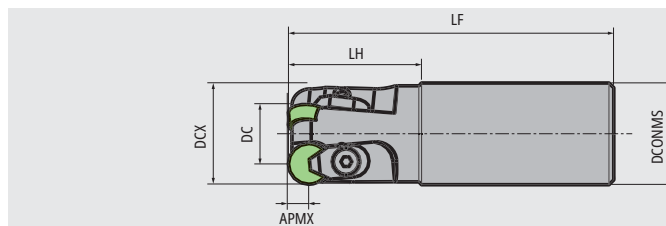
SPARE PARTS

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

JRPMW Shank type Cutter

JRPMW Shank type Cutter For HRSA materials

GAMP = 5°, GAMF = -7.5°



Inch	APMX	DC	DCX	CICT	DCONMS	LF	LH	WT(lb)	Insert
RPIW075E075R02	0.059	0.500	0.750	2	0.750	3.270	1.220	0.397	RP**21.5..
RPIW100E100R03	0.091	0.625	1.000	3	1.000	3.270	1.000	0.595	RP**32..
RPIW125E125R03	0.126	0.750	1.250	3	1.250	4.000	1.640	1.102	RP**43..
RPIW150E150R03	0.126	1.000	1.500	3	1.500	4.000	1.830	1.609	RP**43..
Metric	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)
RPIW075E075R02	AMS-3	AOB-3S	-
RPIW100E100R03	AMS-4	AOB-4S	-
RPIW125E125R03, RPIW150E150R03	AMS-5T	AOB-5S-T25	LLR-T25
JRPMW**S**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

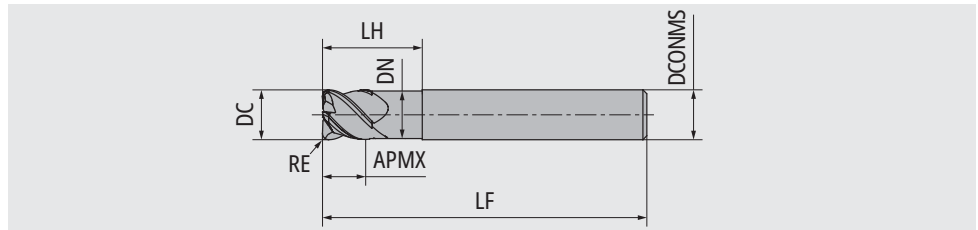
Designation		SiAlON			IC (in)	S (in)
		SX3	SX7	SX9		
Inch	Metric					
RPGN430E02	RPGN120400E004	●	●	●	0.500	0.187
RPGN430T0220	RPGN120400T00520	●	●	●	0.500	0.187
RPGN430T0420	RPGN120400T01020	●	●	●	0.500	0.187



More info

Ceramic 4 flute

Solid ceramic end mill

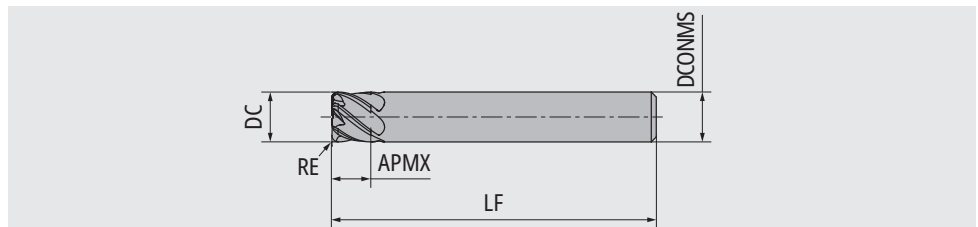


Inch	SX9	CICT	APMX	DC	DCONMS	DN	FHA	LH	LF	RE
RCEI375H4R047S	●	4	0.280	0.280	0.280	0.359	35	0.750	2.500	0.047
RCEI500H4R068S	●	4	0.375	0.500	0.500	0.484	35	1.000	2.750	0.068
Metric	SX9	CICT	APMX	DC	DCONMS	DN	FHA	LH	LF	RE
RCEM080H4R100S	●	4	6	8	8	7.6	35	16	60	1
RCEM100H4R125S	●	4	7.5	10	10	9.6	35	20	65	1.25
RCEM120H4R150S	●	4	9	12	12	11.6	35	24	70	1.5

●: Line up

Ceramic 6 flute

Solid ceramic end mill



Inch	SX9	CICT	APMX	DC	DCONMS	DN	FHA	LH	LF	RE
RCEI375J6R047S	●	6	0.280	0.375	0.375	-	40	-	2.500	.047
RCEI500J6R068S	●	6	0.375	0.500	0.500	-	40	-	2.750	.068
Metric	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

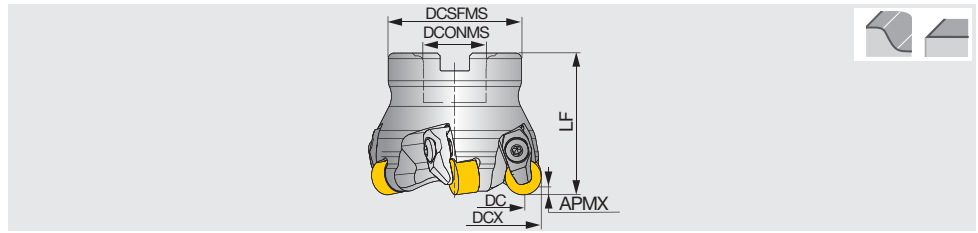
●: Line up



More info

Face milling cutter for high temperature alloy applications

GAMP = -7°, GAMF = +15°



Inch	APMX	DC	DCX	CICT	DCONMS	LF	DCSFMS	WT(lb)	Insert
TFMRND2.00-12-4Z-FL	0.080	1.528	2.000	4	0.750	2.000	1.770	0.88	RNGN120700...
TFMRND2.50-12-5Z-FL	0.080	2.000	2.500	5	1.570	1.969	0.750	0.99	RNGN120700...
TFMRND3.00-12-5Z-FL	0.080	2.500	3.000	5	1.750	1.969	1.000	2.07	RNGN120700...
Metric	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...

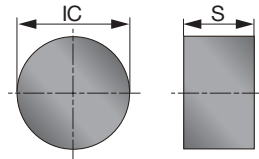
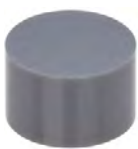
SPARE PARTS



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
Inch	Metric			TS200	TS300		
RNGN 45-E	RNGN120700-E	0.080	E	●		0.500	0.3125
RNGN 45-T1	RNGN120700-T1	0.080	T1	●		0.500	0.3125
RNGN 45-E	RNGN120700-E	0.080	E		●	0.500	0.3125
RNGN 45-T1	RNGN120700-T1	0.080	T1		●	0.500	0.3125

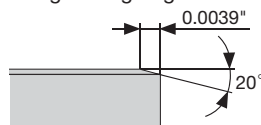
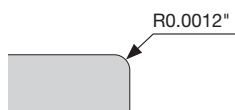
* Types of cutting edge preparations

●: Line up

Edge prep

E: Low cutting force

T1: Strong cutting edge



STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Priority	Grades	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)	Depth of cut ap (in)
S	Ni-based super alloys	Wear resistance	TS200	1804 - 4265	0.002 - 0.008	0.004 - 0.079
		First choice	TS300	886 - 1804	0.002 - 0.008	0.004 - 0.079
	Co-based super alloys	Wear resistance	TS200	1804 - 4921	0.002 - 0.008	0.004 - 0.079
		First choice	TS300	886 - 1804	0.002 - 0.008	0.004 - 0.079

Superalloys

Grooving

Milling

Cast Iron

Hardened
Materials

Hardened Materials

turning

Cast Iron

al Super

Sim m F

Non-Ferrous Materials

Groovi

Ceramic Turning

K Cast Iron

Cast iron / Ductile cast iron machining

SX6 Silicon Nitride Ceramic

■ Features

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

■ Recommended Applications

- Gray cast iron — Rough — Turning and milling

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (SFM)	Feed (IPR / IPT)	Depth of cut (inch)	DRY	WET
Gray cast iron	Turning	SX6	1800-3500	.012-.024	.020-.140	●	●
	Milling	SX6	1500-4200	.003-.010	.020-.140	●	○

	SX6
Notching	◎
Flank Wear	
Toughness	○
Heat Shock	◎

HC1,HW2 Alumina Oxide Ceramic

■ Features

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

■ Recommended Applications

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

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Gray cast iron	Turning	HC1	1200-2100	.004-.016	.020-.080	●	
		HW2	1200-2100	.004-.016	.020-.080	●	
Chilled liners	Turning	HW2	800-1200	.004-.012	.020-.080	●	



SP9 CVD Coated Silicon Aluminum Oxynitride ceramics

SP9

■ Features

- Extremely tough – Tough enough to rough cast iron with T0420(.004"x20) 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

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

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (SFM)	Feed (IPR / IPT)	Depth of cut (inch)	DRY	WET
Gray cast iron	Turning	SP9	1200-2700	.012-.024	-.140	●	○
	Milling		1200-2500	.003-.010	-.240	●	○
Ductile cast iron	Turning	SP9	800-2000	.012-.024	-.140	○	●
	Milling		2100-3000	.002-.010	-.240	●	○

HC2,HC6 TiC Ceramic WA1/533 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

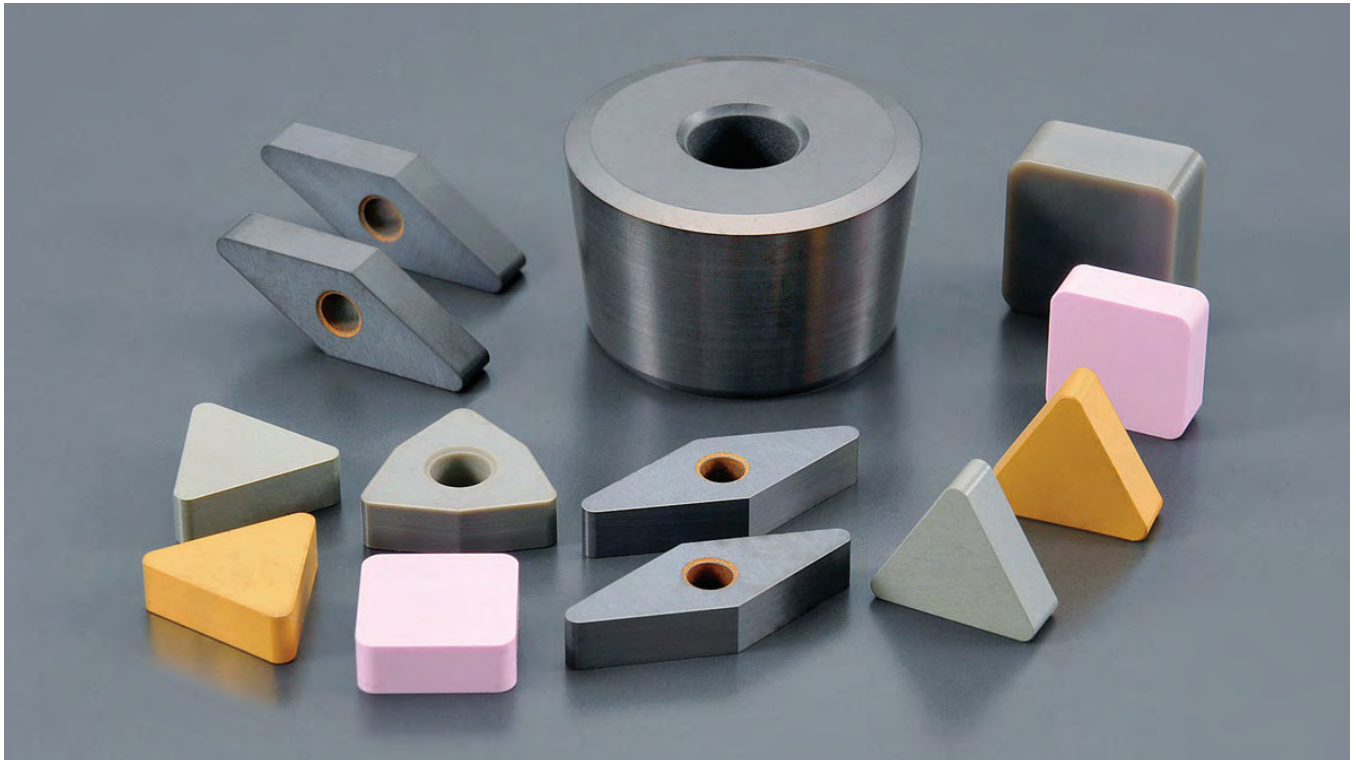
- Gray cast iron – Finish – Turning (HC2 • HC6 • 533)
- Ductile cast iron – Finish – Turning (HC6)

■ Recommended Cutting Conditions

Work material	Purpose	Grade	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Gray cast iron	Turning	HC2/HC6	1200-2100	.004-.016	-.060	●	●
		WA1/533	1200-2100	.004-.016	-.120	●	●
Ductile cast iron	Turning	HC6	600-1500	.004-.012	-.040	○	●



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.

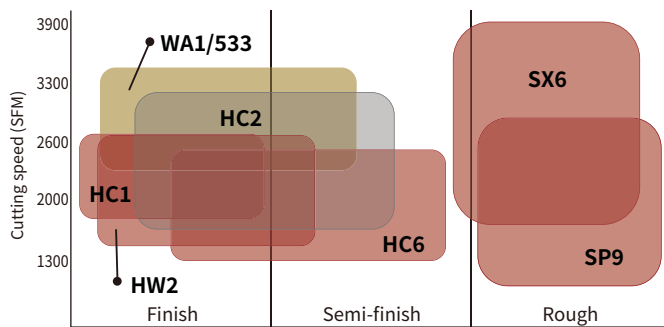
Insert grade, applications, and features

Work material	Grade	Structure	Color	Application	Hardness HRA	Toughness Mpa	Thermal conductivity W/m.K
K Cast iron	HC1	Al ₂ O ₃	White	Semi-finishing of gray cast iron Pipe bead cutting	94	700	17
	HC2	Al ₂ O ₃ +TiC	Black	Semi-finishing of gray cast iron	94.5	800	21
	HW2	Al ₂ O ₃	Pink	Semi-finishing of gray cast iron / liners Reinforced toughness	94	750	19
	HC6	TiC+Al ₂ O ₃	Black	Semi-finishing of ductile cast iron Semi-finishing of gray cast iron with coolant	94	800	29
	SX6	Si ₃ N ₄	Gray	Turning/milling of gray cast iron Reinforced VB wear resistance	93.5	1,200	29
	SP9	SiAlON	Yellow	Turning of heat-resistant alloy Roughing of gray cast iron High-precision machining by low-resistance edge treatment + CVD coating	93.5	1,200	15
H Hardened material	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 Heat resistant alloy	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 gray cast iron Excellent chipping resistance	93.5	1,200	15
	WA1 / 533	Al ₂ O ₃ +SiC	Light green	Turning of heat-resistant alloys/gray cast iron Excellent chipping resistance	94.5	1,200	35

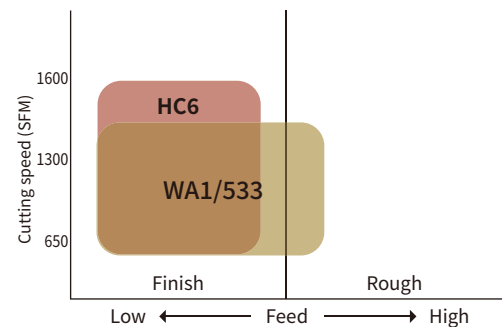


More info

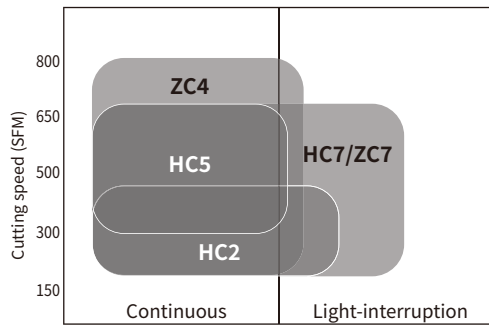
For gray cast iron



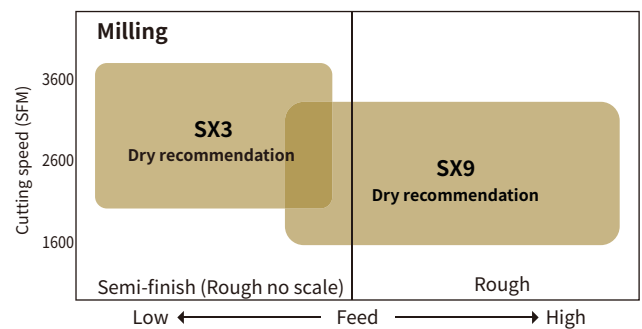
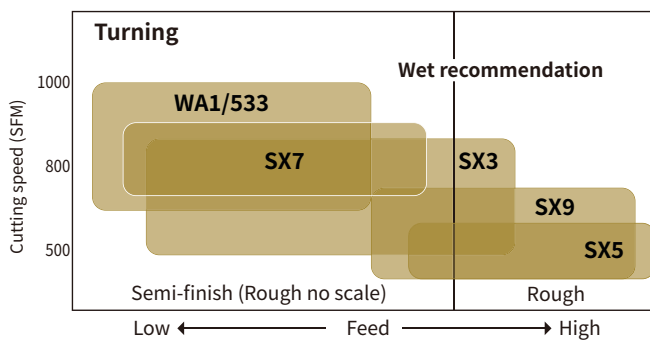
For ductile cast iron



For hardened materials



For heat-resistant alloys



Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

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Turning

Grooving

Milling

Recommended grade from cutting edge damage

Recommended when wear on the infeed 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

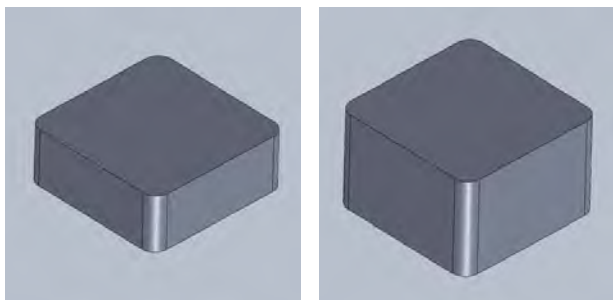
Finishing
HC2 HC6
* HC6 WET machining recommended

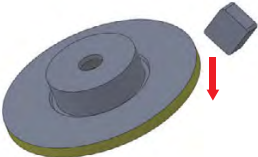
Recommended when the heat generated during DRY machining causes progressive wear, resulting in worsening of the machined surface and deterioration of dimensional accuracy.

Finishing
HC1 HW2
* DRY machining

Effect of insert thickness

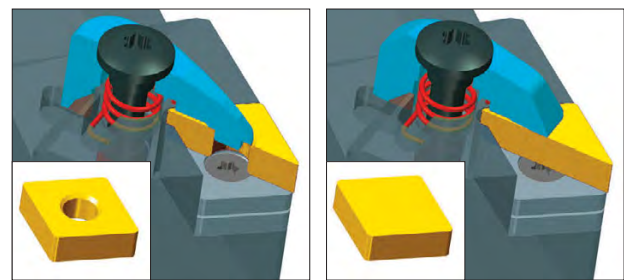
In machining with high cutting loads, such as roughing, a thicker insert thickness effectively reduces damage such as chipping, thus extending tool life.



Brake disc		
Work material	: FC250	
Cutting speed(SFM)	: 1804	
Feed(IPR)	: .018"	
Depth of cut(inch)	: .098"	
Coolant	: DRY	
SNG45 type	100 pcs/corner stable	
SNG43 type	50-70 pcs/corner unstable	

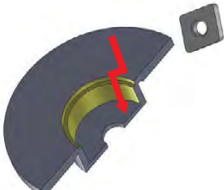
Recommended clamping type when using ceramic inserts

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



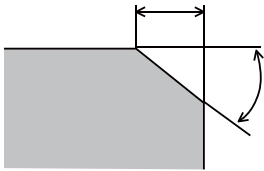
Capable of clamping inserts tightly. Supports cutting loads from any direction.

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

Brake disc		
Work material	: FC250	
Cutting speed(SFM)	: 2460	
Feed(IPR)	: .014"	
Depth of cut(inch)	: .079"	
Coolant	: DRY	
NTK double clamping type	100 pcs/corner 	
Lever lock type	45 pcs/corner 	

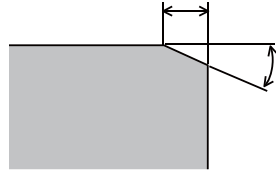
Use of different edge preparations

<Tougher type>



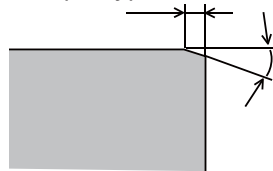
Width: Bigger
Angle: Bigger
Ex. width .012" x angle 35°

<Balance type>



Width: Medium
Angle: Medium
Ex. width .008" x angle 20°

<Shaper type>



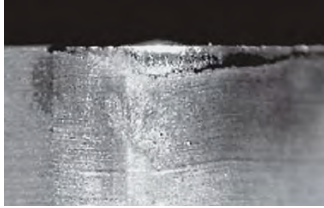
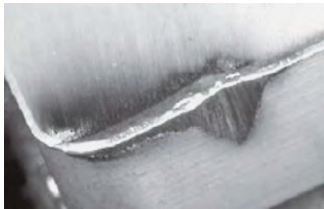
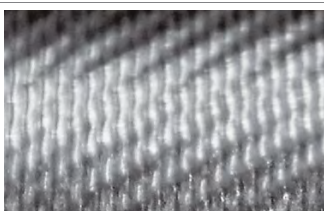
Width: Smaller
Angle: Smaller
Ex. width .004" x angle 15°

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

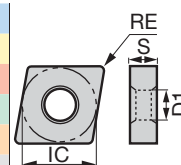
	Case study		Cause	Measure
Insert	VB wear		- Cutting speed too high - Feed rate too low - Insert shape incorrect - Incorrect insert grade	- Reduce cutting speed - Increase feed rate - Increase corner radius - Change to a grade with superior wear resistance
	Notch wear		- Incorrect insert grade - Cutter 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

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

CN



**Rhombic, 80°
with hole**

[illegible]

● : Line up



More info



Ex.Toolholder



In-Toolholder

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

Application	Material			Whisker		SiAlON		Silicon Nitride		Alumina					Dimension (in)				
	Chipbreaker	Designation																	
		Inch	Metric	533	WA1	SP9	SX9	SX6	FX105	HC1	HC2	HC6	HW2	LX21			RE	IC	S
Roughing to finishing	-	CNGN432T0420	CNGN120408T01020	●	●	●	●			●	●	●	●			0.031	0.500	0.187	-
		CNGN432T0820	CNGN120408T02020					●								0.031	0.500	0.187	-
		CNGN433T0420	CNGN120412T01020	●	●	●	●			●	●	●	●			0.047	0.500	0.187	-
		CNGN433T0820	CNGN120412T02020					●								0.047	0.500	0.187	-
		CNGN434T0420	CNGN120416T01020	●		●	●			●	●	●	●			0.063	0.500	0.187	-
	CNGN434T0820	CNGN120416T02020					●								0.063	0.500	0.187	-	
Finishing to medium cutting	-	CNMN 432	CNMN120408					●							0.031	0.500	0.187	-	
		CNMN 433	CNMN120412					●							0.047	0.500	0.187	-	
	-	CNGN 432	CNGN120408					●							0.031	0.500	0.187	-	
		CNGN 433	CNGN120412					●							0.047	0.500	0.187	-	
		CNGN 434	CNGN120416					●					●		0.063	0.500	0.187	-	
		CNGN 435	CNGN120420					●							0.079	0.500	0.187	-	
		CNGN 452	CNGN120708					●							0.031	0.500	0.313	-	
		CNGN 453	CNGN120712					●							0.047	0.500	0.313	-	
		CNGN 454	CNGN120716					●							0.063	0.500	0.313	-	
	-	CNGD 453	CNGD120712					●							0.047	0.500	0.313	-	
		CNGD 454	CNGD120716					●							0.063	0.500	0.313	-	
Roughing to finishing	-	CNGX 432 T0420	CNGX120408T01020			●	●								0.031	0.500	0.187	-	
		CNGX 432 T0820	CNGX120408T02020					●							0.031	0.500	0.187	-	
		CNGX 433 T0420	CNGX120412T01020			●	●								0.047	0.500	0.187	-	
		CNGX 433 T0820	CNGX120412T02020					●							0.047	0.500	0.187	-	
		CNGX 434 T0420	CNGX120416T01020			●	●								0.063	0.500	0.187	-	
		CNGX 434 T0820	CNGX120416T02020					●							0.063	0.500	0.187	-	
		CNGX 452 T0420	CNGX120708T01020			●	●								0.031	0.500	0.313	-	
		CNGX 452 T0820	CNGX120708T02020			●	●	●							0.031	0.500	0.313	-	
		CNGX 453 T0420	CNGX120712T01020			●	●								0.047	0.500	0.313	-	
		CNGX 453 T0820	CNGX120712T02020			●	●	●							0.047	0.500	0.313	-	
		CNGX 454 T0420	CNGX120716T01020			●	●								0.063	0.500	0.313	-	
	CNGX 454 T0820	CNGX120716T02020			●	●	●							0.063	0.500	0.313	-		



Non-Ferrous Materials

CER-44

peralloys
rooving

ring

Iron
moving

Turn

Turning

rooving

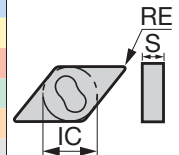
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Alloys

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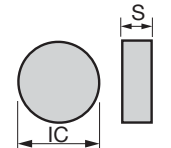
Turning

Milling

[illegible]

Application				SiAlON		Silicon Nitride								Dimension (in)			
	Chipbreaker		Designation														
	Inch	Metric	SP9	SX9	SX6								RE	IC	S	D1	
Roughing to finishing	-	DNGX452T0420	DNGX150708T01020		●	●								0.031	0.500	0.313	-
		DNGX452T0820	DNGX150708T02020				●							0.031	0.500	0.313	-
		DNGX453T0420	DNGX150712T01020		●	●								0.047	0.500	0.313	-
		DNGX453T0820	DNGX150712T02020				●							0.047	0.500	0.313	-
		DNGX454T0420	DNGX150716T01020		●	●								0.063	0.500	0.313	-
		DNGX454T0820	DNGX150716T02020				●							0.063	0.500	0.313	-

RN

[illegible][illegible]

RN



Ex.Toolholder

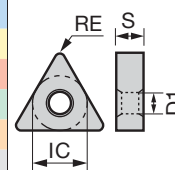
- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊗ : Heavy interrupted cutting

TN



**Triangular
with hole**

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

[illegible]

● : Line up

C

D

R

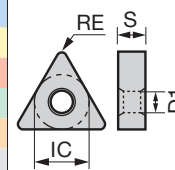
S

V

TN



**Triangular
with hole**

[illegible]

Application	Chipbreaker		Designation	material								Dimension (in)				
				SiAlON		Silicon Nitride	Alumina									
				SP9	SX9	SX6	HC1	HC2	HC6	HW2	RE	IC	S	D1		
Roughing to finishing	-	Inch	Metric	●	●		●	●	●	●			0.031	0.375	0.187	0.150
		TNGA332T0820	TNGA160408T02020			●							0.031	0.375	0.187	0.150
		TNGA333T0420	TNGA160412T01020	●	●		●	●	●	●			0.047	0.375	0.187	0.150
		TNGA333T0820	TNGA160412T02020			●							0.047	0.375	0.187	0.150
		TNGA334T0420	TNGA160416T01020	●	●		●	●	●	●			0.063	0.375	0.187	0.150
		TNGA334T0820	TNGA160416T02020			●							0.063	0.375	0.187	0.150

● : Line up



More info



Ex.Toolholder



In.Toolholder

Superalloys
Turning
Grooving

[illegible]

Cast Iron

Hardened Materials

[illegible]

Hardened Materials

Cast Iron	Milling	Turning
-----------	---------	---------

Sintered metal	Turning
Superalloys	Turning



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ntkcuttingtools.com/us

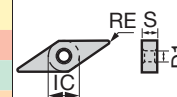
Non-Ferrous Materials

VN



**Rhombic, 35°
with hole**

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

[illegible]

C

D

B

S

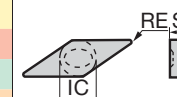
T

V

VN



**Rhombic, 35°
without hole**

[illegible][illegible]

● : Line up



More info



Ex.Toolholder



In.Toolholder

Grooving

turning

Cast Iron Grooving

Materials

Materials
Turning

Grooving

Iron Turning

Milling

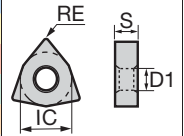
Superalloys

Sintered
metal
Turning

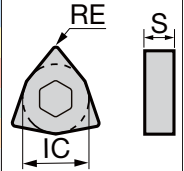
Turning

rooving

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

[illegible]

WN

[illegible][illegible]

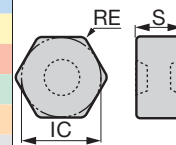
tungaloy.com/us
ntkcuttingtools.com/us

CER-51

HN



Hexagonal,
120°
without hole

[illegible][illegible]

● : Line up

W

OTHERS

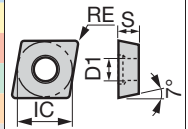


More info

Superalloys
Turning
Grooving



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

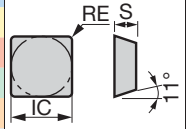


Application	Chipbreaker	Designation		Silicon Nitride	Alumina					Dimension (in)						
		Inch	Metric	SX6	HC2											
Roughing to finishing		-	CCGW21.51T0420	CCGW060204T01020		●						0.016	0.250	0.094	0.148	
			CCGW21.52T0420	CCGW060208T01020		●							0.031	0.250	0.094	0.148
			CCGW32.51T0420	CCGW09T304T01020		●							0.016	0.375	0.156	0.236
			CCGW32.52T0420	CCGW09T308T01020	●	●							0.031	0.375	0.156	0.236
			CCGW32.53T0420	CCGW09T312T01020	●								0.047	0.375	0.156	0.236
			CCGW432T0420	CCGW120408T01020	●								0.031	0.500	0.187	0.295
			CCGW433T0420	CCGW120412T01020	●								0.047	0.500	0.187	0.295

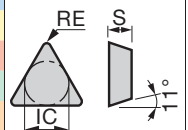
Cast Iron



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

[illegible]

Hardened Materials

[illegible][illegible]

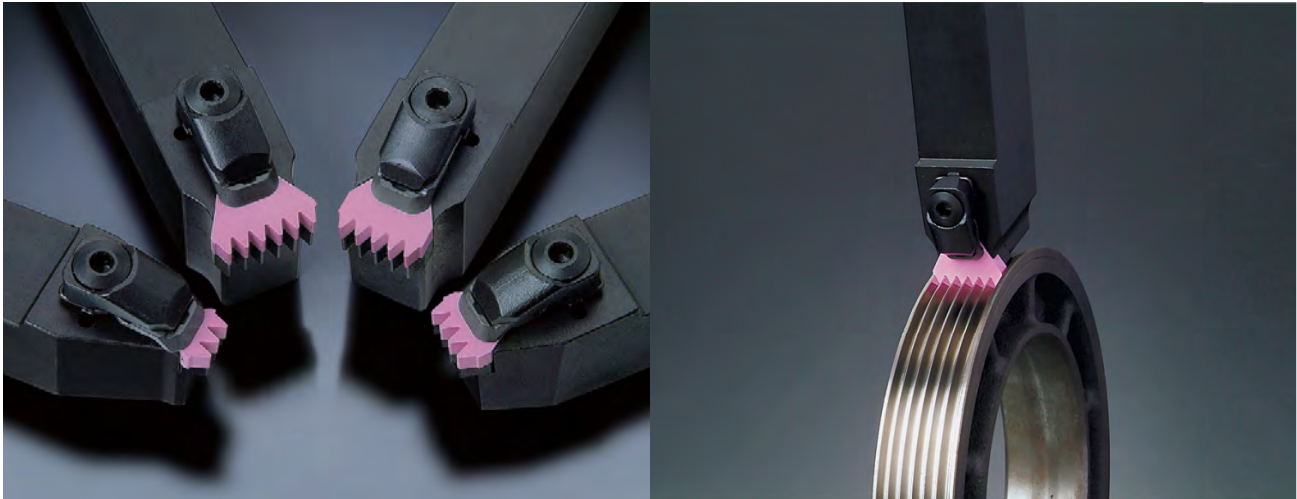
Turning metal ing



tungaloy.com/us CER-53
ntkcuttingtools.com/us

Ceramic Grooving Cast Iron

V-pulley machining



Features

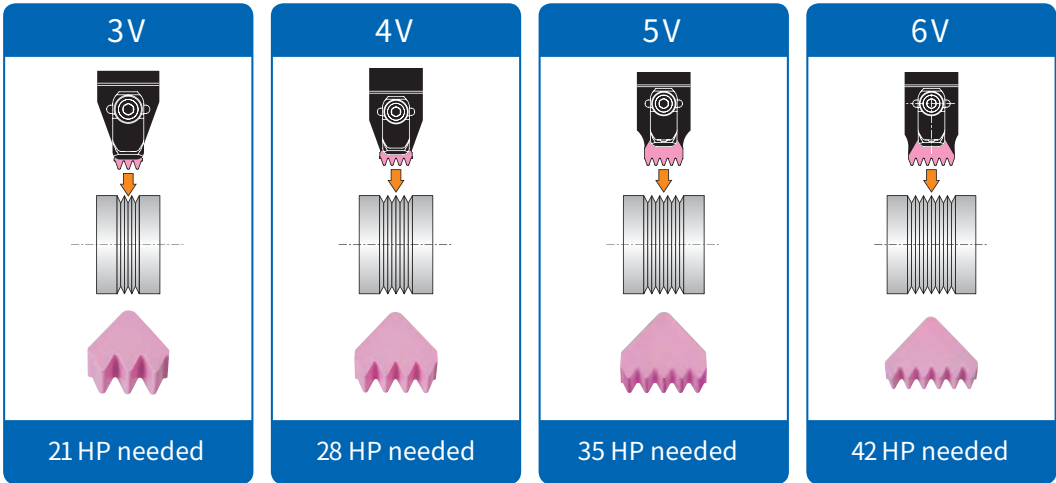
- High-speed machining of poly-V pulleys
- Up to 6 grooves can be machined in a single pass
- High-precision inserts can be produced by profile machining



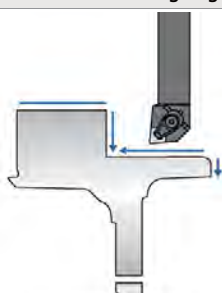
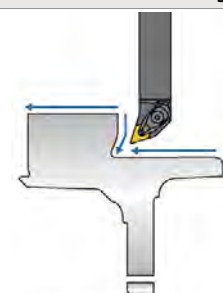
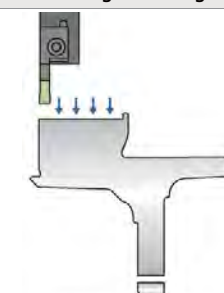
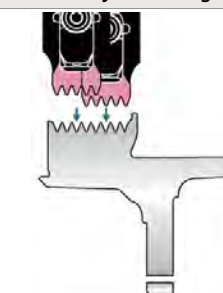
Recommended Cutting Conditions

Material	Insert grade	Cutting speed (SFM)	Feed (IPR)	DRY	WET
Gray cast iron	HW2	1000-2000	.002-.006	●	

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	CNGX453 T0820 SX6	DNGA432T0525 HC6 DNGA432 T0420 SP9	VDB 250 B031 T0220 WA1	HW2 PTM 53 K50504 HW2*
Cutting speed (SFM)	2000-2800	1500-2000(HC6) 1800-2400 (SP9)	1000-1400	1200-1500 (1400 SFM recommend)
Feed (IPR)	.018-.024	.012-.018 (HC6) .018-.024 (SP9)	.008-.010	.002-.006
Depth of cut (inch)	.080-.120	Process dependent (.020)	-	-
Coolant	DRY (WET)	DRY (WET)	DRY (WET)	DRY
Pcs / corner	-300 pcs	-300 pcs	-300 pcs	-300 pcs

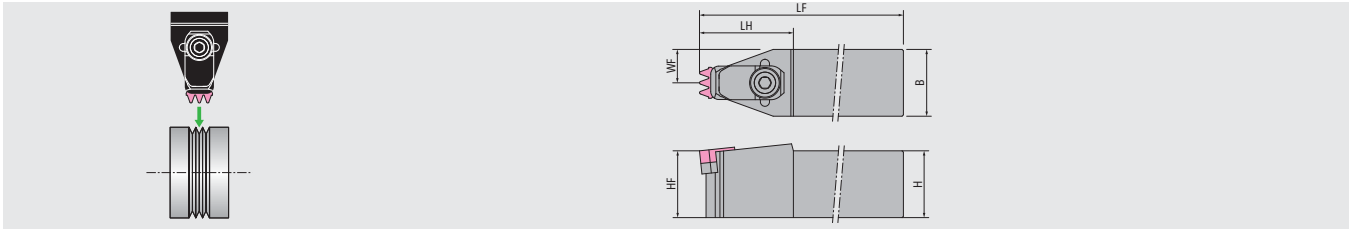
*Check the machine required power.

	3V	4V	5V	6V
Required HP	21HP	28HP	35HP	42HP

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

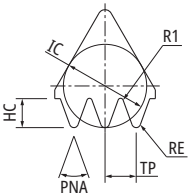
Poly-V Pulley Profiles

Poly-V Pulley Profiles - 3V Insert

							
Inch	B	H	HF	LF	LH	WF	Insert
POLY-V163	1.000	1.000	1.000	6.000	0.500	1.400	PTM33K30...

INSERT

PTM33K30

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

★ : First choice

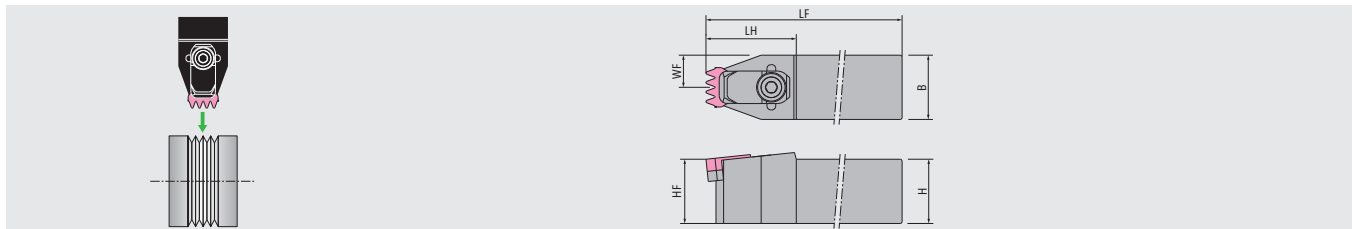
Designation		Alumina	HC (in)	IC (in)	PNA	R1 (in)	RE (in)	S (in)	TP (mm)
Inch	Metric	HW2							
PTM33K30504E02	PTM33K30504E004	●	0.124	0.375	40°	0.016	0.0197	0.187	3.56
PTM33K305E02	PTM33K305E004	●	0.132	0.375	40°	0.012	0.0197	0.187	3.56

● : Line up

● : Line up

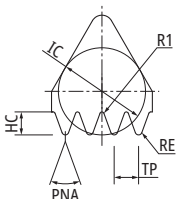
Poly-V Pulley Profiles

Poly-V Pulley Profiles - 4V Insert

							
Inch	B	H	HF	LF	LH	WF	Insert
POLY-V164	1.000	1.000	1.000	6.000	0.500	1.400	PTM43K40...

INSERT

PTM43K40

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

★ : First choice

Designation		Alumina	HC (in)	IC (in)	PNA	R1 (in)	RE (in)	S (in)	TP (mm)
		HW2							
Inch	Metric								
PTM43K40504E02	PTM43K40504E004	●	0.124	0.500	40°	0.016	0.0197	0.187	3.56
PTM43K405E02	PTM43K405E004	●	0.132	0.500	40°	0.012	0.0197	0.187	3.56

● : Line up

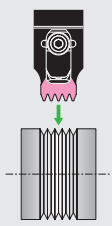
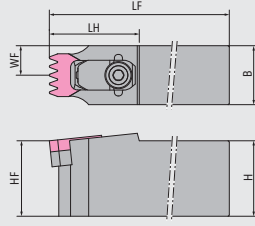
● : Line up



More info

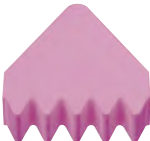
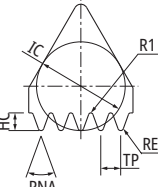
Poly-V Pulley Profiles

Poly-V Pulley Profiles - 5V Insert

							
Inch	B	H	HF	LF	LH	WF	Insert
POLY-V205	1.250	1.250	1.250	7.000	0.625	1.500	PTM53K50..

INSERT

PTM53K50

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

★ : First choice

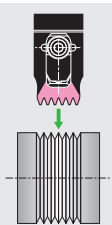
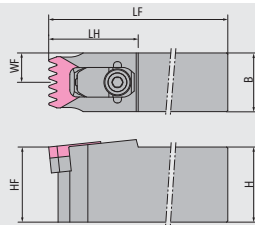
Designation		Alumina		HC (in)	IC (in)	PNA	R1 (in)	RE (in)	S (in)	TP (mm)
		HW2								
Inch	Metric									
PTM53K50504E02	PTM53K50504E004	●		0.124	0.625	40°	0.012	0.0197	0.187	3.56
PTM53K505E02	PTM53K505E004	●		0.132	0.625	40°	0.012	0.0197	0.187	3.56

● : Line up

● : Line up

Poly-V Pulley Profiles

Poly-V Pulley Profiles - 6V Insert

							
Inch	B	H	HF	LF	LH	WF	Insert
POLY-V206	1.250	1.250	1.250	7.000	0.625	1.500	PTM53K60..

INSERT

PTM53K60

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

★ : First choice

Designation		Alumina		HC (in)	IC (in)	PNA	R1 (in)	RE (in)	S (in)	TP (mm)
		HW2								
Inch	Metric									
PTM53K60504E02	PTM53K60504E004	●		0.124	0.625	40°	0.016	0.0197	0.187	3.56
PTM53K605E02	PTM53K605E004	●		0.132	0.625	40°	0.012	0.0197	0.187	3.56

● : Line up

● : Line up

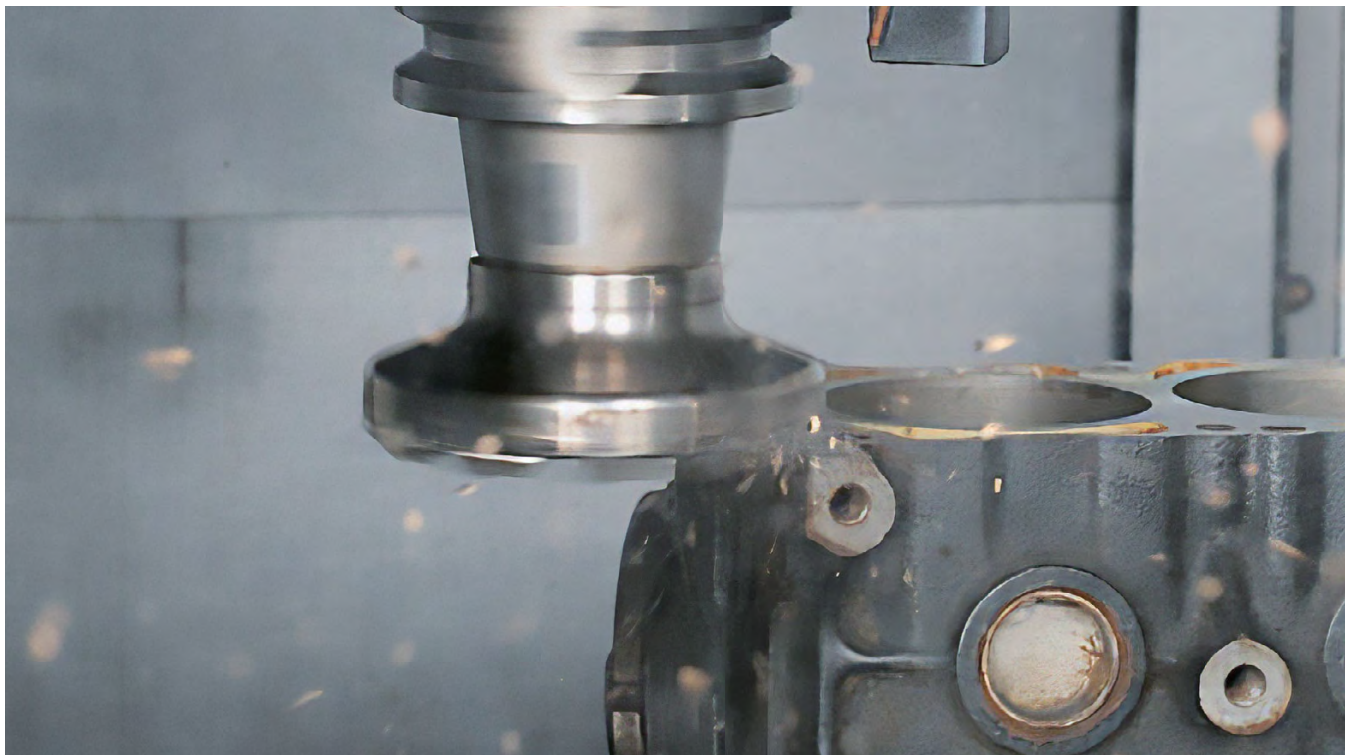


More info

Ceramic Milling

 Cast Iron

Gray / Ductile Cast Iron

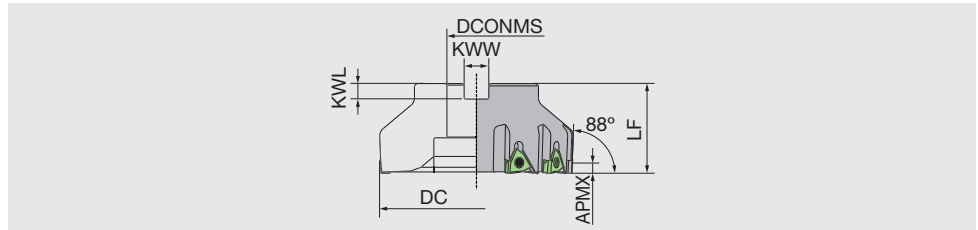


Lineup

Series	Features	DC inch	KAPR °	APMX inch
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.	φ2.480" - 6.300"	88°	-.217"
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	φ2.480" - 6.300"	45°, 75°, 88°	-.236"
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	φ1.50" - 6.00"	88°	-.315"
JQ series 	Shoulder milling × Small diameter cutter • Capable of 90-degree shoulder milling • A variety of cutter diameters as small as φ.787"	φ.787" - 2.480"	90°	-.315"
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	φ2.500" - 6.300"	45°, 75°	-.236"

JWNXM...

Square shoulder mill, bore type, for 6-corner double side inserts



Metric	APMX	DC	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JWNXM063C2200R06-A	4.5,5,5	63	6	50	22	6.3	10.4	0.9	WNX44...
JWNXM080A2540R08-A	4.5,5,5	80	8	50	25.4	6	9.5	1.1	WNX44...
JWNXM100A3175R10-A	4.5,5,5	100	10	50	31.75	8	12.7	1.8	WNX44...
JWNXM125A3810R12-A	4.5,5,5	125	12	58	38.1	10	15.9	3	WNX44...
JWNXM160A5080R16-A	4.5,5,5	160	16	60	50.8	11	19	4.9	WNX44...

SPARE PARTS

Designation	Clamp Screw	Wrench (for Clamp Screw)
JWNXM...	FSI26-4.0*12-LH	LLR-T15

INSERT

WNX44...

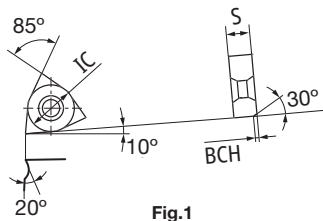
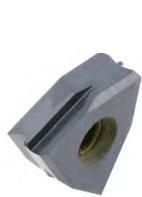


Fig.1

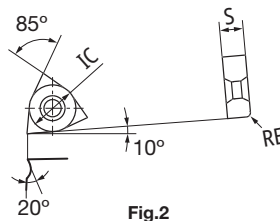


Fig.2

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

★ : First choice
☆ : Second choice

Designation		RE (in)	APMX (in)	Silicon Nitride		SiAlON		S (in)	BCH (in)	BS (in)	IC (in)	Figure
Inch	Metric			SX6		SP9						
WNX44-C10T0420	WNX44-C10T01020	-	0.217	●		●		0.250	0.039	0.024	0.500	1
WNX44-R12T0420	WNX44-R12T01020	0.047	0.177	●		●		0.250	-	-	0.500	2

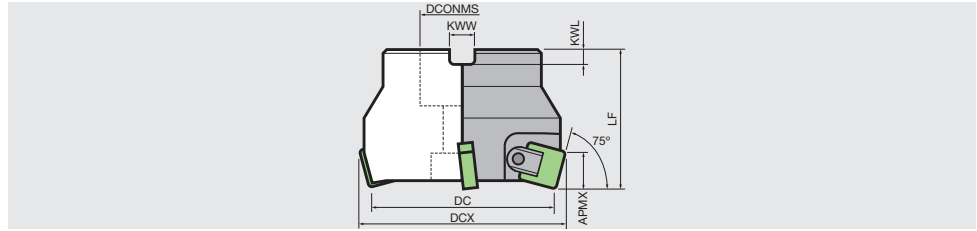
● : Line up



More info

JFDX**-75...

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



Inch	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(lb)	Insert
JFDX25IN-75-06R	0.236	2.500	2.732	6	2.000	0.750	0.217	0.315	2.006	SN**43... / FDX1204**75...
JFDX30IN-75-08R	0.236	3.000	3.232	8	2.000	1.000	0.225	0.387	2.205	SN**43... / FDX1204**75...
JFDX40IN-75-10R	0.236	4.000	4.232	10	2.000	1.500	0.380	0.640	3.307	SN**43... / FDX1204**75...
JFDX50IN-75-12R	0.236	5.000	5.232	12	2.000	1.500	0.380	0.640	5.71	SN**43... / FDX1204**75...
JFDX60IN-75-16R	0.236	6.000	6.244	16	2.500	2.000	0.433	0.748	8.818	SN**43... / FDX1204**75...

Metric	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JFDX063-75-06R	6	63	70	6	50	22	6	10.4	0.79	SN**1204...
JFDX080-75-08R	6	80	87	8	50	25.4	6	9.5	1.06	SN**1204...
JFDX100-75-10R	6	100	107	10	50	31.75	8	12.7	1.39	SN**1204...
JFDX125-75-12R	6	125	132	12	58	38.1	10	15.9	2.56	SN**1204...

SPARE PARTS

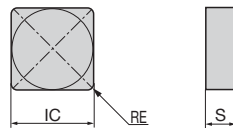
Designation	Wedge	Shim	Clamp screw	Screw (for Shim)	Wrench (for Clamp screw)
JFDX**-75**-R	HLW175	ASN423	WS0616-T15	M3*8	T-15A



More info

INSERT

SNGN-T



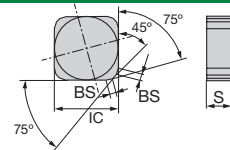
P	Steel			
M	Stainless			
K	Cast iron	★	☆	
N	Non-ferrous			
S	Superalloys			
H	Hard materials			

★ : First choice
☆ : Second choice

Designation		RE (in)	Silicon Nitride	SiAlON	S (in)	IC (in)
Inch	Metric		SX6	SP9		
SNGN433T0420	SNGN120412T01020	0.047	●	●	0.187	0.500

● : Line up

SNGN-EN



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

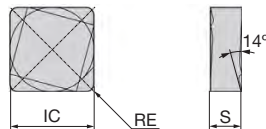
★ : First choice
☆ : Second choice

Designation		RE (in)	Silicon Nitride	SiAlON	S (in)	IC (in)	BS (in)
Inch	Metric		SX6	SP9			
SNGN43ENT0425	SNGN1204ENT01025	0.047	●	●	0.187	0.500	0.055

These inserts must be installed in all pockets.

● : Line up

SNGF-C/-CM



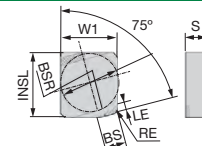
P	Steel			
M	Stainless			
K	Cast iron	★	☆	
N	Non-ferrous			
S	Superalloys			
H	Hard materials			

★ : First choice
☆ : Second choice

Designation		RE (in)	Silicon Nitride	SiAlON	S (in)	IC (in)
Inch	Metric		SX6	SP9		
SNGF433T0425RC	SNGF120412T01025RC	0.047		●	0.187	0.500
SNGF433T0425RC-CM	SNGF120412T01025RC-CM	0.047	●		0.187	0.500

● : Line up

FDX-75



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

★ : First choice
☆ : Second choice

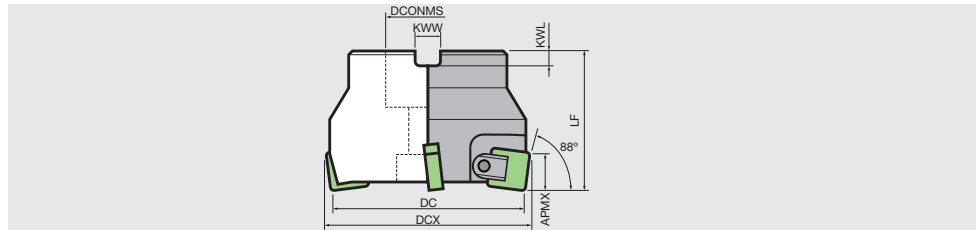
Designation		RE (in)	CBN	S (in)	BS (in)	W1 (in)	LE (in)	BSR (in)
Inch	Metric		BK310 BK350					
FDX1204-75-50R		0.047	● ●	0.187	0.177	0.480	0.059	9.843

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

● : Line up

JFDX**-88...

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



Inch	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(lb)	Insert
JFDX25IN-88-06R	0.236	2.500	2.531	6	2.000	0.750	0.217	0.315	1.808	SN**43... / FDX1204**88...
JFDX30IN-88-08R	0.236	3.000	3.031	8	2.000	1.000	0.225	0.387	2.094	SN**43... / FDX1204**88...
JFDX40IN-88-10R	0.236	4.000	4.031	10	2.000	1.500	0.380	0.640	3.197	SN**43... / FDX1204**88...
JFDX50IN-88-12R	0.236	5.000	5.031	12	2.000	1.500	0.380	0.640	5.798	SN**43... / FDX1204**88...

Metric	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JFDX063-88-06R	6	63	64	6	50	22	6	10.4	0.79	SN**1204...
JFDX080-88-08R	6	80	81	8	50	25.4	6	9.5	1.03	SN**1204...
JFDX100-88-10R	6	100	101	10	50	31.75	8	12.7	1.38	SN**1204...
JFDX125-88-12R	6	125	126	12	58	38.1	10	15.9	2.61	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



More info

INSERT

SNGN-T

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

★ : First choice
☆ : Second choice

Designation	RE (in)	Silicon Nitride SX6	SiAlON SP9	S (in)	IC (in)
SNGN433T0420 SNGN120412T01020	0.047	●	●	0.187	0.500

● : Line up

SNEN-ZN

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

★ : First choice
☆ : Second choice

Designation	RE (in)	Silicon Nitride SX6	SiAlON SP9	S (in)	IC (in)	BS (in)
SNEN43ZNT0425 SNEN1204ZNT01025	0.047	●	●	0.187	0.500	0.079

● : 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 (in)	Silicon Nitride SX6	SiAlON SP9	S (in)	IC (in)
SNGF433T0425RC SNGF120412T01025RC	0.047	●	●	0.187	0.500
SNGF433T0425RC-CM SNGF120412T01025RC-CM	0.047	●	●	0.187	0.500

● : Line up

FDX-88

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

★ : First choice
☆ : Second choice

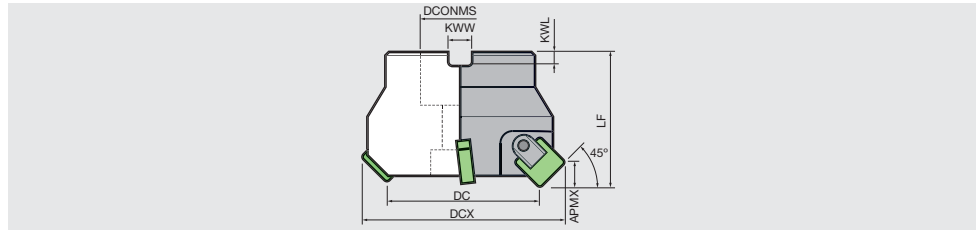
Designation	RE (in)	CBN BK310	CBN BK350	S (in)	BS (in)	W1 (in)	LE (in)	INSL (in)	BSR (in)
FDX1204-88-50R	0.047	●	●	0.187	0.242	0.480	0.059	0.510	9.843

● : Line up

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

JFDX**-45...

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



Inch	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JFDX25IN-45-06R	0.236	2.500	3.129	6	2.000	0.750	0.217	0.315	2.205	SN**43... / FDX1204**45...
JFDX30IN-45-08R	0.236	3.000	3.629	8	2.000	1.000	0.225	0.387	2.8	SN**43... / FDX1204**45...
JFDX40IN-45-10R	0.236	4.000	4.629	10	2.000	1.500	0.380	0.640	3.902	SN**43... / FDX1204**45...
Metric	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JFDX063-45-06R	6	63	72	6	50	22	6	10.4	0.93	SN**1204...
JFDX080-45-08R	6	80	95	8	50	25.4	6	9.5	1.21	SN**1204...
JFDX100-45-10R	6	100	120	10	50	31.75	8	12.7	1.66	SN**1204...
JFDX125-45-12R	6	125	146	12	58	38.1	10	15.9	2.8	SN**1204...

SPARE PARTS

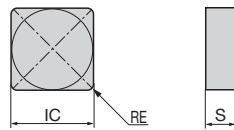
Designation	Wedge	Shim	Clamp screw	Screw (for Shim)	Wrench (for Clamp screw)
JFDX**-45...	HLW175	ASN423	WS0616-T15	M3*8	T-15A



More info

INSERT

SNGN-T



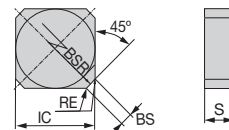
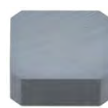
P	Steel			
M	Stainless			
K	Cast iron	★	☆	
N	Non-ferrous			
S	Superalloys			
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	RE (in)	Silicon Nitride	SiAlON	S (in)	IC (in)
Inch	Metric	SX6	SP9		
SNGN433T0420	SNGN120412T01020	0.047	●	0.187	0.500

● : Line up

SNGN-AN



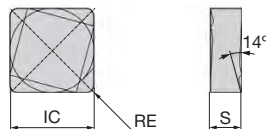
P	Steel			
M	Stainless			
K	Cast iron	★	☆	
N	Non-ferrous			
S	Superalloys			
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	RE (in)	Silicon Nitride	SiAlON	S (in)	IC (in)	BS (in)	BSR (in)
Inch	Metric	SX6	SP9				
SNGN43ANT0420	SNGN1204ANT01020	0.5	●	0.187	0.500	0.079	5.906

● : Line up

SNGF-C/-CM



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

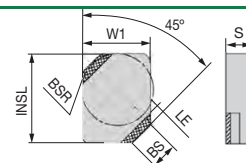
★ : First choice
☆ : Second choice

Designation	RE (in)	Silicon Nitride	SiAlON	S (in)	IC (in)
Inch	Metric	SX6	SP9		
SNGF433T0425RC	SNGF120412T01025RC	0.047	●	0.187	0.500
SNGF433T0425RC-CM	SNGF120412T01025RC-CM	0.047	●	0.187	0.500

Reduce Tool Pressure.

● : Line up

FDX-45



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

★ : First choice
☆ : Second choice

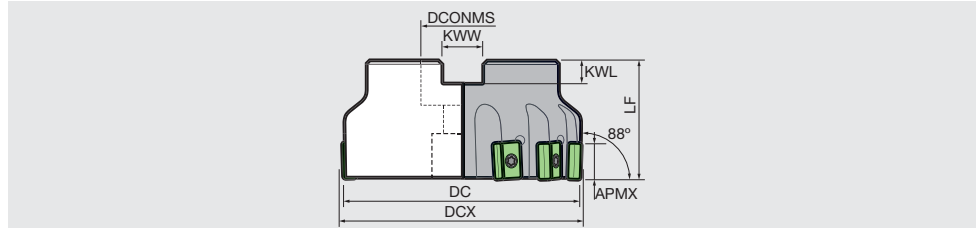
Designation	CBN	S (in)	BS (in)	W1 (in)	LE (in)	INSL (in)	BSR (in)
	BK310 BK350						
FDX1204-45-50R	● ●	0.187	0.189	0.480	0.059	0.630	9.843

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

● : Line up

JXTM...

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



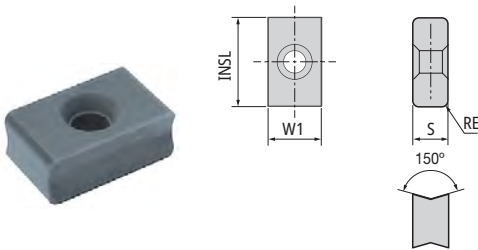
Inch	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JXTM15IN-88-4R	0.315	1.500	1.550	4	1.720	0.750	0.200	0.320	0.992	LN324A..
JXTM15IN-88-5R	0.315	1.500	1.550	5	1.720	0.750	0.200	0.320	0.992	LN324A..
JXTM20IN-88-6R	0.315	2.000	2.050	6	2.000	0.750	0.200	0.320	0.992	LN324A..
JXTM25IN-88-8R	0.315	2.500	2.550	8	2.000	1.000	0.230	0.390	1.499	LN324A..
JXTM30IN-88-10R	0.315	3.000	3.040	10	2.000	1.000	0.230	0.390	2.403	LN324A..
JXTM40IN-88-13R	0.315	4.000	4.040	13	2.000	1.500	0.380	0.640	3.902	LN324A..
JXTM50IN-88-16R	0.315	5.000	5.040	16	2.000	1.500	0.380	0.640	6.504	LN324A..
JXTM60IN-88-18R	0.315	6.000	6.050	18	2.000	2.000	0.440	0.765	8.003	LN324A..
JXTM15IN-88-4L	0.315	1.500	1.550	4	1.720	0.750	0.200	0.320	0.992	LN324A..
JXTM15IN-88-5L	0.315	1.500	1.550	5	1.720	0.750	0.200	0.320	0.992	LN324A..
JXTM20IN-88-6L	0.315	2.000	2.050	6	2.000	0.750	0.200	0.320	0.992	LN324A..
JXTM25IN-88-8L	0.315	2.500	2.550	8	2.000	1.000	0.230	0.390	1.499	LN324A..
JXTM30IN-88-10L	0.315	3.000	3.040	10	2.000	1.000	0.230	0.390	2.403	LN324A..
JXTM40IN-88-13L	0.315	4.000	4.040	13	2.000	1.500	0.380	0.640	3.902	LN324A..
JXTM50IN-88-16L	0.315	5.000	5.040	16	2.000	1.500	0.380	0.640	6.504	LN324A..
JXTM60IN-88-18L	0.315	6.000	6.050	18	2.000	2.000	0.440	0.765	8.003	LN324A..
Metric	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JXTM080-88-10R	8	80	83	6	50	25.4	6	9.5	1.1	LN324M...
JXTM100-88-13R	8	100	103	8	50	31.75	8	12.7	1.8	LN324M...
JXTM125-88-16R	8	125	128	10	58	38.1	10	15.9	3.1	LN324M...

SPARE PARTS

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

INSERT

LN324



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

★ : First choice
☆ : Second choice

Designation		RE (in)	Silicon Nitride SX6	SiAlON SP9	S (in)	D1 (in)	INSL (in)	W1 (in)
Inch	Metric							
LN324A-02T0420	LN324A-08T01020	0.031	●	●	0.250	0.165	0.625	0.375
LN324A-03T0420	LN324A-12T01020	0.047	●	●	0.250	0.165	0.625	0.375
LN324A-04T0420	LN324A-16T01020	0.063	●	●	0.250	0.165	0.625	0.375

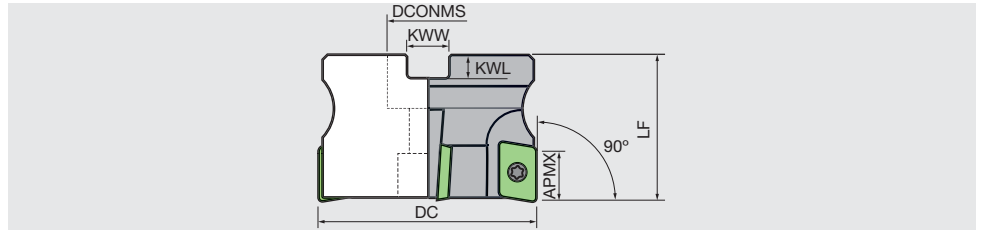
● : Line up



More info

JQTS...

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



Metric	APMX	DC	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JQTS040-90-4R	8	40	4	40	16	5.6	8.4	0.2	APCW1604...
JQTS050-90-5R	8	50	5	40	22	6.3	10.4	0.32	APCW1604...
JQTS063-90-6R	8	63	6	50	22	6.3	10.4	1.4	APCW1604...
JQTS080-90-8R	8	80	8	50	25.4	6	9.5	1.9	APCW1604...

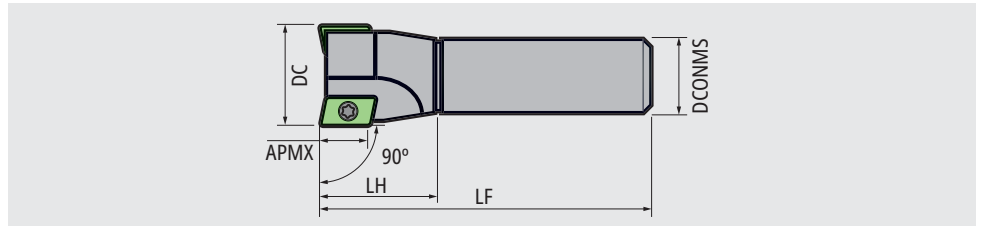
SPARE PARTS



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

JQTE...

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



Metric	APMX	DC	CICT	LF	DCONMS	LH	WT(kg)	Insert
JQTE020-90-1R	8	20	1	100	20	30	0.22	APCW1604..
JQTE025-90-2R	8	25	2	100	25	30	0.32	APCW1604...
JQTE032-90-3R	8	32	3	120	32	35	0.53	APCW1604...
JQTE040-90-4R	8	40	4	120	32	37	0.64	APCW1604...

SPARE PARTS

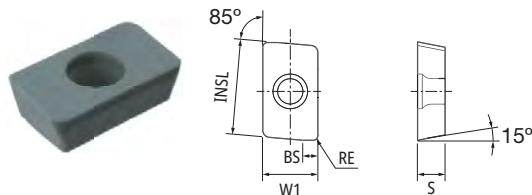


Designation	Clamp screw	Wrench (for Clamp screw)
JQTE020-90-1R, JQTE025-90-2R	FSI23-4.0*7	T-15A
JQTE032-90-3R, JQTE040-90-4R	FSI22-4.0*11	T-15A



More info

APCW1604PDRT01020



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

★ : First choice
☆ : Second choice

Designation		RE (in)	Silicon Nitride		S (in)	INSL (in)	W1 (in)	BS (in)
			SX6	SP9				
Inch	Metric							
APCW160408T0420	APCW160408T01020	0.031	●	●	0.187	0.648	0.375	-
APCW160412T0420	APCW160412T01020	0.047	●	●	0.187	0.648	0.375	-
APCW160416T0420	APCW160416T01020	0.063	●	●	0.187	0.648	0.375	-
APCW160420T0420	APCW160420T01020	0.079	●	●	0.187	0.648	0.375	-
APCW1604PDRT0420	APCW1604PDRT01020	0.031	●	●	0.187	0.648	0.375	0.102

● : Line up

Superalloys

Cast Iron

Milling

Hardened Materials

Materials

Hardened
Grooving

Iron
Turning

Cast
Milling

Turning Superalloys

Sintered metal
Turning

00

Turning

Grooving

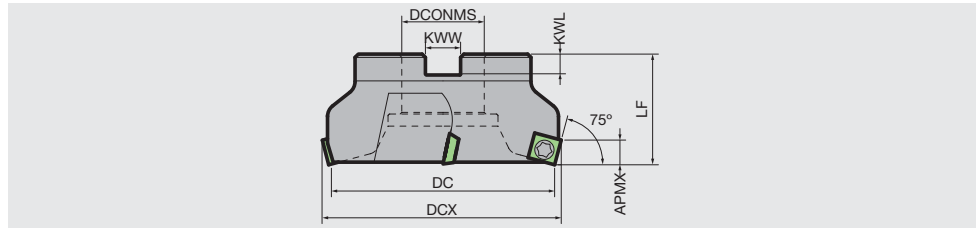
Milling



More info

JSDW**-75...

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



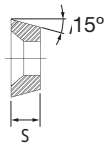
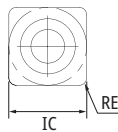
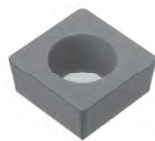
Inch	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
E250R100-SDW43-4C	0.236	2.500	2.780	4	2.000	1.000	0.200	0.385	1.896	SDCW43...
E300R100-SDW43-5C	0.236	3.000	3.280	5	2.000	1.000	0.200	0.385	2.403	SDCW43...
E400R150-SDW43-6C	0.236	4.000	4.280	6	2.000	1.500	0.320	0.640	3.704	SDCW43...
E500R150-SDW43-7C	0.236	5.000	5.280	7	2.000	1.500	0.320	0.640	5.401	SDCW43...
Metric	APMX	DC	DCX	CICT	LF	DCONMS	KWL	KWW	WT(kg)	Insert
JSDW063-75-04R	6	63	70.6	4	50	22	6.3	10.4	0.82	SDCW1204...
JSDW080-75-05R	6	80	83.3	5	50	25.4	6	9.5	1.04	SDCW1204...
JSDW100-75-06R	6	100	108.7	6	50	31.75	8	12.7	1.33	SDCW1204...
JSDW125-75-07R	6	125	134.1	7	58	38.1	10	15.9	2.54	SDCW1204...

SPARE PARTS

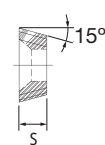
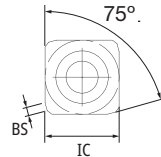
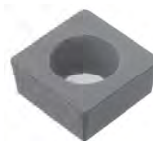
Designation	Clamp screw	Wrench (for Clamp screw)
E***R***SDW43-**C JSDW***-75-**R	FSI21-5.0*12.45	T-20

INSERT

SDCW1204**T...



SDCW1204**EERT...



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

★ : First choice
☆ : Second choice

Designation		RE (in)	Silicon Nitride		SiAlON	IC (in)	S (in)	BS (in)
Inch	Metric		SX6		6DS			
SDCW432T0420	SDCW120408T01020	0.031	●		●	0.500	0.187	-
SDCW433T0420	SDCW120412T01020	0.047	●		●	0.500	0.187	-
SDCW43EERT0420	SDCW1204EERT01020	-	●		●	0.500	0.187	0.055

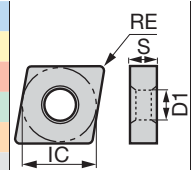
● : Line up



More info

H Hardened Materials

Superalloys



1

Cast Iron

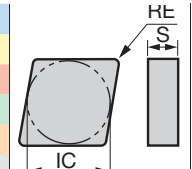
... ..

aterials

Σ BN 10

Materials

Hardeners



Iron

Cast

Superalloys

metal

CD

Materials

- Ferrous M

Non-



In-Toolholder

● : Line up

● : Line up



Materials	Cast Iron			Superalloys		
Turning	Milling	Grooving	Turning	Milling	Grooving	Turning

● : Line up

● : Line up



CER-69

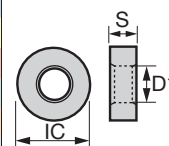
PCD

Non-Ferrous Materials

RN



Round,
with hole

[illegible][illegible]

● : Line up

C

D

R

S

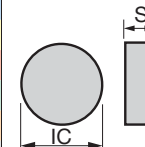
V

w

RN



**Round,
without hole**

[illegible]

Application	Chipbreaker			Designation	material								Dimension (in)				
					Whisker	Alumina											
					533	LX10	LX11	HC2	HC4	HC5	HC7	ZC7	RE	IC	S	D1	
Finishing to medium cutting		-	RNGN 430	RNGN120400		●	●							-	0.500	0.187	-
			RNGN 450	RNGN120700		●	●							-	0.500	0.313	-
Roughing to finishing		-	RNGN430S0425	RNGN120400S01025	●				●		●			-	0.500	0.187	-
			RNGN430T0425	RNGN120400T01025					●		●			-	0.500	0.187	-
			RNGN450P8015	RNGN120700P20015	●			●	●	●	●			-	0.500	0.313	-
			RNGN450S0425	RNGN120700S01025	●			●			●			-	0.500	0.313	-
			RNGN450T0425	RNGN120700T01025				●			●			-	0.500	0.313	-
			RNGN550P8015	RNGN150700P20015				●		●	●			-	0.625	0.313	-
			RNGN650P8015	RNGN190700P20015				●		●	●			-	0.750	0.313	-
			RNGN850P8015	RNGN250700P20015				●		●	●			-	1.000	0.313	-

● : Line up



More info



DN

Ex.Toolholder



In-Toolholder



RN

Ex.Toolholder

Turning

Grooving

Milling

Cast Iron

Materials

rdened Ma

Turning

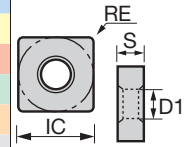
Cast In

turning

metal

Materials

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

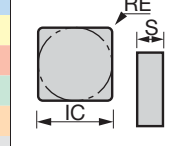


Application	Chipbreaker			Designation	Material												Dimension (in)				
					Alumina																
				LX10	LX11	HC4	ZC7										RE	IC	S	D1	
Finishing to medium cutting		-	SNGA 431	SNGA120404	●	●											0.016	0.500	0.187	0.203	
			SNGA431S0825	SNGA120404S02025			●	●										0.016	0.500	0.187	0.203
			SNGA431T0425	SNGA120404T01025			●	●										0.016	0.500	0.187	0.203
			SNGA 432	SNGA120408	●	●												0.031	0.500	0.187	0.203
			SNGA432S0825	SNGA120408S02025			●	●										0.031	0.500	0.187	0.203
			SNGA432T0425	SNGA120408T01025			●	●										0.031	0.500	0.187	0.203
			SNGA 433	SNGA120412	●	●												0.047	0.500	0.187	0.203
			SNGA433S0825	SNGA120412S02025			●	●										0.047	0.500	0.187	0.203
			SNGA433T0425	SNGA120412T01025			●	●										0.047	0.500	0.187	0.203
			SNGA 434	SNGA120416	●	●												0.063	0.500	0.187	0.203

● : Line up

● : Line up

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



Application	Chipbreaker	Designation	Material											Dimension (in)					
			Alumina																
			LX10	LX11	ZC7														
		Inch	Metric												RE	IC	S	D1	
Finishing to medium cutting	-	SNGN 322	SNGN090308	●	●											0.031	0.375	0.125	-
		SNGN 421	SNGN120304	●	●											0.016	0.500	0.125	-
		SNGN 423	SNGN120312		●											0.047	0.500	0.125	-
		SNGN 431	SNGN120404	●	●											0.016	0.500	0.187	-
		SNG431S0825	SNGN120404S02025			●										0.016	0.500	0.187	-
		SNGN431T0425	SNGN120404T01025			●										0.016	0.500	0.187	-
		SNGN 432	SNGN120408	●	●											0.031	0.500	0.187	-
		SNG432S0825	SNGN120408S02025			●										0.031	0.500	0.187	-
		SNGN432T0425	SNGN120408T01025			●										0.031	0.500	0.187	-
		SNGN 433	SNGN120412	●	●											0.047	0.500	0.187	-
		SNG433S0825	SNGN120412S02025			●										0.047	0.500	0.187	-
		SNGN433T0425	SNGN120412T01025			●										0.047	0.500	0.187	-
		SNGN 434	SNGN120416	●	●											0.063	0.500	0.187	-
		SNGN 452	SNGN120708	●	●											0.031	0.500	0.313	-
		SNGN 453	SNGN120712	●	●											0.047	0.500	0.313	-
		SNGN 454	SNGN120716	●	●											0.063	0.500	0.313	-
SNGN 455	SNGN120720		●											0.079	0.500	0.313	-		

● : Line up

● : Line up



In.Toolholder

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Planning

iron
Tun

Cast

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Hardened Materials Turning

CBN

Turning

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Cast Iron

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Turni

Sintered
metal
Turning

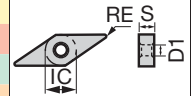
PCD

Turning

Moving
 our Mate

Non-Ferrous
Mining

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

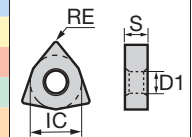


Application	Chipbreaker			Designation	Alumina												Dimension (in)				
					LX10	LX11	HC4	ZC7									RE	IC	S	D1	
	Inch		Metric																		
Finishing to medium cutting		-	VNGA 331	VNGA160404	●	●											0.016	0.375	0.187	0.150	
			VNGA331S0825	VNGA160404S02025			●	●										0.016	0.375	0.187	0.150
			VNGA331T0425	VNGA160404T01025			●	●										0.016	0.375	0.187	0.150
			VNGA 332	VNGA160408	●	●												0.031	0.375	0.187	0.150
			VNGA332S0825	VNGA160408S02025			●	●										0.031	0.375	0.187	0.150
			VNGA332T0425	VNGA160408T01025			●	●										0.031	0.375	0.187	0.150
			VNGA333S0825	VNGA160412S02025			●	●										0.047	0.375	0.187	0.150
			VNGA333T0425	VNGA160412T01025			●	●										0.047	0.375	0.187	0.150

WN



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

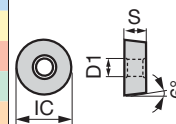
[illegible]

In-Toolholder

CDH



Round,
with hole
Positive 6°

[illegible][illegible]

C

D

R

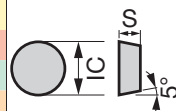
S

V

RB



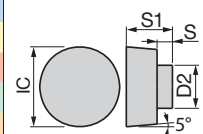
Round,
without hole
Positive 5°

[illegible][illegible]

RB



Round,
without hole
Positive 5°

[illegible]

Application	Chipbreaker			Designation		material		Whisker		Alumina									Dimension (in)				
Medium to finishing		Inch	Metric	533			HC2	HC4	HC5	HC7							RE	IC	S	S1	D2		
		-	RBGX200P8015	RBGX20P20015	●			●	●	●	●							-	0.787	0.394	0.591	0.394	
			RBGX260P8015	RBGX26P20015	●			●	●	●	●							-	1.024	0.394	0.591	0.551	
			RBGX320P8015	RBGX32P20015	●			●		●								-	1.260	0.315	0.591	0.630	
																							

● : Line up



More info

Turning

Superalloys

Grooving

Milling

Cast Iron

Materials

urning

CBN

Materials

Turning

Harden (

Groovin

Cast Iron

Alloys

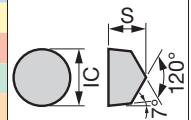
metal
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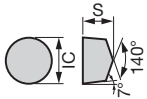
Materials

Non-Ferrous Metals

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

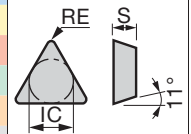


Application	Chipbreaker		Designation	Material		Whisker		Alumina				Dimension (in)						
				533	HC2	HC4	HC5	HC7										
	Inch	Metric													RE	IC	S	D1
Medium to finishing	-	RCGX230P2815	RCGX060400P07015	●	●	●	●	●							-	0.250	0.187	-
		RCGX230T0425	RCGX060400T01025	●	●	●	●	●							-	0.250	0.187	-
		RCGX240P2815	RCGX060600P07015	●	●	●	●	●							-	0.250	0.250	-
		RCGX240T0425	RCGX060600T01025	●	●	●	●	●							-	0.250	0.250	-
		RCGX350P2815	RCGX090700P07015	●	●	●	●	●							-	0.375	0.313	-
		RCGX350T0425	RCGX090700T01025	●	●	●	●	●							-	0.375	0.313	-
		RCGX450P8015	RCGX120700P20015	●	●	●	●	●							-	0.500	0.313	-
		RCGX450T0425	RCGX120700T01025	●	●	●	●	●							-	0.500	0.313	-
		RCGX660P8015	RCGX191000P20015		●		●	●							-	0.750	0.394	-
		RCGX880P7915	RCGX251200P20015		●		●	●							-	1.000	0.472	-



● : Line up

Only RCGX880P7915 (RCGX251200P20015)
bottoms angle is 140°.

[illegible][illegible]

● : Line up



More info



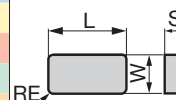
TP

In.Toolholder

LNM



Rectangular

[illegible][illegible]

● : Line up

C

D

R

S

T

V

OTHERS



More info

Hardened
Materials

Materials

Hardened

Iron

Cast

Superalloys

Sintered metal

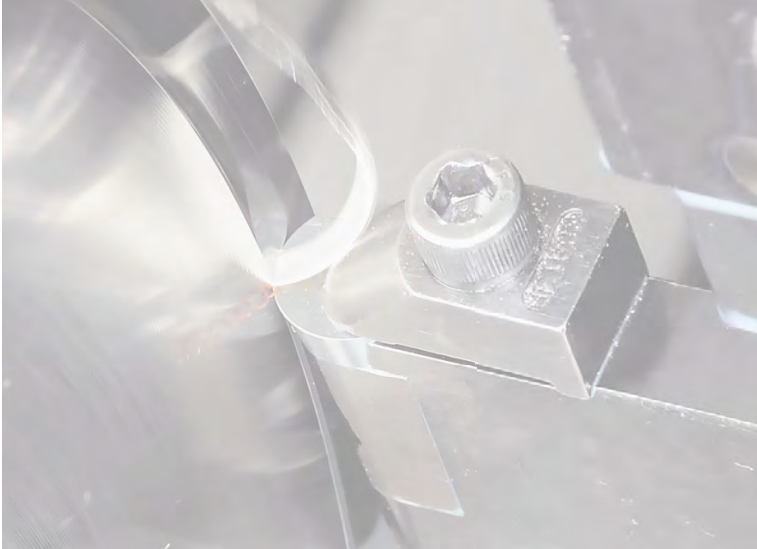
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ous Material

Non-Ferro

ADVANCED MATERIALS SOLUTIONS



CERAMIC SOLUTIONS



CBN SOLUTIONS



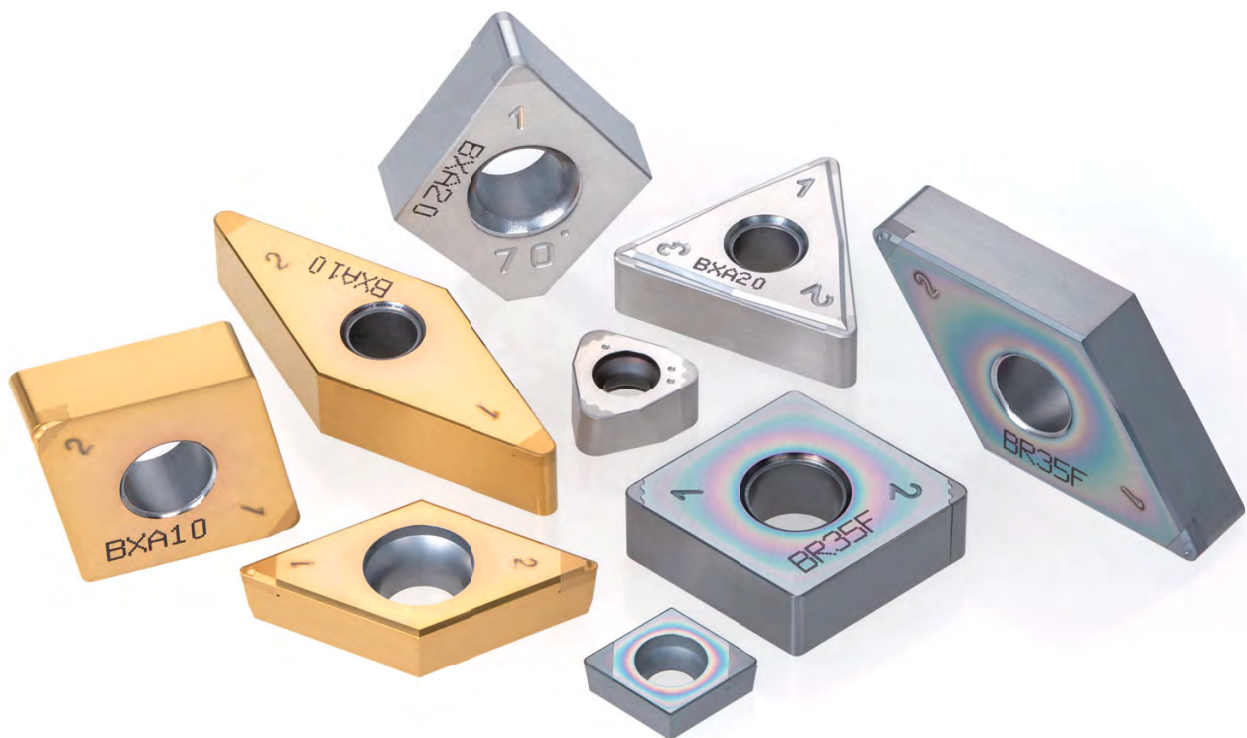
PCD SOLUTIONS

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

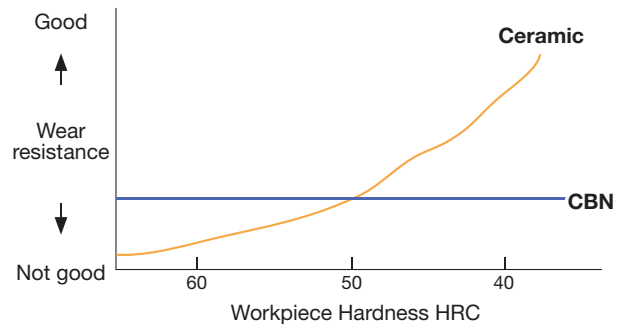
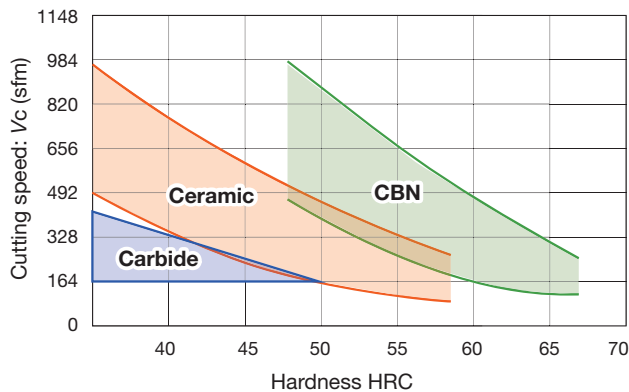
Ceramic Inserts

Best wear resistance in 40 - 70 HRC with roughing and 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)

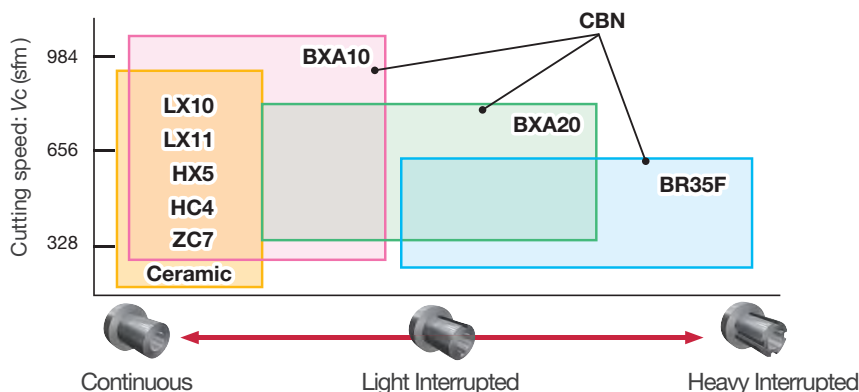


Ceramic has superior wear resistance to CBN in machining workpieces with hardnesses of HRC 60 or less.

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

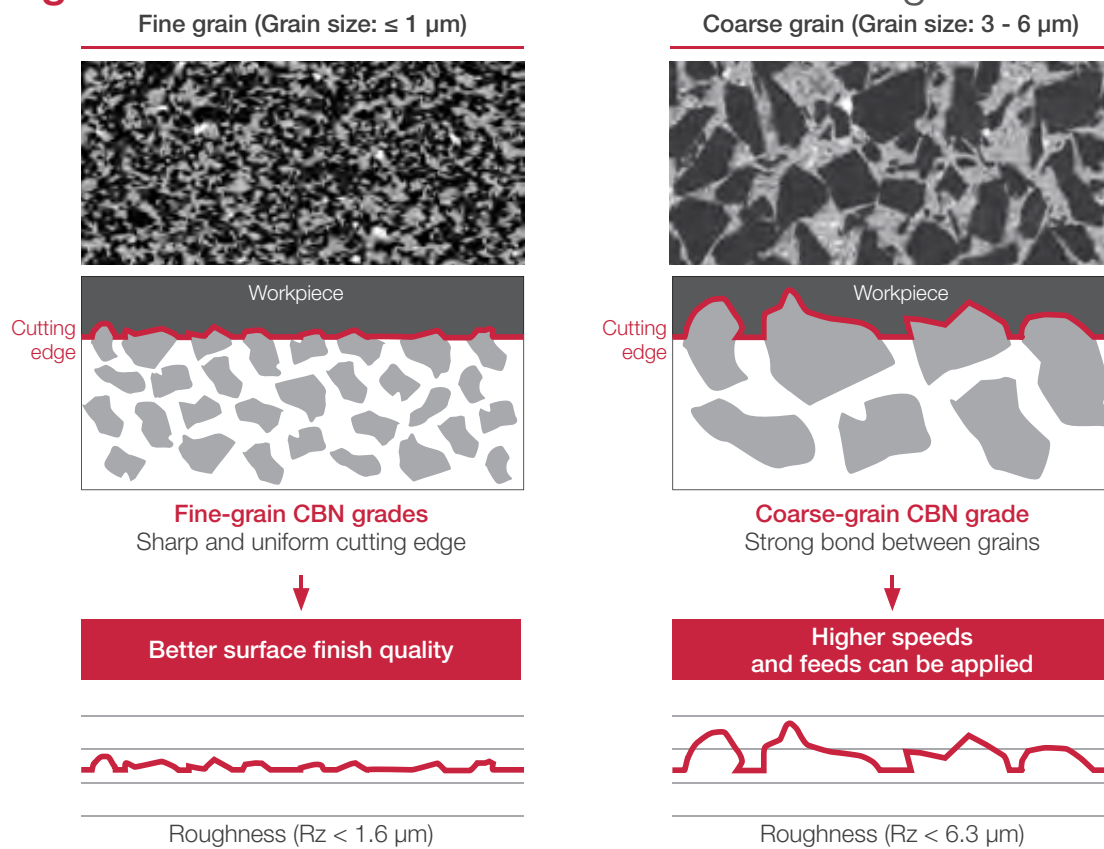
- **Fine:** Yields a sharper edge and better surface finish.
- **Coarse:** Offers enhanced fracture resistance.

CBN Content

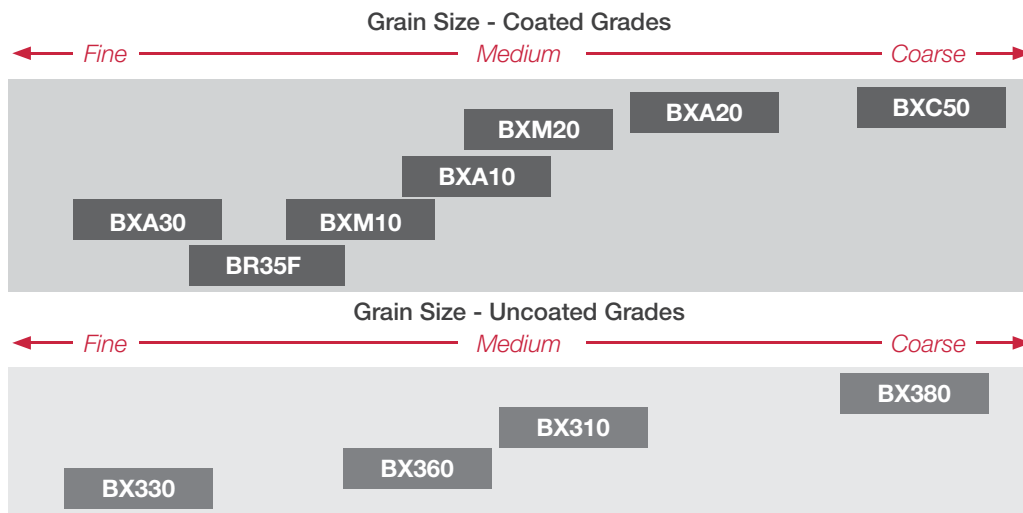
- **Lower Content:** Improves wear resistance.
- **Higher Content:** Boosts toughness for demanding cuts.

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

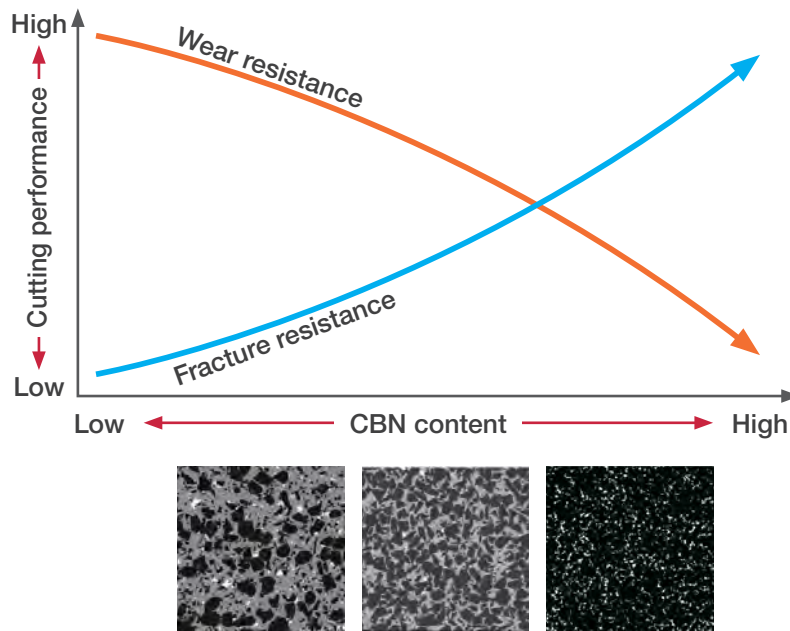
CBN grain sizes and their effects on surface roughness



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.

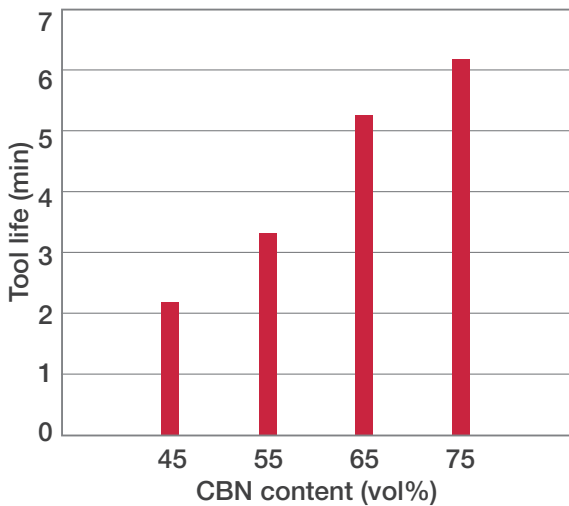


Wear and fracture resistance in terms of CBN content



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.

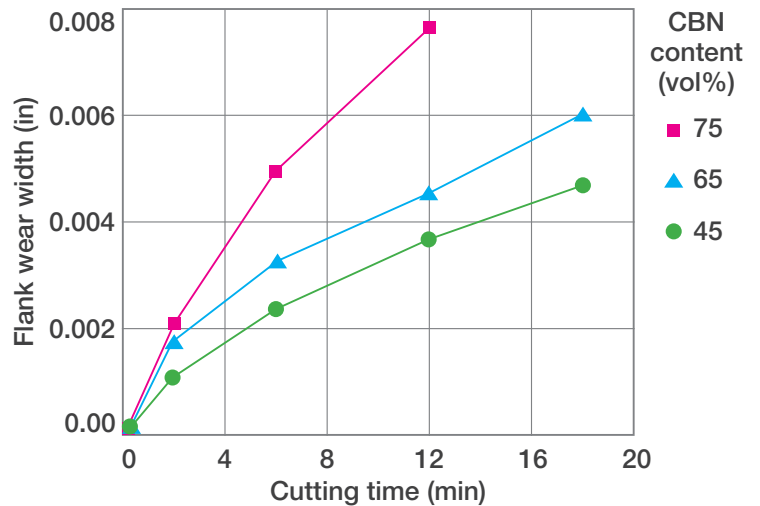
Interrupted Cutting



Cutting conditions
 Cutting speed: $V_c = 591$ sfm
 Depth of cut: $a_p = 0.004$ "
 Feed: $f = 0.004$ ipr
 Coolant: Dry
 Workpiece material: 4140 (60HRC)

High CBN content
 ↓
 High fracture resistance

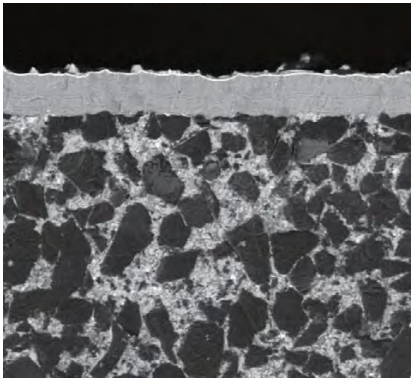
Continuous Cutting



Cutting conditions
 Cutting speed: $V_c = 591$ sfm
 Depth of cut: $a_p = 0.008$ "
 Feed: $f = 0.004$ ipr
 Coolant: Wet
 Workpiece material: 4140 (60HRC)

Low CBN content
 ↓
 High wear resistance

BENEFITS OF **COATED CBN**



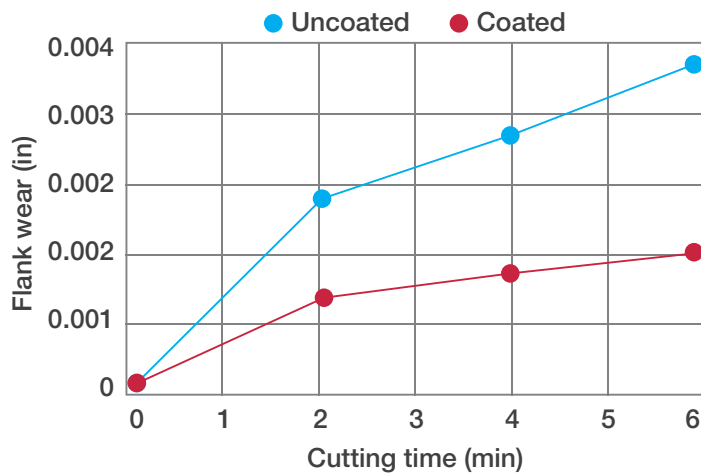
Anti-oxidation wear

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: $V_c = 591$ sfm
 Depth of cut: $a_p = 0.008$ "
 Feed: $f = 0.004$ ipr
 Coolant: Dry
 Workpiece material: 4140 (60HRC)

Insert wear after 6 minutes

Uncoated



Coated



Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

CBN

Turning

Grooving

Turning

Milling

Turning

Turning

PCD

Turning

Grooving

Milling

High

Low

Cutting force

Edge strength

Low

High

MINI F TURN

ISO

0.18

0.13

0.05

W (mm)

α

10°

15°

25°

35°

SP

L

LF

H / HC*

Standard / SR*

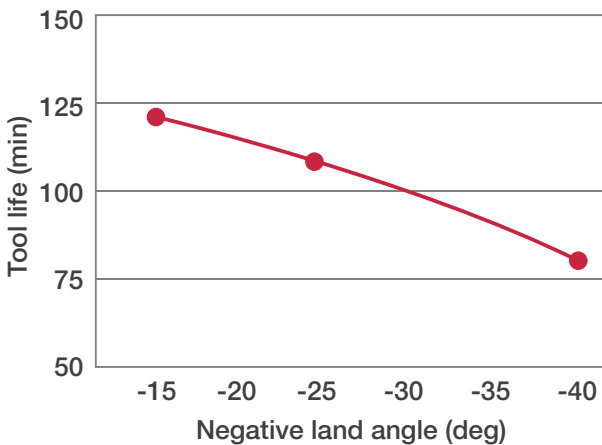
LC



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



Edge preparation - Continuous cutting



Cutting conditions

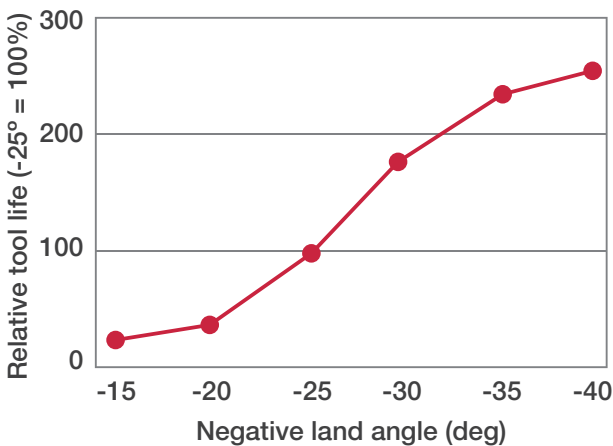
Cutting speed: $V_c = 328$ sfm
 Depth of cut: $a_p = 0.010$ "
 Feed: $f = 0.004$ ipr
 Coolant: Dry
 Continuous cutting
 Workpiece material: 4140 (60HRC)
 Criteria: $VB_{max} = 0.006$ "

Edge preparations

Width: 0.005"
 Angles: -15, -25, and -40°
 Honed to: $R0.0004$ " ~ 0.0008 "

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: $V_c = 328$ sfm
 Depth of cut: $a_p = 0.010$ "
 Feed: $f = 0.006$ ipr
 Coolant: Dry
 Workpiece material: 4140 (60HRC)
 Criteria: Fracture

Edge preparations

Width: 0.005"
 Angles: -15, -20, -25, -30, -35, and -40°
 Honed to: $R0.0004$ " ~ 0.0008 "

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



Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Hardened Materials

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

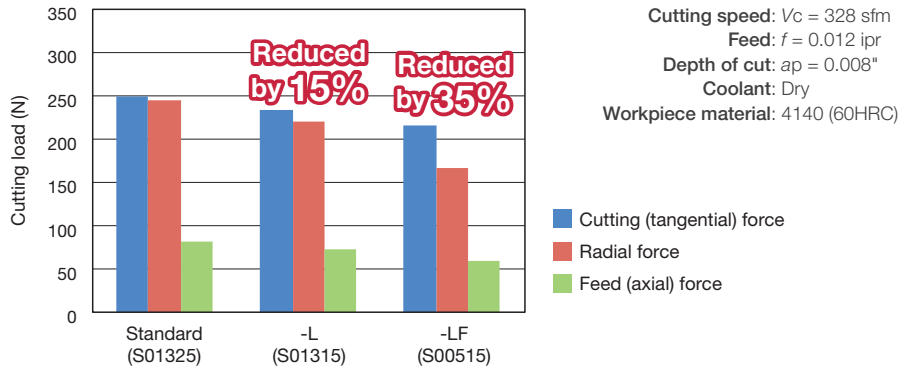
Turning

Grooving

Milling

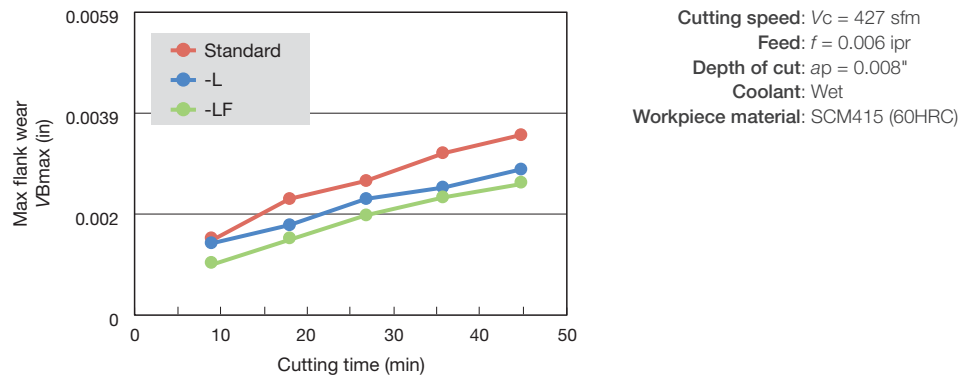
Edge preparation - Cutting loads

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



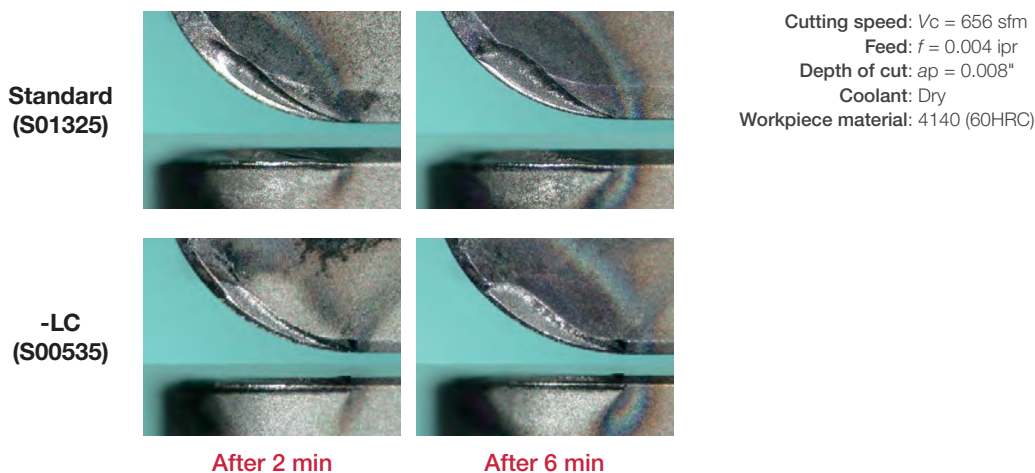
Edge preparation - Flank wear

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



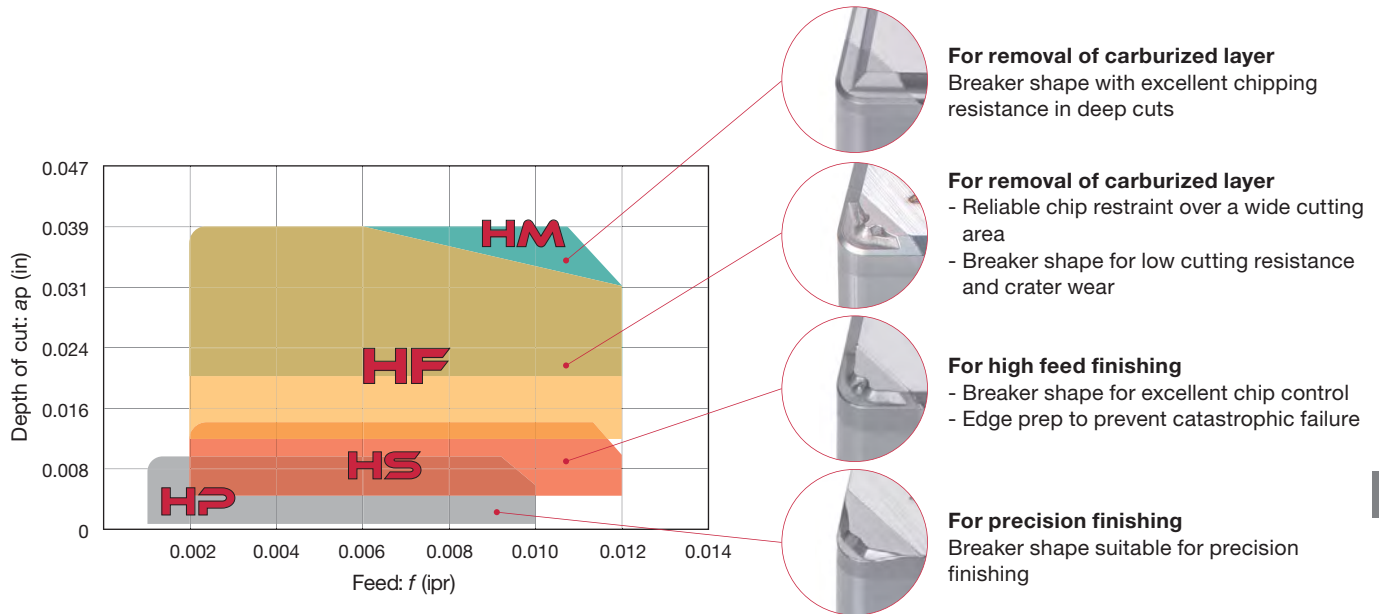
Edge preparation - Crater wear

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



Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

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Turning

Grooving

Milling

HP - HardBreakers for finishing hardened steel

Innovative 3D chipbreaker for efficient chip control

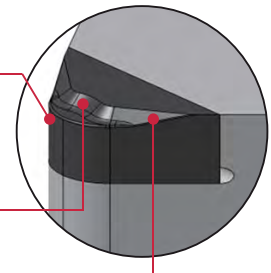
- By separating the chipbreaker from the cutting edge, the cutting force imposed on the cutting edge during machining is significantly reduced, thus providing long tool life.
- The cutting edge preparation is designed to ensure easy cutting at low cutting forces, while maintaining close tolerances with 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



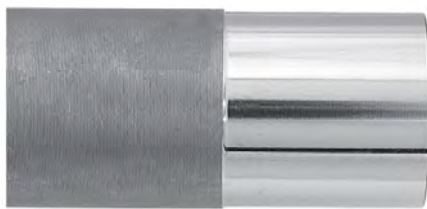
Consistent and durable chip breaking

HARDBREAKER HP	Vs.	Competitor
	40 min	
	80 min	

Insert: 2QP-CNGM 432 HP
 Workpiece material: 4140 (58 HRC)
 Cutting speed: $V_c = 590$ sfm
 Feed: $f = 0.006$ "
 Depth of cut: $a_p = 0.006$ "
 Holder: ACLNR2525M12-A
 Coolant: Wet
 Machining: External continuous cutting

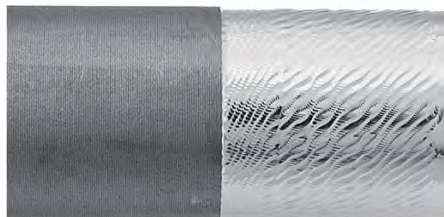
Chatter-free machining

HARDBREAKER HP



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

Competitor (without breaker)

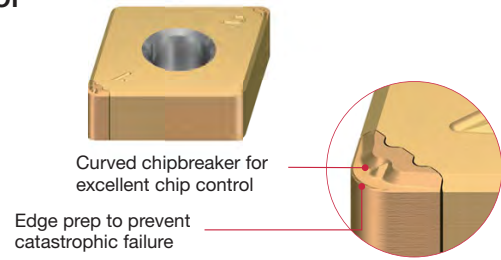


More info

HS chipbreaker

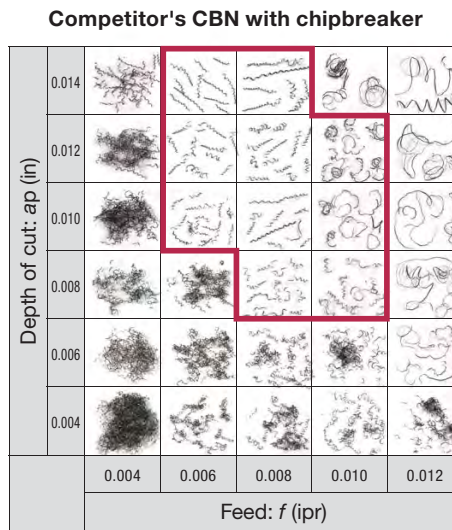
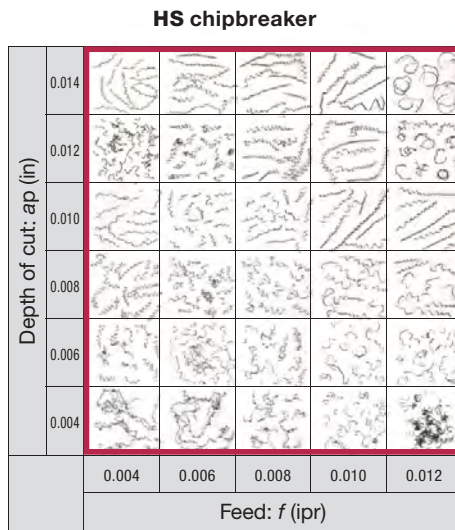
Optimized chipbreaker design for excellent chip control during hard turning at aggressive conditions

- 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-CNGM 432 HS
 Workpiece material: 4140 (58HRC)
 Cutting speed : $V_c = 492$ sfm
 Holder : ACLNL2525M12-A
 Coolant : Wet
 Machining : External continuous cutting

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

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Turning

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Turning

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Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

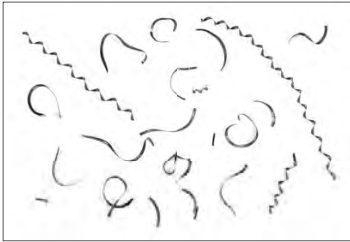
Milling

HARDBREAKER HF

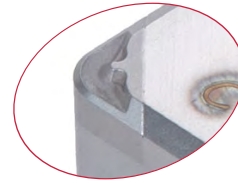
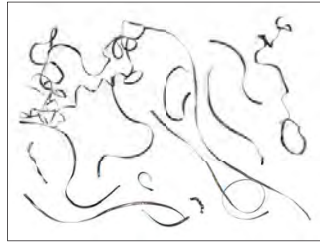
■ Chip control

Comparisons of chip formations after machining 80 pcs of automotive shafts

HF chipbreaker



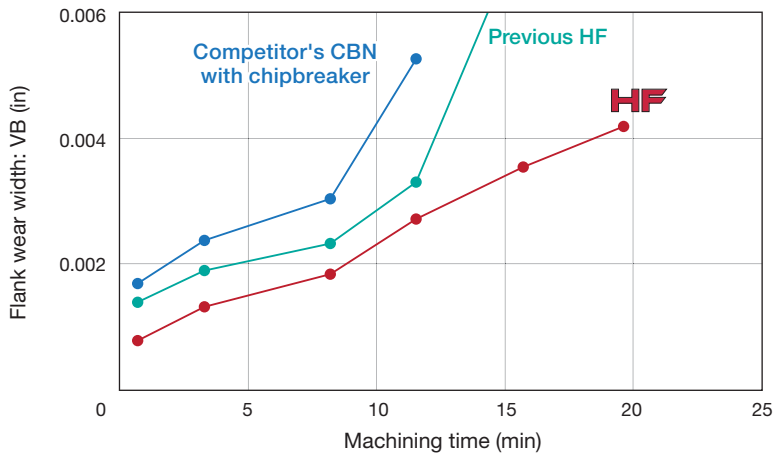
Competitor's CBN with chipbreaker



Insert : 2QP-CNGM 432 HF
Workpiece material : 4140 (60HRC)
Cutting speed : $V_c = 591$ sfm
Feed : $f = 0.008$ ipr
Depth of cut : $a_p = 0.020"$ x 3 passes
Holder : ACLNL25252M12-A
Machining : External continuous cutting
Coolant : Wet

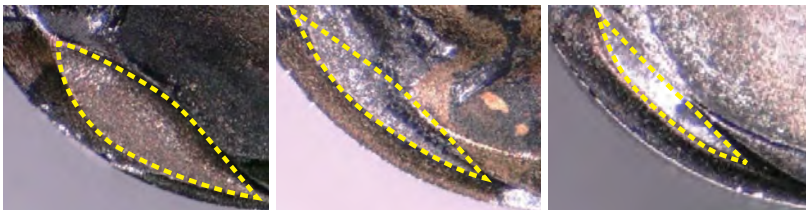
■ Crater wear resistance

Comparison of automotive clutch machining lifetime



Insert : 2QP-CNGM 432 HF
Workpiece material : 4140 (60HRC)
Cutting speed : $V_c = 492$ sfm
Feed : $f = 0.006$ ipr
Depth of cut : $a_p = 0.020"$ 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

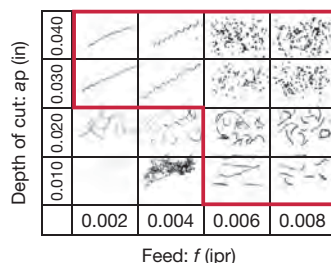
HARDBREAKER HM



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

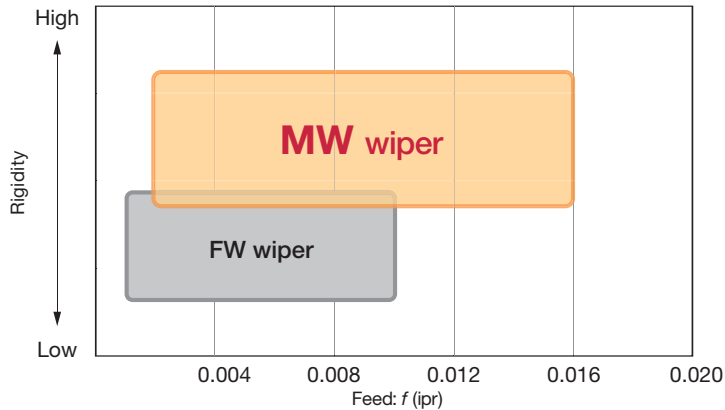
HM chipbreaker



CBN wiper insert series for extended application coverage

Cutting performance

Application areas



FW wiper eliminates chatter generation at slower feeds and offers good surface part quality.

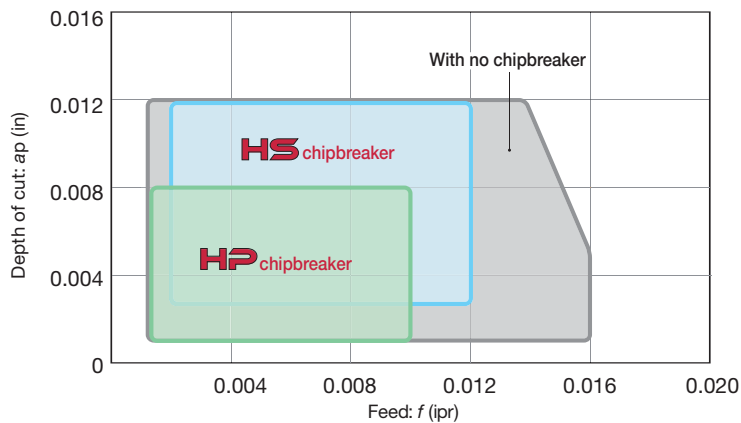
MW wiper provides improved surface finishing at an increased feed rate.



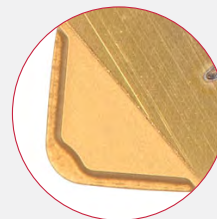
FW wiper



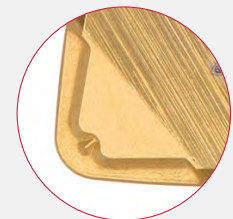
MW wiper



Available with **HP chipbreaker** and **HS chipbreaker** for effective chip control. Inserts with no chipbreaker are also available.

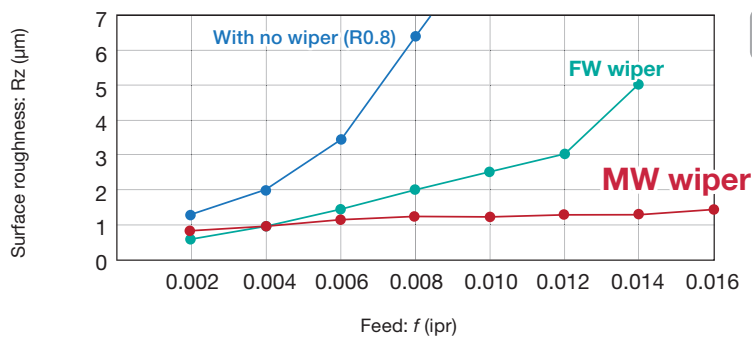


HP



HS

Surface roughness



H

Insert : 4QS-CNGA 432*W BXA10
Holder : ACLNL2525M12-A
Workpiece material : 4140 (58 - 60 HRC)
Cutting speed : $V_c = 492$ sfm
Depth of cut : $a_p = 0.006$ "
Machining : External continuous cutting
Coolant : Wet

Superalloys
Turning
Grooving
Milling

Cast Iron
Turning
Grooving
Milling

Hardened Materials
Turning

CBN
Hardened Materials
Turning
Grooving

Cast Iron
Turning
Milling

Superalloys
Turning

PCD
Non-Ferrous Materials
Turning
Grooving
Milling

GNGA / FNGA / YNGA

New CBN inserts for general turning

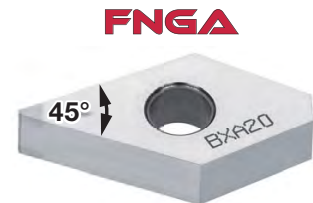
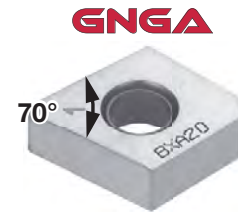
GNGA insert with 70° corner angle

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



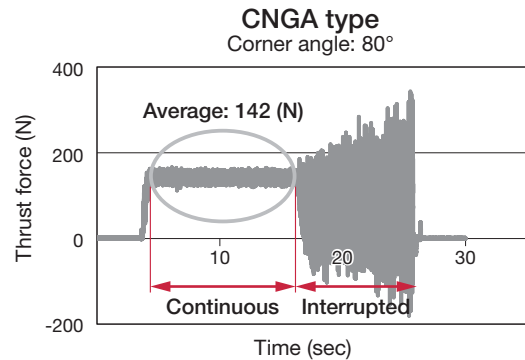
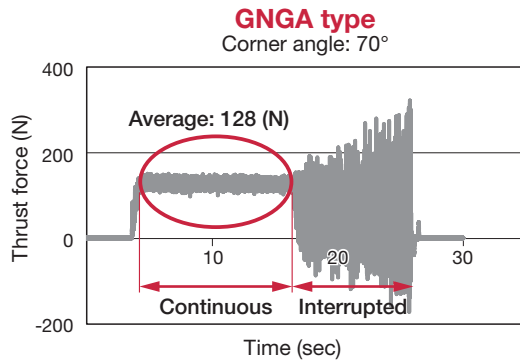
■ High versatility

- Existing ISO turning toolholder can be used for these inserts
 - For GNGA insert: use the holder for CN**43 (1204) insert
 - For FNGA insert: use the holder for DN**43 (1504) insert
 - For YNGA insert: use the holder for VN**33 (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.

H	Insert	: 2QP-GNGA 432 2QP-CNGA 432
	Workpiece material	: 4140 (59HRC)
	Cutting speed	: $V_c = 492$ sfm
	Feed	: $f = 0.006$ ipr
	Depth of cut	: $a_p = 0.005$ "
	Toolholder	: ACLNL2525M12-A
	Machining	: Face turning
	Coolant	: Dry

■ Chip flow and control in face turning

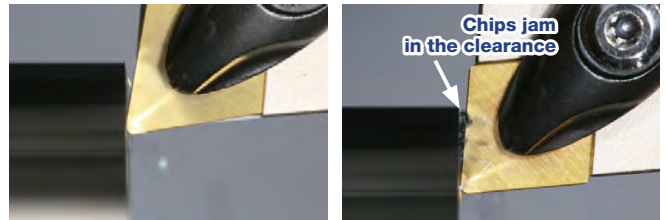
Chip flow of continuous face turning



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.

H	Insert	: 2QP-GNGA 432 2QP-CNGA 432
	Workpiece material	: 4140 (60HRC)
	Cutting speed	: $V_c = 492$ sfm
	Feed	: $f = 0.004$ ipr
	Depth of cut	: $a_p = 0.005$ "
	Toolholder	: ACLNL2525M12-A
	Machining	: Face turning
	Coolant	: Dry

Turning

Superalloys

Grooving

Milling

Turning

Cast Iron

Grooving

Milling

Turning

Hardened Materials

Turning

CBN

Turning

Hardened Materials

Grooving

Turning

Cast Iron

Milling

Turning

Superalloys

Grooving

Turning

Cast Iron

Milling

Turning

Superalloys

Grooving

Turning

Cast Iron

Milling

Turning

Sintered metal

Turning

PCD

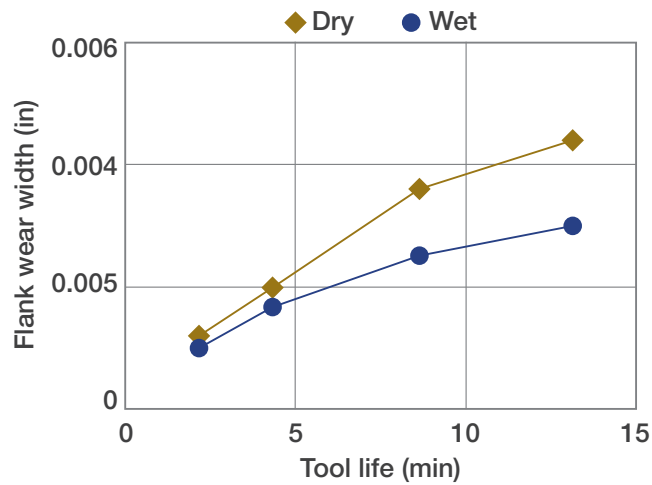
Turning

Non-Ferrous Materials

Grooving

Milling

Coolant effect - Continuous cutting



Wet cutting improves tool life for continuous cutting operations.

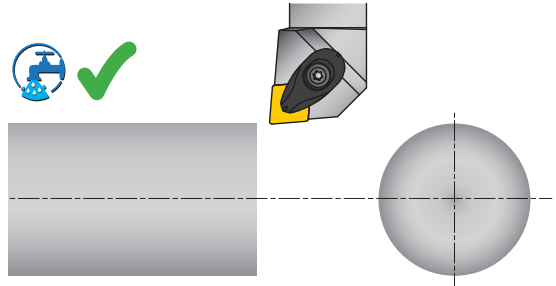
Cutting conditions

Cutting speed: $V_c = 591$ sfm

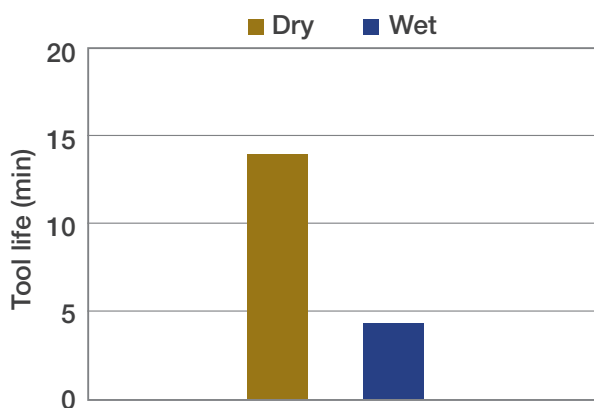
Depth of cut: $a_p = 0.008$ "

Feed: $f = 0.004$ ipr

Workpiece material: 4140 (60HRC)



Coolant effect - Interrupted cutting



Dry cutting improves tool life for interrupted cutting operations.

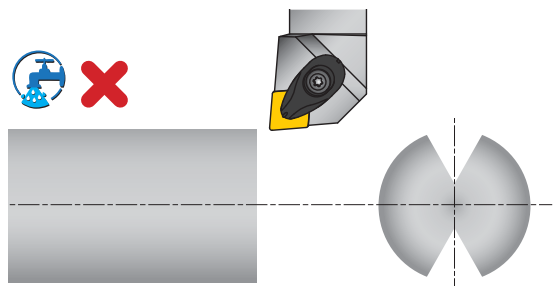
Cutting conditions

Cutting speed: $V_c = 492$ sfm

Depth of cut: $a_p = 0.008$ "

Feed: $f = 0.008$ ipr

Workpiece material: 4140 (60HRC)



Use of coolant

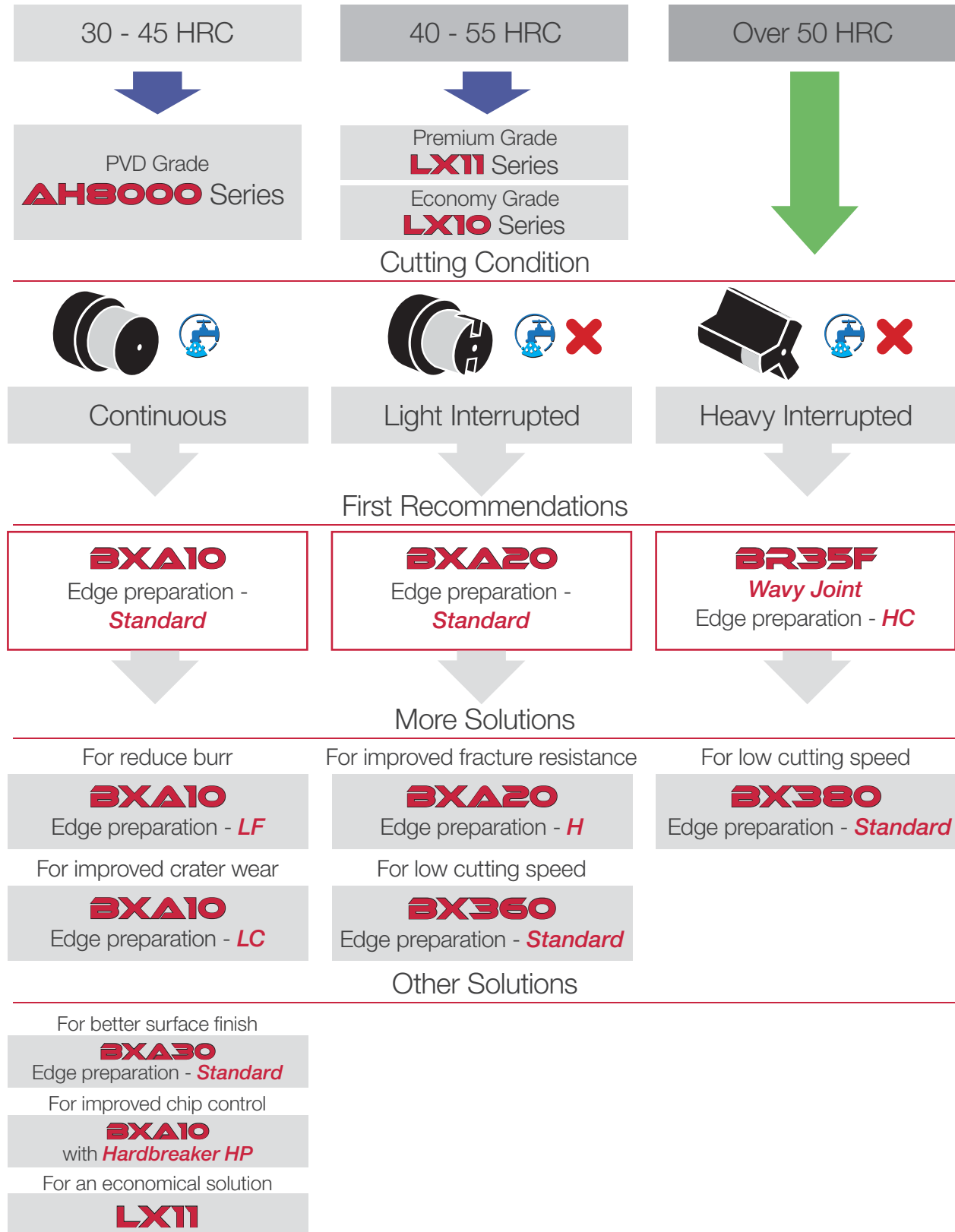
	Dry	Wet
Continuous cutting	✗	✓
Interrupted cutting	✓	✗

CBN Turning

H Hard Materials

SELECTION GUIDE

Tungaloy's recommended solutions *for hard turning*



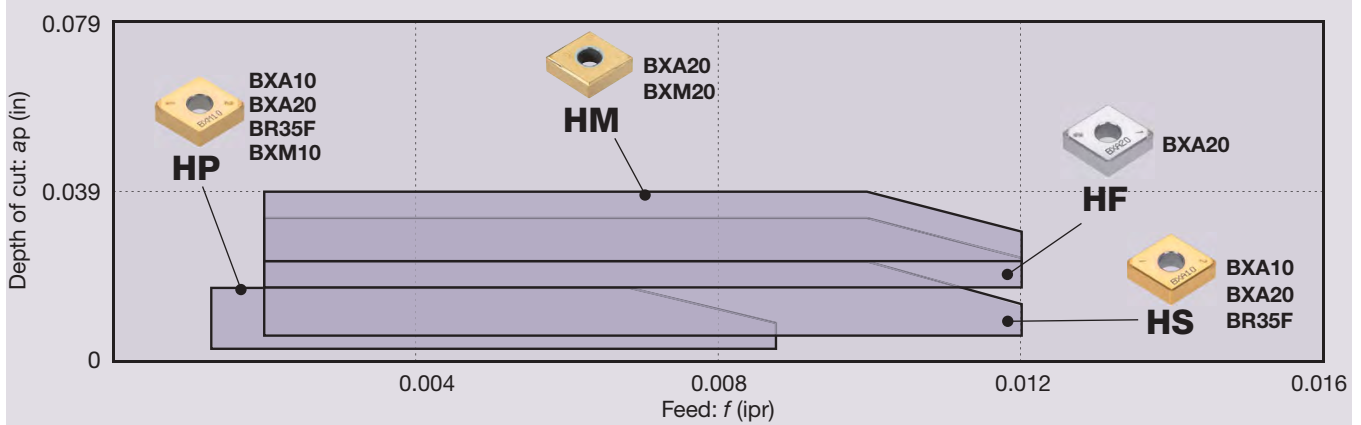
Superalloys
Turning
Grooving
Milling
Turning
Grooving
Milling
Cast Iron
Turning
Grooving
Milling
Hardened Materials
Turning
CBN
Turning
Grooving
Hardened Materials
Turning
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Turning
Non-Ferrous Materials
Grooving
Milling

Chipbreaker Guide

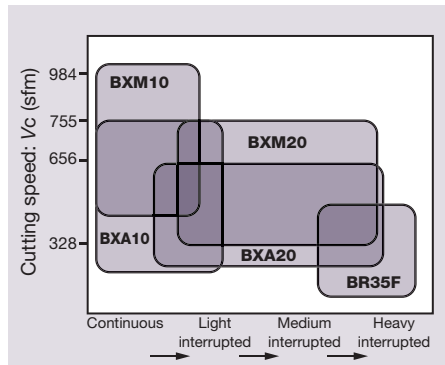
BASIC CHIPBREAKER: NEGATIVE TYPE

H Hard Materials

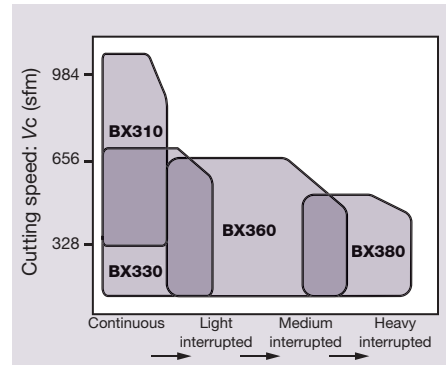
Chipbreaker System for Turning (Negative type)



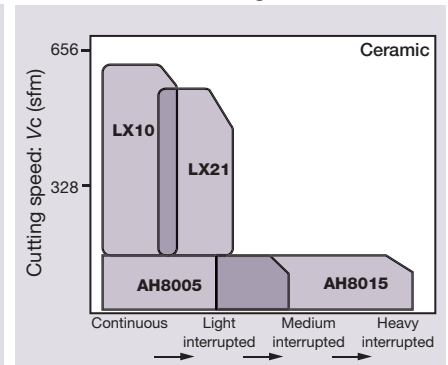
Coated CBN



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

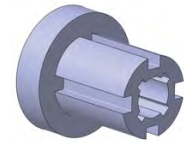
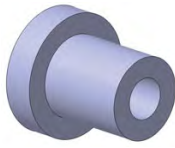
ISO	Operation	Chipbreaker	Grade	Depth of cut a_p (in)	Feed f (ipr)	Cutting speed V_c (sfm)
H	Precision finishing	HP	BXA10 BXA20 BR35F	0.001 - 0.01	0.001 - 0.009	230 - 1148
		HS	BXA10 BXA20 BR35F	0.004 - 0.014	0.002 - 0.012	230 - 1148
	Finishing	-	BXM10 BXM20 BXA20	0.002 - 0.02	0.002 - 0.01	230 - 1148
		-	LX10, LX11	0.002 - 0.02	0.002 - 0.01	197 - 591
	Removing of carburized layer	HF	BXA20	0.012 - 0.039	0.002 - 0.012	230 - 591
		HM	BXA20 BXM20	0.02 - 0.039	0.002 - 0.012	230 - 656
	Medium cutting	HRF	AH8005 AH8015	0.002 - 0.079	0.002 - 0.01	33 - 164

Hardened steels, Pre-hardened steels: H-13, P-20, etc.

Selection System

SELECTION SYSTEM: NEGATIVE TYPE

H Hard Materials



Continuous

Light interrupted

Heavy interrupted

Precision finishing
[$a_p \sim 0.014''$]

Basic



HP
BXA10



HS
BXA10

Basic



BXA20



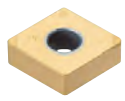
-H
BXA20



BXA10

Finishing
[$a_p \sim 0.020''$]

Basic

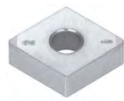


BXA10



LX10

Basic



BXA20

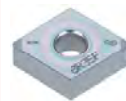


-H
BXA20



BXA10

Basic



BR35F



-HC
BR35F

Removing of carburized layer
[$a_p \sim 0.039''$]

Basic



HF
BXA20

Basic



HM
BXA20

Medium cutting
[$a_p \sim 0.079''$]

Basic



HRF
AH8005



HRF
AH8015

Basic

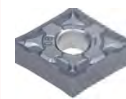


HRF
AH8015



HRM
AH8015

Basic



HRF
AH8015



HRM
AH8015

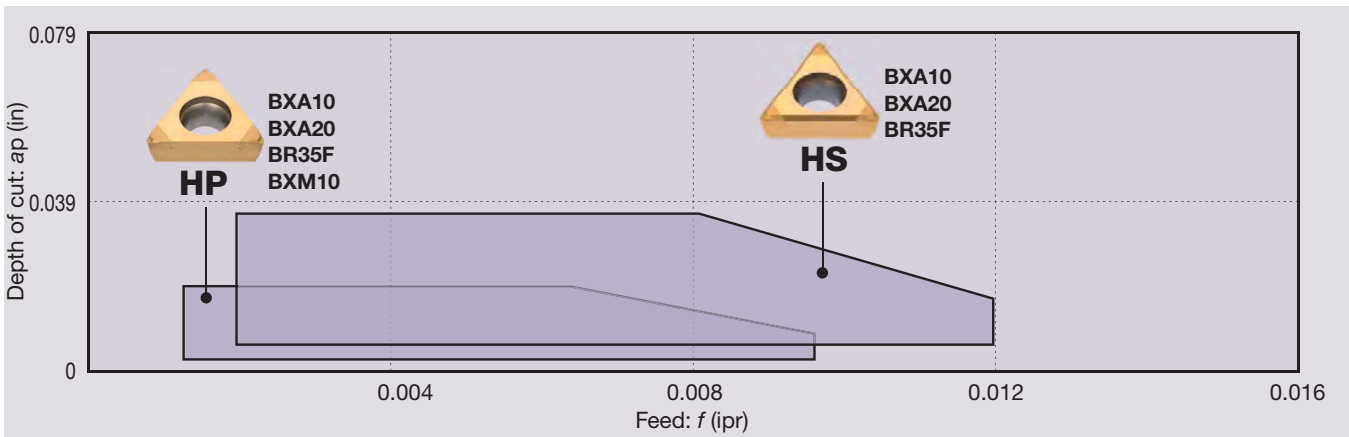
CER
Turning
Superalloys
Grooving
Milling
Turning
Cast Iron
Grooving
Milling
Hardened Materials
Turning
CBN
Hardened Materials
Turning
Grooving
Cast Iron
Turning
Milling
Superalloys
Turning
Sintered metal
Turning
PCD
Non-Ferrous Materials
Turning
Grooving
Milling

Chipbreaker Guide

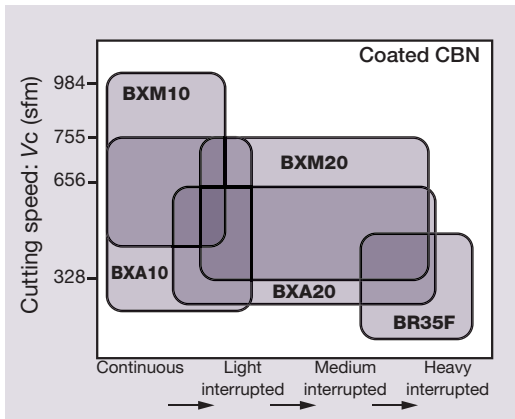
BASIC CHIPBREAKER: POSITIVE TYPE

H Hard Materials

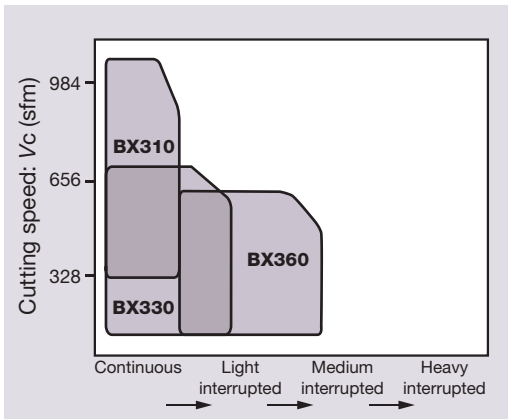
Chipbreaker System for Turning (Positive Type)



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

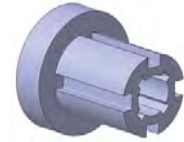
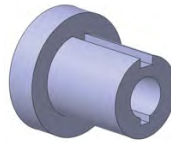
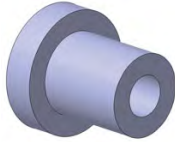
ISO	Operation	Chipbreaker	Grade	Depth of cut a_p (in)	Feed f (ipr)	Cutting speed V_c (sfm)
H	Precision finishing	HP	BXM10 BXA20 BR35F	0.001 - 0.01	0.001 - 0.009	230 - 1148
		HS	BXM10 BXA20 BR35F	0.004 - 0.014	0.002 - 0.012	230 - 1148
	Finishing	-	BXM10 BXA20 BR35F	0.002 - 0.02	0.002 - 0.01	230 - 1148

Hardened steels, Pre-hardened steels: H-13, P-20, etc.

Selection System

SELECTION SYSTEM: POSITIVE TYPE

H Hard Materials



Continuous

Light interrupted

Heavy interrupted

Precision finishing
[$a_p \approx 0.014''$]

Basic

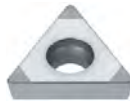


**HP
BXA10**

High-feed

**HS
BXA10**

Basic



BXA20

Fracture

**-H
BXA20**

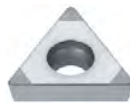
Finishing
[$a_p \approx 0.020''$]

Basic



BXA10

Basic



BXA20

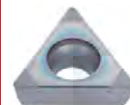
Fracture

**-H
BXA20**

High-speed wear

BXA10

Basic



**SR
BR35F**

Fracture

**HC
BR35F**

Superalloys

Turning

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

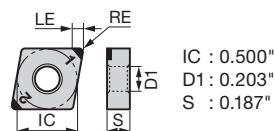
Non-Ferrous Materials

Turning

Grooving

Milling

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



CN



80° Rhombic with hole

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem					BXA10	BXA20	BR35F	BXM10	BXM20	BXC50	BXA30	BXA40	BX310	BX330	BX360	BX380		
								Burr	Flank wear	Crater wear	Chipping															
	RE	LE																								
Precision finishing	Inch	Metric																								
	2QP-CNGA 430.5-LF	2QP-CNGA120402-LF	0.008	0.091	2				○				●	●												
	2QP-CNGA 430.5-L	2QP-CNGA120402-L		0.091	2					○			●	●												
	2QP-CNGA 431-LF	2QP-CNGA120404-LF		0.091	2				○				●	●												
	4QS-CNGA 431-LF	4QS-CNGA120404-LF	0.016	0.063	4				○				●	●												
	2QP-CNGA 431-L	2QP-CNGA120404-L		0.091	2				○			●	●									●				
	2QP-CNGA 431-FW	2QP-CNGA120404FW		0.091	2	○	○					●	●													
	4QS-CNGA 431-FW	4QS-CNGA120404FW		0.063	4	○	○					●	●													
	2QP-CNMA 431-W	2QP-CNMA120404W		0.091	2	○	○															●				
	4QP-CNMA 431	4QP-CNMA120404W		0.091	4	○	○											●								
	2QP-CNGA 432-LF	2QP-CNGA120408-LF		0.031	0.087	2				○				●	●											
	4QS-CNGA 432-LF	4QS-CNGA120408-LF			0.059	4				○				●	●											
	2QP-CNGA 432-L	2QP-CNGA120408-L	0.087		2					○			●	●									●			
	2QP-CNGA 432 FW	2QP-CNGA120408FW	0.087		2	○	○						●	●												
	4QS-CNGA 432 FW	4QS-CNGA120408FW	0.071		4	○	○						●	●												
	2QP-CNMA 432-W	2QP-CNMA120408W	0.087		2	○	○																●			
	4QP-CNMA 432	4QP-CNMA120408W	0.087		4	○	○											●								
	2QP-CNGA 433-LF	2QP-CNGA120412-LF	0.047	0.094	2				○				●	●												
	4QS-CNGA 433-LF	4QS-CNGA120412-LF		0.067	4				○				●	●												
	2QP-CNGA 433-L	2QP-CNGA120412-L		0.094	2					○			●	●									●			
	2QP-CNGA 433 FW	2QP-CNGA120412FW		0.094	2	○	○						●	●												
	4QS-CNGA 433 FW	4QS-CNGA120412FW		0.083	4	○	○						●	●												
	2QP-CNMA 433-W	2QP-CNMA120412W		0.094	2	○	○																●			
	4QP-CNMA 433	4QP-CNMA120412W		0.094	4	○	○																			
	Finishing	2QP-CNGA 430.5		2QP-CNGA120402	0.008	0.091	2			○					●	●										
		2QP-CNGA 430.5-LC		2QP-CNGA120402-LC		0.091	2						○		●	●										
		2QP-CNGA 431		2QP-CNGA120404	0.016	0.091	2			○					●	●								●	●	●
T2QP-CNGA 431		T2QP-CNGA120404	0.091	2				○															●			
2QP-CNGA 431-SR		2QP-CNGA120404SR	0.091	2				○																		
4QS-CNGA 431		4QS-CNGA120404	0.063	4				○					●	●												
4QS-CNGA 431-SR		4QS-CNGA120404SR	0.063	4				○							●											
4QP-CNGA 431		4QP-CNGA120404	0.091	4				○											●	●	●					
2QP-CNGA 431-LC		2QP-CNGA120404-LC	0.091	2								○		●	●											
4QS-CNGA 431-LC	4QS-CNGA120404-LC	0.063	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**

The diagram shows a square hole in a plate. The hole has a side length of IC . The plate has a thickness of S . The hole is positioned such that the distance from the left edge of the plate to the left edge of the hole is LE , and the distance from the right edge of the hole to the right edge of the plate is RE . A dashed line indicates the hole's position relative to the plate's center.

CN



80° Rhombic with hole

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20	BXC50	BXA30	BXA40	BX310	BX330	BX360	BX380	
								Burr	Flank wear	Crater wear	Chipping													
	Inch	Metric	RE	LE																				
Finishing	2QP-CNGA 432	2QP-CNGA120408	0.031	0.087	2		○					●	●		●	●				●	●	●	●	
	T2QP-CNGA 432	T2QP-CNGA120408		0.087	2		○																	
	2QP-CNGA 432-SR	2QP-CNGA120408SR		0.087	2		○							●										
	4QS-CNGA 432	4QS-CNGA120408		0.059	4		○						●	●										
	4QS-CNGA 432-SR	4QS-CNGA120408SR		0.059	4		○								●									
	4QP-CNGA 432	4QP-CNGA120408		0.087	4		○										●	●	●					
	2QP-CNGA 432-LC	2QP-CNGA120408-LC	0.031	0.087	2					○		●	●				●	●	●					
	4QS-CNGA 432-LC	4QS-CNGA120408-LC		0.059	4					○		●	●											
	2QP-CNGA 433	2QP-CNGA120412	0.047	0.094	2		○					●	●		●	●				●	●	●	●	
	2QP-CNGA 433-SR	2QP-CNGA120412SR		0.094	2		○						●											
	4QS-CNGA 433	4QS-CNGA120412		0.067	4		○					●	●											
	4QS-CNGA 433-SR	4QS-CNGA120412SR		0.067	4		○						●											
	4QP-CNGA 433	4QP-CNGA120412		0.094	4		○									●	●	●						
	2QP-CNGA 433-LC	2QP-CNGA120412-LC		0.094	2					○		●	●											
	4QS-CNGA 433-LC	4QS-CNGA120412-LC	0.067	4					○		●	●												
	2QP-CNGA 434	2QP-CNGA120416	0.063	0.130	2		○					●	●											
	2QP-CNGA 434-SR	2QP-CNGA120416SR		0.130	2		○						●											
	2QP-CNGA 435	2QP-CNGA120420	0.079	0.126	2		○					●	●											
	2QP-CNGA 435-SR	2QP-CNGA120420SR		0.126	2		○							●										
	2QP-CNGA 436	2QP-CNGA120424	0.094	0.122	2		○					●	●											
2QP-CNGA 436-SR	2QP-CNGA120424SR	0.122		2		○							●											
Medium cutting	2QP-CNGA 431-H	2QP-CNGA120404-H	0.016	0.091	2						○	●	●		●							●	●	
	2QP-CNGA 431-HC	2QP-CNGA120404HC		0.091	2						○		●											
	4QS-CNGA 431-H	4QS-CNGA120404-H		0.063	4						○	●	●											
	4QS-CNGA 431-HC	4QS-CNGA120404HC		0.063	4						○		●											
	4QP-CNGA 431-H	4QP-CNGA120404-H		0.091	4					○							●							
	2QP-CNGA 432-H	2QP-CNGA120408-H	0.031	0.087	2					○	●	●		●							●	●		
	2QP-CNGA 432-HC	2QP-CNGA120408HC		0.087	2					○		●												
	4QS-CNGA 432-H	4QS-CNGA120408-H		0.059	4					○	●	●												
	4QS-CNGA 432-HC	4QS-CNGA120408HC		0.059	4					○		●												
	4QP-CNGA 432-H	4QP-CNGA120408-H	0.087	4					○							●								
	2QP-CNGA 433-H	2QP-CNGA120412-H	0.047	0.094	2					○	●	●		●							●	●		
	2QP-CNGA 433-HC	2QP-CNGA120412HC		0.094	2					○		●												
	4QS-CNGA 433-H	4QS-CNGA120412-H		0.067	4					○	●	●												
	4QS-CNGA 433-HC	4QS-CNGA120412HC		0.067	4					○		●												
	4QP-CNGA 433-H	4QP-CNGA120412-H	0.094	4					○								●							
	2QP-CNGA 434-HC	2QP-CNGA120416HC	0.063	0.130	2					○		●												
	2QP-CNGA 435-HC	2QP-CNGA120420HC	0.079	0.126	2					○		●												
	2QP-CNGA 436-HC	2QP-CNGA120424HC	0.094	0.122	2					○		●												

● : Line up



Ex.Toolholder



In.Toolholder

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

tungaloy.com/us
ntkcuttingtools.com/us

CBN-23

Non-Ferrous Materials

Superalloys

Iron
moving

Grading

Hardened Materials

CBN

Turning

Materials

Grooving

urning

Cast In
illing

ing
alloys

Super
Tur

Sintet
met

als

Water

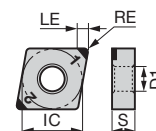
ous

- Fer

No

-23

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



IC : 0.500"
D1 : 0.203"
S : 0.187"

CN with chipbreaker

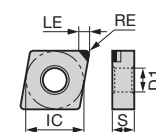


80° Rhombic with hole

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20	BXA40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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● : Line up



IC : 0.500"
D1 : 0.203"
S : 0.187"

CN

 **80° Rhombic
with hole**

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BX360																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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● : Line up

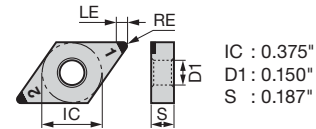


Ex Toolholder

In Toolholder

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

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



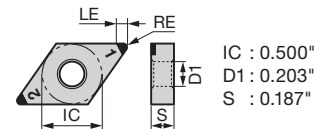
DN



55° Rhombic with hole

55° Rhombic with hole							K	Cast iron															
							S	Superalloy															
							H	Hard material		●	●●												
							Sintered metal																
Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20										
			RE	LE				Burr	Flank wear	Crater wear	Chipping												
Finishing	Inch	Metric	RE	LE																			
	2QP-DNGA 331	2QP-DNGA110404	0.016	0.098	2		○						●	●									
	2QP-DNGA 332	2QP-DNGA110408	0.031	0.083	2		○						●	●									
	2QP-DNGA 333	2QP-DNGA110412	0.047	0.079	2		○						●	●									

● : Line up



DN



55° Rhombic with hole

[illegible]

Please see Tungaloy General catalog vol.5 page **L031** about the toolholders recommended for wiper inserts of the designation with WJ at the end.

● : Line up



Ex.Toolholder



In.Toolholder

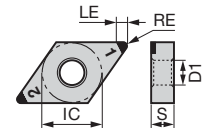
Reference pages : Edge preparation → **CBN-6**

DN



55° Rhombic with hole

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



IC : 0.500"
D1 : 0.203"
S : 0.187"

55° Rhombic with hole							K		Cast iron																
							S		Superalloy																
							H		Hard material		●	●●	✱	●	●●	✱	●	●●	●	●	●●	✱			
									Sintered metal																
Application	Designation		Dimension (in)		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-DNGA 432	2QP-DNGA150408	0.031	0.083	2		○																		
	2QP-DNGA 432-SR	2QP-DNGA150408SR		0.083	2		○																		
	4QS-DNGA 432	4QS-DNGA150408		0.063	4		○																		
	4QS-DNGA 432-SR	4QS-DNGA150408SR		0.063	4		○																		
	4QP-DNGA 432	4QP-DNGA150408		0.083	4		○																		
	2QP-DNGA 432-LC	2QP-DNGA150408-LC		0.083	2						○														
	4QS-DNGA 432-LC	4QS-DNGA150408-LC		0.063	4						○														
	2QP-DNGA 433	2QP-DNGA150412		0.047	0.079	2		○																	
	2QP-DNGA 433-SR	2QP-DNGA150412SR	0.079		2		○																		
	4QS-DNGA 433	4QS-DNGA150412	0.063		4		○																		
	4QS-DNGA 433-SR	4QS-DNGA150412SR	0.063		4		○																		
	4QP-DNGA 433	4QP-DNGA150412	0.079		4		○																		
	2QP-DNGA 433-LC	2QP-DNGA150412-LC	0.079		2						○														
	4QS-DNGA 433-LC	4QS-DNGA150412-LC	0.063		4						○														
	2QP-DNGA 434	2QP-DNGA150416	0.063		0.134	2		○																	
	2QP-DNGA 434-SR	2QP-DNGA150416SR		0.134	2		○																		
	2QP-DNGA 435	2QP-DNGA150420		0.118	2		○																		
	2QP-DNGA 435-SR	2QP-DNGA150420SR	0.079	0.118	2		○																		
	2QP-DNGA 436	2QP-DNGA150424		0.094	0.102	2		○																	
	2QP-DNGA 436-SR	2QP-DNGA150424SR	0.102		2		○																		
Medium cutting	2QP-DNGA 431-H	2QP-DNGA150404-H	0.016	0.098	2						○														
	2QP-DNGA 431-HC	2QP-DNGA150404HC		0.098	2						○														
	4QS-DNGA 431-H	4QS-DNGA150404-H		0.079	4						○														
	4QS-DNGA 431-HC	4QS-DNGA150404HC		0.079	4						○														
	4QP-DNGA 431-H	4QP-DNGA150404-H	0.031	0.098	4						○														
	2QP-DNGA 432-H	2QP-DNGA150408-H		0.083	2						○														
	2QP-DNGA 432-HC	2QP-DNGA150408HC		0.083	2						○														
	4QS-DNGA 432-H	4QS-DNGA150408-H		0.063	4						○														
	4QS-DNGA 432-HC	4QS-DNGA150408HC		0.063	4						○														
	4QP-DNGA 432-H	4QP-DNGA150408-H		0.083	4						○														
	2QP-DNGA 433-H	2QP-DNGA150412-H		0.047	0.079	2						○													
	2QP-DNGA 433-HC	2QP-DNGA150412HC			0.079	2						○													
	4QS-DNGA 433-H	4QS-DNGA150412-H	0.063		4						○														
	4QS-DNGA 433-HC	4QS-DNGA150412HC	0.063		4						○														
	4QP-DNGA 433-H	4QP-DNGA150412-H	0.079		4						○														
	2QP-DNGA 434-HC	2QP-DNGA150416HC	0.063	0.134	2						○														
	2QP-DNGA 435-HC	2QP-DNGA150420HC	0.079	0.118	2						○														
	2QP-DNGA 436-HC	2QP-DNGA150424HC	0.094	0.102	2						○														

● : Line up

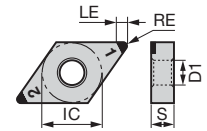


Ex.Toolholder



In.Toolholder

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



IC : 0.500"
D1 : 0.203"
S : 0.187"

DN with chipbreaker



55° Rhombic with hole

55° Rhombic with hole			K	Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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			H	Hard material				●	●●	✱	●	●●	●●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20	BXA40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

● : Line up

DN



55° Rhombic with hole

55° Rhombic with hole							KCast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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● : Line up



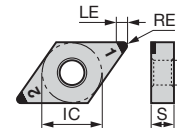
Ex.Toolholder



In.Toolholder

Reference pages : Edge preparation → CBN-6

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



IC : 0.500"
D1 : 0.203"
S : 0.250"

DN



55° Rhombic with hole

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20						
								Burr	Flank wear	Crater wear	Chipping											
	Inch	Metric	RE	LE																		
Precision finishing	2QP-DNGA 441-LF	2QP-DNGA150604-LF	0.016	0.098	2			○				●	●									
	2QP-DNGA 441-L	2QP-DNGA150604-L		0.098	2				○			●	●									
	2QP-DNGA 442-LF	2QP-DNGA150608-LF	0.031	0.083	2			○				●	●									
	2QP-DNGA 442-L	2QP-DNGA150608-L		0.083	2			○			●	●										
	2QP-DNGA 443-LF	2QP-DNGA150612-LF	0.047	0.079	2			○				●	●									
	2QP-DNGA 443-L	2QP-DNGA150612-L		0.079	2			○			●	●										
Finishing	2QP-DNGA 441	2QP-DNGA150604	0.016	0.098	2			○				●	●		●	●						
	2QP-DNGA 441-SR	2QP-DNGA150604SR		0.098	2			○					●									
	2QP-DNGA 441-LC	2QP-DNGA150604-LC		0.098	2					○		●	●									
	2QP-DNGA 442	2QP-DNGA150608	0.031	0.083	2			○				●	●		●	●						
	2QP-DNGA 442-SR	2QP-DNGA150608SR		0.083	2			○					●									
	2QP-DNGA 442-LC	2QP-DNGA150608-LC		0.083	2					○		●	●									
	2QP-DNGA 443	2QP-DNGA150612	0.047	0.079	2			○				●	●		●	●						
	2QP-DNGA 443-SR	2QP-DNGA150612SR		0.079	2			○					●									
	2QP-DNGA 443-LC	2QP-DNGA150612-LC		0.079	2					○		●	●									
Medium cutting	2QP-DNGA 441-H	2QP-DNGA150604-H	0.016	0.098	2						○	●	●									
	2QP-DNGA 441-HC	2QP-DNGA150604HC		0.098	2						○		●									
	2QP-DNGA 442-H	2QP-DNGA150608-H	0.031	0.083	2						○	●	●									
	2QP-DNGA 442-HC	2QP-DNGA150608HC		0.083	2						○		●									
	2QP-DNGA 443-H	2QP-DNGA150612-H	0.047	0.079	2						○	●	●									
	2QP-DNGA 443-HC	2QP-DNGA150612HC		0.079	2						○		●									

● : Line up

DN with chipbreaker



55° Rhombic with hole

[illegible][illegible]

● : Line up

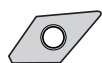


Ex.Toolholder

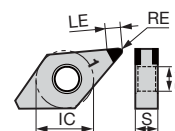


In.Toolholder

FN

[illegible]

● : Line up



FN

with chipbreaker

[illegible]

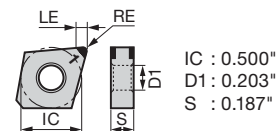
● : Line up



In Toolholder

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

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



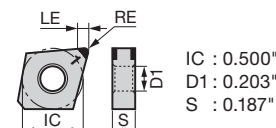
GN



70° Rhombic with hole

[illegible][illegible]

● : Line up



GN with chipbreaker



70° Rhombic with hole

[illegible][illegible]

● : Line up



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

Ex Toolholder

In Toolholder

LE RE

IC : 0.500"

D1 : 0.203"

S : 0.187"

IC S

[illegible]

● : Line up

[illegible]

● : Line up



In.Toolholder

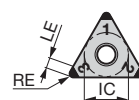
tungaloy.com/us
ntkcuttingtools.com/us

CBN-31

[illegible]



Superalloys



IC : 0.375"
D1 : 0.150"
S : 0.187"

[illegible]Ailing

urning

Cast Iron

proving

illing

Hardened materials

ning

CRN

Materials

urning

Harden

Iron

Cas

Superalloys

intermetal

Turning

ials

ous Mat

rooving

Non-Fe

Milling

● : Line up



Ex Toolholder



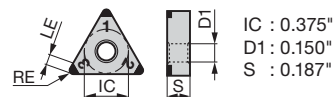
In Toolholder

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

tungaloy.com/us
ntkcuttingtools.com/us

CBN-33

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



TN with chipbreaker



Triangular with hole

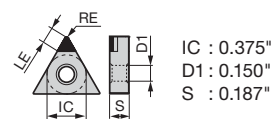
[illegible]

● : Line up

TN



Triangular with hole

[illegible]

● : Line up



Ex Toolholder



In Toolholder

Technical drawing of a mechanical part, likely a bracket or arm, showing dimensions and tolerances. The part is shown in two views: a side view and a cross-sectional view.

Dimensions and Tolerances:

- IC : 0.375"
- D1 : 0.150"
- S : 0.187"

Labels:

- LE: Left End
- RE: Right End
- IC: Inner Circle (or Inner Diameter)
- D1: Diameter 1
- S: Thickness

[illegible]

Superalloys

Milling

Cast Iron

CBN

Materials

Harden

urning

Cast In

Supera

aterials

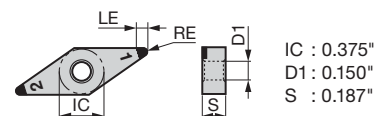
Non-F



In.Toolholder

tungaloy.com/us
ntkcuttingtools.com/us

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



VN with chipbreaker



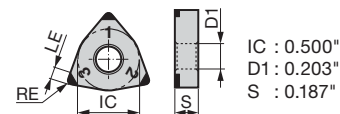
35° Rhombic with hole

[illegible]

● : Line up

WN

 80° Trigon with hole

[illegible]

● : Line up



VN

Ex Toolholder



In Toolholder



W

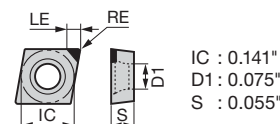
Ex Toolholder



In Toolholder

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

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



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



Ex Toolholder



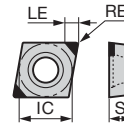
In Toolholder

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

CC



**80°Rhombic
with hole, Positive 7°**



IC : 0.250"
D1 : 0.109"
S : 0.094"

 80°Rhombic with hole, Positive 7°		K	Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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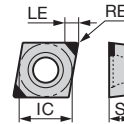
● : Line up

CC

with chipbreaker



**80°Rhombic
with hole, Positive 7°**



IC : 0.250"
D1 : 0.109"
S : 0.094"

 80°Rhombic with hole, Positive 7°		K	Cast iron																		
		S	Superalloy																		
		H	Hard material	●	●●	✱	●														
			Sintered metal																		
Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10						
			RE	LE				Burr	Flank wear	Crater wear	Chipping										
Inch	Metric																				
Precision finishing	2QP-CCGT 21.51 HP	2QP-CCGT060204-HP	0.016	0.091	2		○					●	●	●	●						
	2QP-CCGT 21.51 HS	2QP-CCGT060204-HS		0.087	2		○					●	●	●							

● : Line up



Ex.Toolholder



In.Toolholder

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

LE RE

IC S

IC : 0.375"
D1 : 0.173"
S : 0.156"

[illegible]C

D

F

G

S

T

V

w

Y

● : Line up

[illegible]

● : Line up



In Toolholder

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

Turning

Superalloys

Grooving

Milling

Cast Iron

turning

CBN

Hardened Materials

Grooving
Turning

on

Cast

Alloys

Sintered metal

Non-Ferrous Materials

LE
RE
IC : 0.313"
D1 : 0.134"
S : 0.094"

● : Line up

IC : 0.375"
D1 : 0.173"
S : 0.125"

● : Line up

IC : 0.375"
D1 : 0.157"
S : 0.094"

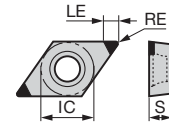
Tungaloy's standard hole specification (ISO non-compliant)

● : Line up



DC
**55° Rhombic
with hole, Positive 7°**

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

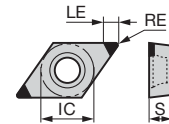

 IC : 0.250"
 D1 : 0.109"
 S : 0.094"

Application		Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F	BXM10	BXM20	BXA30	BXA40	BX310	BX330	BX360	
				RE	LE				Burr	Flank wear	Crater wear	Chipping											
		Inch	Metric																				
Finishing	2QP-DCGW 21.50.5-LF	2QP-DCGW070202-LF	0.008	0.106	2			○				●	●										
	2QP-DCGW 21.50.5-L	2QP-DCGW070202-L		0.106	2				○			●	●										
	2QP-DCGW 21.51-LF	2QP-DCGW070204-LF	0.016	0.098	2			○			●	●											
	2QP-DCGW 21.51-L	2QP-DCGW070204-L		0.098	2				○			●	●										
	2QP-DCGW 21.52-LF	2QP-DCGW070208-LF	0.031	0.083	2			○			●	●											
2QP-DCGW 21.52-L	2QP-DCGW070208-L	0.083		2				○			●	●											
Medium cutting	2QP-DCGW 21.50.5	2QP-DCGW070202	0.008	0.106	2		○				●	●		●	●	●	●						
	2QP-DCGW 21.50.5-SR	2QP-DCGW070202SR		0.106	2		○						●										
	2QP-DCMW 21.50.5	2QP-DCMW070202		0.106	2		○											●	●	●			
	2QP-DCGW 21.50.5-LC	2QP-DCGW070202-LC	0.016	0.106	2				○		●	●											
	2QP-DCGW 21.51	2QP-DCGW070204		0.098	2		○				●	●		●	●	●	●						
	2QP-DCGW 21.51-SR	2QP-DCGW070204SR		0.098	2		○						●										
	2QP-DCMW 21.51	2QP-DCMW070204		0.098	2		○											●	●	●			
	Q-DCMW 21.51	Q-DCMW070204		0.083	1		○												●				
	2QP-DCGW 21.51-LC	2QP-DCGW070204-LC		0.098	2					○		●	●										
	2QP-DCGW 21.52	2QP-DCGW070208		0.031	0.083	2		○				●	●										
	2QP-DCGW 21.52-SR	2QP-DCGW070208SR	0.083		2		○						●										
	2QP-DCGW 21.52-LC	2QP-DCGW070208-LC	0.083		2					○		●	●										

● : Line up

DC

with chipbreaker


**55° Rhombic
with hole, Positive 7°**

 IC : 0.250"
 D1 : 0.109"
 S : 0.094"



55° Rhombic

with hole, Positive 7°

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● : Line up



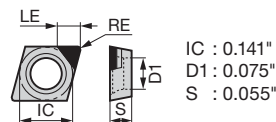
Ex.Toolholder



In.Toolholder

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

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



EP



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

[illegible]

● : Line up

C

D

F

G

S

V

W

OTUERO

EP



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

[illegible]

● : Line up

SP



Square Positive 11° without hole

[illegible]

● : Line up



FP

In Toolholder



SP

In Toolholder

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

IC : 0.219"
D1 : 0.098"
S : 0.094"

[illegible]

● : Line up

IC : 0.250"
D1 : 0.109"
S : 0.094"

[illegible]

● : Line up

IC : 0.375"
D1 : 0.173"
S : 0.156"

[illegible]

● : Line up



Ex.Toolholder



In.Toolholder

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

TP



Triangular Positive 11°
with hole



IC : 0.187"
D1 : 0.091"
S : 0.094"

		Triangular Positive 11° with hole										K		S		H		Sintered metal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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● : Line up

TP



Triangular Positive 11°
with hole



IC : 0.219"
D1 : 0.098"
S : 0.094"

	Triangular Positive 11° with hole						K	Cast iron																	
							S	Superalloy																	
							H	Hard material				●	●●	●	●●	●	●●	●	●	●●					
								Sintered metal												●●					
Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10	BXM20	BXA30	BXA40	BX310	BX330	BX360					
			RE	LE				Burr	Flank wear	Crater wear	Chipping														
	Inch	Metric																							
Finishing	3QP-TPGW 730.5	3QP-TPGW090202	0.008	0.091	3		○					●	●		●	●	●								
	3QP-TPMW 730.5	3QP-TPMW090202		0.091	3		○											●	●						
	Q-TPMW 73Y	Q-TPMW090202		0.094	1		○											●							
	3QP-TPGW 731	3QP-TPGW090204	0.016	0.087	3		○					●	●	●	●	●									
	3QP-TPMW 731	3QP-TPMW090204		0.087	3		○									●	●	●							
	Q-TPMW 731	Q-TPMW090204		0.091	1		○											●							
	3QP-TPGW 732	3QP-TPGW090208	0.031	0.075	3		○					●	●												

● : Line up

TP



Triangular Positive 11°
with hole



IC : 0.250"
D1 : 0.109"
S : 0.094"

		Triangular Positive 11° with hole																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● : Line up



In.Toolholder

IC : 0.250"
D1 : 0.134"
S : 0.125"

[illegible]

● : Line up

IC : 0.250"
D1 : 0.134"
S : 0.125"

[illegible]

● : Line up



Superalloys

Willing

urning

Cast Iron

moving

illing

● : Line up

Hardened Materials

Turning



CBN

Hardened Materials

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CBN-49

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

TP



Triangular Positive 11° with hole



IC : 0.375"
D1 : 0.173"
S : 0.187"

		Triangular Positive 11° with hole																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● : Line up

TP



Triangular Positive 11° without hole



IC : 0.250"
S : 0.125"



Triangular Positive 11°

without hole

K	Cast iron																			
S	Superalloy																			
H	Hard material	●	●●																	
	Sintered metal																			

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BX330	BX360								
								Burr	Flank wear	Crater wear	Chipping										
	Inch	Metric	RE	LE																	
Finishing	3QP-TPMN 220.5	3QP-TPMN110302	0.008	0.091	3		○					●	●								
	3QP-TPMN 221	3QP-TPMN110304	0.016	0.087	3		○					●	●								
	Q-TPGN 221	Q-TPGN110304		0.087	1		○						●	●							
	3QP-TPMN 222	3QP-TPMN110308	0.031	0.075	3		○					●	●								
	Q-TPGN 222	Q-TPGN110308		0.087	1		○						●								

● : Line up

TP



Triangular Positive 11° without hole



IC : 0.375"
S : 0.125"



Triangular Positive 11°

without hole

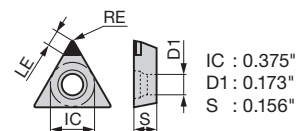
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● : Line up

Reference pages : Edge preparation → CBN-6

tungaloy.com/us
cuttingtools.com/us

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

[illegible][illegible]

● : Line up

[illegible][illegible]

● : Line up

[illegible][illegible]

● : Line up



In.Toolholder

[illegible]

● : Line up

[illegible]

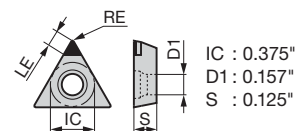
● : Line up

[illegible]

● : Line up



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



Triangular Positive 11° with hole

[illegible]

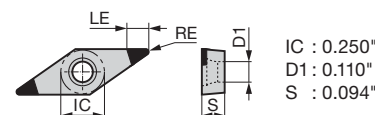
Tungaloy's standard hole specification (ISO non-compliant)

● : Line up

VB



35° Rhombic Positive 5° with hole

[illegible]

● : Line up



TP

In.Toolholder



VB

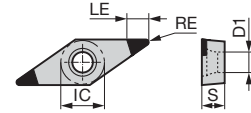
In.Toolholder

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

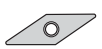
VB



**35° Rhombic
Positive 5°
with hole**



IC : 0.250"
D1 : 0.110"
S : 0.125"

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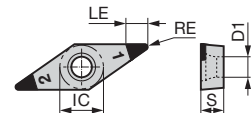
● : Line up

VB

with chipbreaker



**35° Rhombic
Positive 5°
with hole**



IC : 0.250"
D1 : 0.110"
S : 0.125"

 35° Rhombic Positive 5° with hole			K		S		H		●		●●		●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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● : Line up



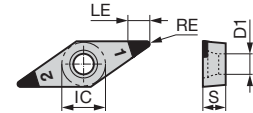
In.Toolholder

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

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

VB

**35° Rhombic
Positive 5°
with hole**



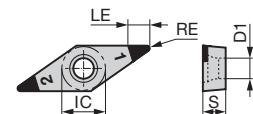
IC : 0.375"
D1 : 0.173"
S : 0.187"

K	Cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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● : Line up

VB with chipbreaker

**35° Rhombic
Positive 5°
with hole**



IC : 0.375"
D1 : 0.173"
S : 0.187"



35° Rhombic

Positive 5°

with hole

K

Cast iron

S

Superalloy

H

Hard material

Sintered metal

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BXM10						
			RE	LE				Burr	Flank wear	Crater wear	Chipping									
	Inch	Metric																		
Precision finishing	2QP-VBGT 331 HP	2QP-VBGT160404-HP	0.016	0.118	2		○													
	2QP-VBGT 331 HS	2QP-VBGT160404-HS		0.118	2		○													
	2QP-VBGT 332 HP	2QP-VBGT160408-HP	0.031	0.087	2		○													
	2QP-VBGT 332 HS	2QP-VBGT160408-HS		0.087	2		○													

● : Line up



In.Toolholder

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

Superalloys

ning

Turn
ing

Hardened Materials



CBN

Turning



In Toolholder

Hardened

rooving

Iron

Grading

Cast I

g
Turn

Superalloys

Milling

intermetal

Turning

PCD

Materials

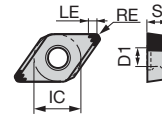
Tur

-Ferrous M

Non-

ing
Tur

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



IC : 0.250"
D1 : 0.106"
S : 0.125"

DX



55° Rhombic with hole



55° Rhombic

with hole

K

Cast iron

S

Superalloy

H

Hard material

Sintered metal

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BXA10	BXA20	BR35F									
			RE	LE				Burr	Flank wear	Crater wear	Chipping												
Finishing	4QS-DXGQ 220.5SPR	4QS-DXGQ070302SPR	0.008	0.083	4		○					●	●	●									
	4QS-DXGQ 220.5SPL	4QS-DXGQ070302SPL		0.083	4		○					●	●	●									
	4QS-DXGQ 221SPR	4QS-DXGQ070304SPR	0.016	0.075	4		○					●	●	●									
	4QS-DXGQ 221SPL	4QS-DXGQ070304SPL		0.075	4		○					●	●	●									
	4QS-DXGQ 222SPR	4QS-DXGQ070308SPR	0.031	0.063	4		○					●	●	●									
	4QS-DXGQ 222SPL	4QS-DXGQ070308SPL		0.063	4		○					●	●	●									

● : Line up

C

D

F

G

S

T

V

W

Y

OTHERS

DX with chipbreaker



55° Rhombic with hole

[illegible]

● : Line up



Ex.Toolholder



In.Toolholder

External profiling of hardened steel

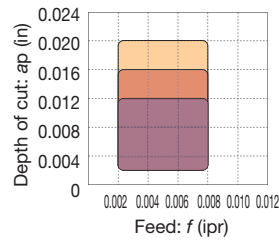
STR type
(1 corner)

Full radius type

Profile insert with 3D chipbreaker that delivers excellent chip control during hard part turning.
CW = 0.118" - 0.197"

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

Standard feed and DoC



Groove width: CW (in)

3 4 5



High feed external/internal/face turning of hardened steel

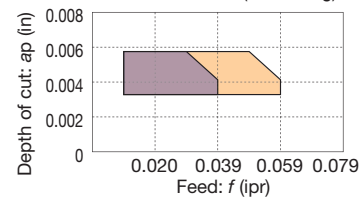
STH type
(1 corner)

For high feed turning of hardened steel parts

High efficiency machining using light D.O.C. and increased feeds
CW = 0.118", 0.197"

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

Standard feed and DoC (for turning)



Groove width: CW (in)

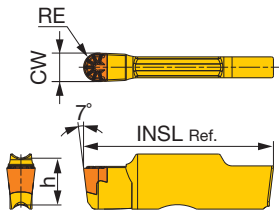
3 5



INSERTS

STR

Profiling



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

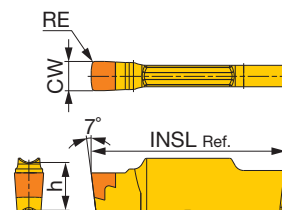
★ : First choice

Designation	Seat size	CW±0.05 (mm)	CW±0.002 (in)	RE (in)	CBN		INSL (in)	h (in)
					BXA10			
STR300-HP	3	3	0.118	0.059	●		0.787	0.197
STR400-HP	4	4	0.157	0.079	●		0.787	0.197
STR500-HP	5	5	0.197	0.098	●		0.787	0.217

●: 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 (mm)	CW±0.001 (in)	RE (in)	CBN		INSL (in)	h (in)
					BXA10			
STH300-SR	3	3	0.118	0.3	●		0.787	0.197
STH500-SR	5	5	0.197	0.3	●		0.984	0.217

●: Line up

STANDARD CUTTING CONDITIONS

STR

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (sfm)
H	External profiling	> 50 HRC	First choice	BXA10	262 - 591

STH

ISO	Grade	CW	Application	Cutting speed Vc (sfm)	Depth of cut ap (in)	Feed f (ipr)
H	BXA10	3	External turning	328 - 755	0.003 - 0.005	0.016 - 0.039
			Face turning	328 - 755	0.003 - 0.005	0.016 - 0.031
		5	External turning	328 - 755	0.003 - 0.005	0.020 - 0.059
			Face turning	328 - 755	0.003 - 0.005	0.020 - 0.031

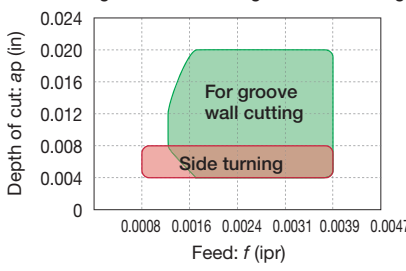
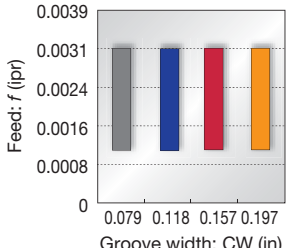
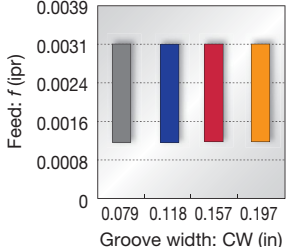
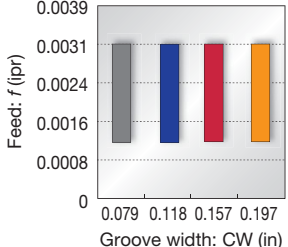
CBN Grooving

H Hard Materials

CHIPBREAKER GUIDE

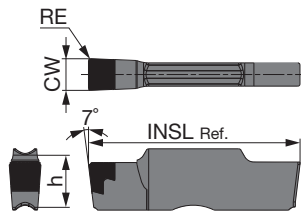
TUNGCUT

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 = 0.079" - 0.197" (Tol. ±0.001") ■ Standard feed and DoC ■ For groove wall cutting and side turning  ■ For grooving  ■ Standard feed 
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 = 0.079" - 0.197" (Tol. ±0.001") ■ Standard feed 

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

STX



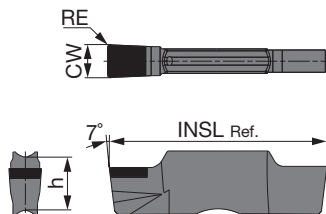
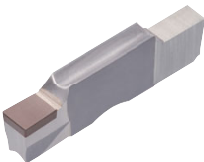
P	Steel					
M	Stainless					
K	Cast iron					
N	Non-ferrous					
S	Superalloys					
H	Hard materials	★				

★ : First choice

[illegible]

●: Line up

External grooving



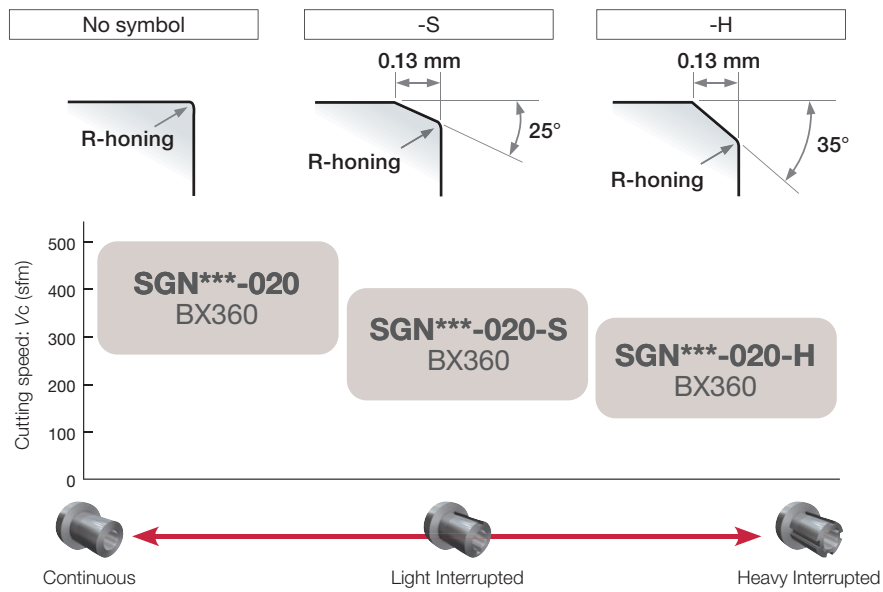
P	Steel				
M	Stainless				
K	Cast iron				
N	Non-ferrous				
S	Superalloys				
H	Hard materials	★			

★ : First choice
☆ : Second choice

Designation	Seat size	CW±0.025 (mm)	CW±0.001 (in)	RE (in)	CBN								INSL (in)	h (in)	Condition		
					BX360												Continuous
SGN200-020	2	2	0.079	0.008	●								0.787	0.197	○		
SGN200-020-S	2	2	0.079	0.008	●								0.787	0.197		○	
SGN200-020-H	2	2	0.079	0.008	●								0.787	0.197			○
SGN300-020	3	3	0.118	0.008	●								0.787	0.197	○		
SGN300-020-S	3	3	0.118	0.008	●								0.787	0.197		○	
SGN300-020-H	3	3	0.118	0.008	●								0.787	0.197			○
SGN400-020	4	4	0.157	0.008	●								0.787	0.197	○		
SGN400-020-S	4	4	0.157	0.008	●								0.787	0.197		○	
SGN400-020-H	4	4	0.157	0.008	●								0.787	0.197			○
SGN500-020-S	5	5	0.197	0.008	●								0.984	0.217		○	
SGN500-020-H	5	5	0.197	0.008	●								0.984	0.217			○

●: Line up

Edge preparations



STANDARD CUTTING CONDITIONS

STX

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (sfm)
H	External grooving	> 50 HRC	First choice	BX360	262 - 492
	Groove wall cutting				
	Side turning				
	Internal grooving	> 50 HRC	First choice	BX360	262 - 394
	Face grooving				

SGN

ISO	Grade	Edge preparation	Workpiece condition	Cutting speed Vc (sfm)	Feed f (ipr)
H	BX360	No symbol	Continuous	262 - 492	0.001 - 0.003
		-S	Light interrupted	164 - 394	0.001 - 0.003
		-H	Heavy interrupted	131 - 328	0.001 - 0.002

Turning

Superalloys
Grooving

Milling

Turning

Cast Iron
Grooving

Milling

Hardened Materials
Turning

CBN

Hardened Materials
Turning

Grooving

Turning

Cast Iron
Milling

Superalloys
Turning

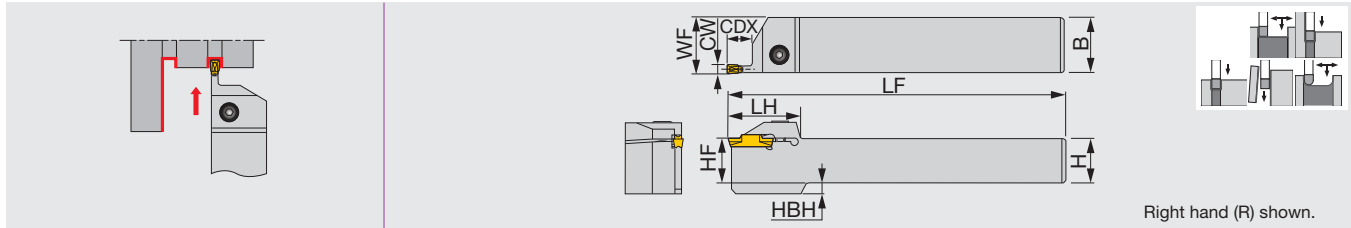
Sintered metal
Turning

PCD

Non-Ferrous Materials
Turning

Grooving

Milling



Inch	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	HBH	Torque
CTER/L10-2T08	0.079	2	0.315	0.625	0.625	4.500	1.299	0.625	0.629	0.157	3.69
CTER/L12-2T08	0.079	2	0.315	0.750	0.750	5.000	1.299	0.750	0.754	-	3.69
CTER/L16-2T08	0.079	2	0.315	1.000	1.000	6.000	1.299	1.000	1.004	-	3.69
CTER/L10-2T12	0.079	2	0.472	0.625	0.625	4.500	1.260	0.625	0.629	0.157	3.69
CTER/L12-2T12	0.079	2	0.472	0.750	0.750	5.000	1.260	0.750	0.754	-	3.69
CTER/L16-2T12	0.079	2	0.472	1.000	1.000	6.000	1.260	1.000	1.004	-	3.69
CTER/L10-2T17	0.079	2	0.669	0.625	0.625	4.500	1.457	0.625	0.629	0.157	3.69
CTER/L12-2T17	0.079	2	0.669	0.750	0.750	5.000	1.457	0.750	0.754	-	3.69
CTER/L16-2T17	0.079	2	0.669	1.000	1.000	6.000	1.457	1.000	1.004	-	3.69
CTER/L10-3T09	0.118	3	0.354	0.625	0.625	4.500	1.260	0.625	0.637	0.157	3.69
CTER/L12-3T09	0.118	3	0.354	0.750	0.750	5.000	1.260	0.750	0.762	-	3.69
CTER/L16-3T09	0.118	3	0.354	1.000	1.000	6.000	1.260	1.000	1.012	-	3.69
CTER/L12-3T12	0.118	3	0.472	0.750	0.750	5.000	1.260	0.750	0.763	-	3.69
CTER/L16-3T12	0.118	3	0.472	1.000	1.000	6.000	1.260	1.000	1.011	-	3.69
CTER/L10-3T20	0.118	3	0.787	0.625	0.625	4.500	1.516	0.625	0.637	0.157	3.69
CTER/L12-3T20	0.118	3	0.787	0.750	0.750	5.000	1.516	0.750	0.762	-	3.69
CTER/L16-3T20	0.118	3	0.787	1.000	1.000	6.000	1.516	1.000	1.012	-	3.69
CTER/L16-3T25	0.118	3	0.984	1.000	1.000	6.000	1.752	1.000	1.012	-	3.69
CTER/L10-4T10	0.157	4	0.394	0.625	0.625	4.500	1.260	0.625	0.645	0.157	6.27
CTER/L12-4T10	0.157	4	0.394	0.750	0.750	5.000	1.260	0.750	0.770	-	6.27
CTER/L16-4T10	0.157	4	0.394	1.000	1.000	6.000	1.260	1.000	1.020	-	6.27
CTER/L12-4T15	0.157	4	0.590	0.750	0.750	5.000	1.299	0.750	0.771	-	6.27
CTER/L16-4T15	0.157	4	0.590	1.000	1.000	6.000	1.299	1.000	1.019	-	6.27
CTER/L10-4T25	0.157	4	0.984	0.625	0.625	4.500	1.772	0.625	0.645	0.157	6.27
CTER/L12-4T25	0.157	4	0.984	0.750	0.750	5.000	1.772	0.750	0.770	-	6.27
CTER/L16-4T25	0.157	4	0.984	1.000	1.000	6.000	1.772	1.000	1.020	-	6.27
CTER/L20-4T25	0.157	4	0.984	1.250	1.250	7.000	1.772	1.250	1.270	-	6.27
CTER/L12-5T12	0.197	5	0.472	0.750	0.750	5.000	1.457	0.750	0.769	-	6.27
CTER/L16-5T12	0.197	5	0.472	1.000	1.000	6.000	1.457	1.000	1.019	-	6.27
CTER/L16-5T20	0.197	5	0.787	1.000	1.000	6.000	1.457	1.000	1.023	-	6.27
CTER/L16-5T32	0.197	5	1.260	1.000	1.000	6.000	2.205	1.000	1.019	-	6.27
CTER/L20-5T32	0.197	5	1.260	1.250	1.250	7.000	2.205	1.250	1.269	-	6.27
CTER/L12-6T12	0.236	6	0.472	0.750	0.750	5.000	1.457	0.750	0.770	-	8.85
CTER/L16-6T12	0.236	6	0.472	1.000	1.000	6.000	1.457	1.000	1.020	0.276	8.85
CTER/L16-6T20	0.236	6	0.787	1.000	1.000	6.000	1.614	1.000	1.023	0.276	8.85
CTER/L16-6T32	0.236	6	1.260	1.000	1.000	6.000	2.205	1.000	1.020	0.276	8.85
CTER/L20-6T32	0.236	6	1.260	1.250	1.250	7.000	2.205	1.250	1.270	-	8.85
CTER/L16-8T16	0.315	8	0.630	1.000	1.000	6.000	1.850	1.000	1.039	0.276	8.85
CTER/L16-8T25	0.315	8	0.984	1.000	1.000	6.000	1.850	1.000	1.039	0.276	8.85
CTER/L20-8T25	0.315	8	0.984	1.250	1.250	7.000	1.850	1.250	1.289	-	8.85
CTER/L16-8T36	0.315	8	1.417	1.000	1.000	6.000	2.362	1.000	1.039	0.276	8.85
CTER/L20-8T36	0.315	8	1.417	1.250	1.250	7.000	2.362	1.250	1.289	-	8.85

Metric	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

Metric	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	HBH	Torque*
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 - 0.059" [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: lbs-ft (*N·m)

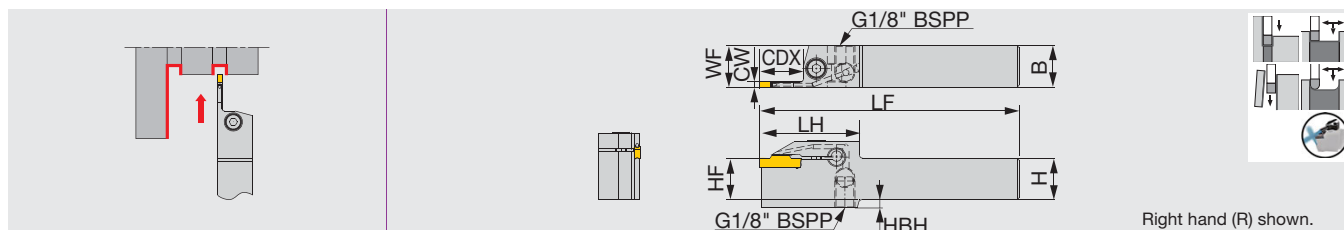
SPARE PARTS

Designation	Clamping screw	Wrench
CTER/L10-2T08, CTER/L1616-2T08	CM5X0.8X16-A	P-4
CTER/L12-2T08, CTER/L2020-2T08	CM5X0.8X20-A	P-4
CTER/L16-2T08, CTER/L2525-2T08	CM5X0.8X25-A	P-4
CTER/L10-2T12, CTER/L1616-2T12	CM5X0.8X16-A	P-4
CTER/L12-2T12, CTER/L2020-2T12	CM5X0.8X20-A	P-4
CTER/L16-2T12, CTER/L2525-2T12	CM5X0.8X25-A	P-4
CTER/L10-2T17, CTER/L1616-2T17	CM5X0.8X16-A	P-4
CTER/L12-2T17, CTER/L2020-2T17	CM5X0.8X20-A	P-4
CTER/L16-2T17, CTER/L2525-2T17	CM5X0.8X25-A	P-4
CTER/L2525-2T20	CM5X0.8X25-A	P-4
CTER/L10-3T09, CTER/L1616-3T09	CM5X0.8X16-A	P-4
CTER/L12-3T09, CTER/L2020-3T09	CM5X0.8X20-A	P-4
CTER/L16-3T09, CTER/L2525-3T09	CM5X0.8X25-A	P-4
CTER/L1616-3T12	CM5X0.8X16-A	P-4
CTER/L12-3T12, CTER/L2020-3T12	CM5X0.8X20-A	P-4
CTER/L16-3T12, CTER/L2525-3T12	CM5X0.8X25-A	P-4
CTER/L10-3T20, CTER/L1616-3T20	CM5X0.8X16-A	P-4
CTER/L12-3T20, CTER/L2020-3T20	CM5X0.8X20-A	P-4
CTER/L16-3T20, CTER/L2525-3T20	CM5X0.8X25-A	P-4
CTER/L16-3T25, CTER/L2525-3T25	CM5X0.8X25-A	P-4
CTER/L10-4T10, CTER/L1616-4T10	CM6X1X16-A	P-5
CTER/L12-4T10, CTER/L2020-4T10	CM6X1X20-A	P-5
CTER/L16-4T10, CTER/L2525-4T10	CM6X1X25-A	P-5
CTER/L12-4T15, CTER/L2020-4T15	CM6X1X20-A	P-5

SPARE PARTS

Designation	Clamping screw	Wrench
CTER/L16-4T15, CTER/L2525-4T15	CM6X1X25-A	P-5
CTER/L10-4T25, CTER/L1616-4T25	CM6X1X16-A	P-5
CTER/L12-4T25, CTER/L2020-4T25	CM6X1X20-A	P-5
CTER/L16-4T25, CTER/L2525-4T25	CM6X1X25-A	P-5
CTER/L20-4T25, CTER/L3232-4T25	CM6X1X25-A	P-5
CTER/L12-5T12, CTER/L2020-5T12	CM6X1X20-A	P-5
CTER/L16-5T12, CTER/L2525-5T12	CM6X1X25-A	P-5
CTER/L2525-5T17	CM6X1X25-A	P-5
CTER/L16-5T20, CTER/L2525-5T20	CM6X1X25-A	P-5
CTER/L16-5T32, CTER/L2525-5T32	CM6X1X25-A	P-5
CTER/L20-5T32, CTER/L3232-5T32	CM6X1X25-A	P-5
CTER/L12-6T12, CTER/L2020-6T12	CM8X1.25X20-A	P-6
CTER/L16-6T12, CTER/L2525-6T12	CM8X1.25X25-A	P-6
CTER/L2525-6T16	CM8X1.25X25-A	P-6
CTER/L16-6T20, CTER/L2525-6T20	CM8X1.25X25-A	P-6
CTER/L2525-6T25	CM8X1.25X25-A	P-6
CTER/L16-6T32, CTER/L2525-6T32	CM8X1.25X25-A	P-6
CTER/L20-6T32, CTER/L3232-6T32	CM8X1.25X25-A	P-6
CTER/L16-8T16, CTER/L2525-8T16	CM8X1.25X25-A	P-6
CTER/L16-8T25, CTER/L2525-8T25	CM8X1.25X25-A	P-6
CTER/L20-8T25, CTER/L3232-8T25	CM8X1.25X25-A	P-6
CTER/L3232-8T32	CM8X1.25X25-A	P-6
CTER/L16-8T36, CTER/L2525-8T36	CM8X1.25X25-A	P-6
CTER/L20-8T36, CTER/L3232-8T36	CM8X1.25X25-A	P-6

External grooving and parting toolholder, with high pressure coolant capability



Right hand (R) shown.

Inch	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	HBH	Torque
CTER/L12-2T17-CHP	0.079	2	0.669	0.750	0.750	5.000	1.772	0.750	0.754	0.157	4.06
CTER/L16-2T17-CHP	0.079	2	0.669	1.000	1.000	6.000	1.772	1.000	1.004	-	4.06
CTER/L12-3T25-CHP	0.118	3	0.984	0.750	0.750	5.000	2.008	0.750	0.762	0.157	4.06
CTER/L16-3T25-CHP	0.118	3	0.984	1.000	1.000	6.000	2.008	1.000	1.012	-	4.06
CTER/L16-4T25-CHP	0.157	4	0.984	1.000	1.000	6.000	2.170	1.000	1.020	-	5.9
CTER/L16-5T32-CHP	0.197	5	1.260	1.000	1.000	6.000	2.323	1.000	1.022	-	5.9
CTER/L16-6T32-CHP	0.236	6	1.260	1.000	1.000	6.000	2.441	1.000	1.023	0.276	8.85

Metric	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 - 0.059" [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: lbs-ft (*N·m)

INCH SPARE PARTS



Designation	Clamping screw	Wrench
CTER/L12-2T17-CHP	CM5X0.8X20-A	P-4
CTER/L16-2T17-CHP	CM5X0.8X20-A	P-4
CTER/L12-3T25-CHP	CM5X0.8X25-A	P-4
CTER/L16-3T25-CHP	CM5X0.8X25-A	P-4
CTER/L16-4T25-CHP	CM6X1X16-A	P-5
CTER/L16-5T32-CHP	CM6X1X16-A	P-5
CTER/L16-6T32-CHP	CM8X1.25X20-A	P-6

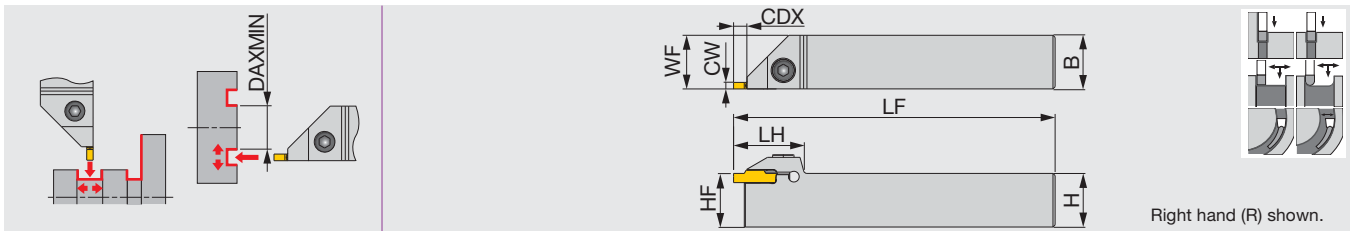
METRIC SPARE PARTS



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



Inch	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	Torque
CTEFR/L12-4T04	0.157	2, 3, 4	0.189	0.750	0.750	5.000	1.300	0.750	0.770	6.27
CTEFR/L16-4T04	0.157	2, 3, 4	0.189	1.000	1.000	6.000	1.300	1.000	1.020	6.27
CTEFR/L12-6T04	0.236	5, 6	0.189	0.750	0.750	5.000	1.460	0.750	0.770	6.27
CTEFR/L16-6T04	0.236	5, 6	0.189	1.000	1.000	6.000	1.460	1.000	1.020	6.27

Metric	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: lbs-ft (*N-m)

INCH SPARE PARTS

Designation	Clamping screw	Wrench
CTEFR/L12-4T04	CM6X1X20-A	P-5
CTEFR/L16-4T04	CM6X1X25-A	P-5
CTEFR/L12-6T04	CM6X1X20-A	P-5
CTEFR/L16-6T04	CM6X1X25-A	P-5

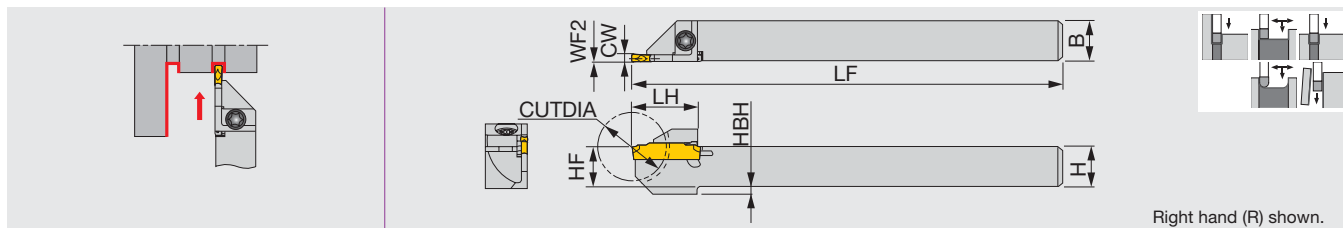
METRIC SPARE PARTS

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 (in)	Face grooving Min. machining dia. DAXMIN (in)
DGM / DGS / SGN / DGL	0.079	11.614
DGM / DGS / SGN / DGL	0.118	3.622
DGM / DGS / SGN / DGL	0.157	1.457
DGM / DGS / SGN / DGL	0.197	2.362
DGM / DGS / DGL	0.236	2.244
DTX / DTM / DTR	0.079	11.614
DTE / DGG / DTM	0.118	2.441
DTE / DGG / DTM	0.157	1.654
DTE / DGG / DTM	0.197	2.520
DTE / DGG / DTM	0.236	2.402
DTR	0.118	1.732
DTR	0.157	1.260
DTR	0.197	1.890
DTR	0.236	1.890
DTX	0.118	0.866
DTX	0.157	0.787
DTX	0.197	0.787
DTX	0.236	0.906
DTF	0.118	0.787
DTF	0.157	0.787

Insert	Groove width CW (mm)	Face grooving Min. machining dia. DAXMIN (mm)
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
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

External grooving and parting toolholder, for Swiss lathes



Inch	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	HBH	Torque
JCTER/L08-2T12	0.079	2	0.945	0.500	0.500	4.750	0.748	0.500	0.005/0.505	0.051	2.21
JCTER/L08-3T12	0.118	3	0.945	0.500	0.500	4.750	0.748	0.500	0.012/0.512	0.051	2.21
JCTER/L10-2T16	0.079	2	1.260	0.625	0.625	4.750	0.945	0.625	0.005/0.630	-	2.21
JCTER/L10-3T16	0.118	3	1.260	0.625	0.625	4.750	0.945	0.625	0.012/0.637	-	2.21

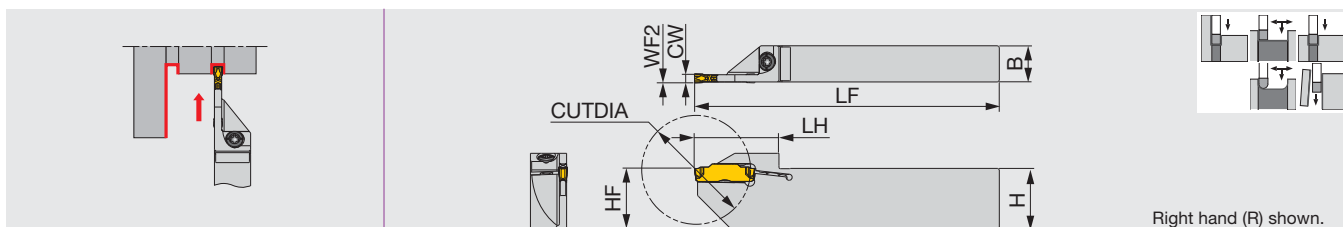
Metric	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	HBH	Torque*
JCTER/L1010X2T10	2	2	20	10	10	120	19	10	0.1/10.1	2	3
JCTER/L1212F2T12	2	2	24	12	12	85	19	12	0.1/12.1	2	3
JCTER/L1212X2T12	2	2	24	12	12	120	19	12	0.1/12.1	2	3
JCTER/L1414-2T12	2	2	24	14	14	125	19	14	0.1/14.1	-	3
JCTER/L1616X2T16	2	2	32	16	16	120	24	16	0.1/16.1	-	3
JCTER/L1212F3T12	3	3	24	12	12	85	19	12	0.3/12.3	2	3
JCTER/L1212X3T12	3	3	24	12	12	120	19	12	0.3/12.3	2	3
JCTER/L1616X3T16	3	3	32	16	16	120	24	16	0.3/16.3	-	3
JCTER/L2020H3T16	3	3	32	20	20	100	24	20	0.3/20.3	-	3

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

Torque: Recommended clamping torque: lbs-ft (*N·m)

JCTER/L2012

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



Metric	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	Torque
JCTER/L2012H2T18	2	2	36	20	12	100	25	20	0.1/12.1	3
JCTER/L2012H3T21	3	3	42	20	12	100	28	20	0.3/12.3	3

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

Torque: Recommended clamping torque: N·m

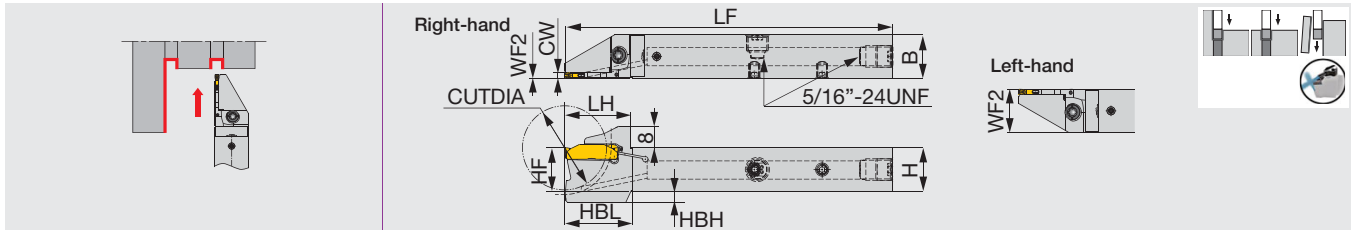
SPARE PARTS

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



JCTER/L-CHP

External grooving and parting toolholder, with high pressure coolant capability



Inch	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	HBH	HBL	Torque
JCTER/L08X2T12-CHP	0.079	2	0.980	0.500	0.500	4.750	0.972	0.500	0 / 0.500	0.169	0.965	2.21
JCTER/L10X2T12-CHP	0.079	2	0.980	0.625	0.625	4.750	0.972	0.625	0 / 0.625	0.039	0.965	2.21
JCTER/L10X2T16-CHP	0.079	2	1.260	0.625	0.625	4.750	0.972	0.625	0 / 0.625	0.157	0.965	2.21
JCTER/L12X2T16-CHP	0.079	2	1.260	0.750	0.750	4.750	0.972	0.750	0 / 0.750	0.037	0.965	2.21

Metric	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	HBH	HBL	Torque*
JCTER/L1212X2T12-CHP	2	2	25	12	12	120	24.7	12	0/12	5	24.7	3
JCTER/L1616X2T12-CHP	2	2	25	16	16	120	24.7	16	0/16	1	24.5	3
JCTER/L1616X2T16-CHP	2	2	32	16	16	120	24.7	16	0/16	4	24.7	3
JCTER/L2020X2T16-CHP	2	2	32	20	20	120	24.7	20	0/20	-	-	3

⁽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.

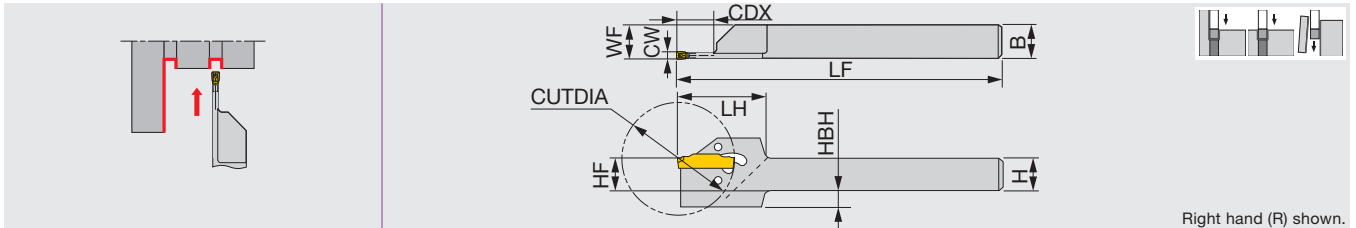
Torque: Recommended clamping torque: lbs-ft (*N-m)

SPARE PARTS

Designation	Clamping screw	Wrench 1	Coolant plug	Wrench 2	DirectJet plug	Wrench 3
JCTER/L...	CSHB-4-A	T-15F	SR 5/16UNF TL360	P-4	SSHM4-6-TB	P-2

CGER/L

External deep grooving and parting toolholder, for Swiss lathes



Metric	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

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

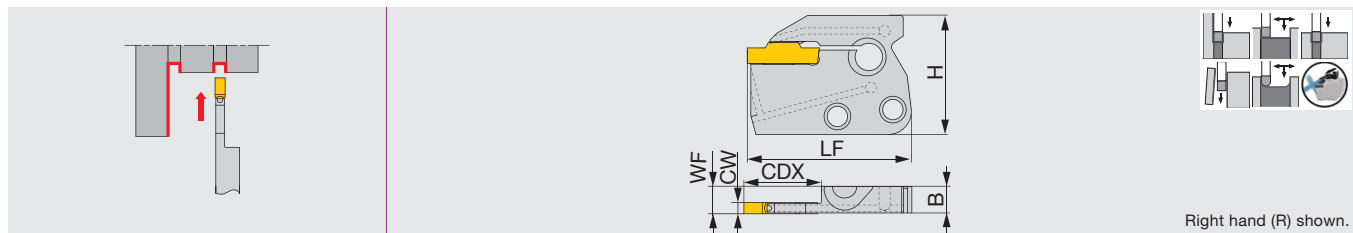
Non-Ferrous Materials
Turning

Grooving

Milling

CAER/L-CHP

External grooving and parting adapter, with high pressure coolant capability



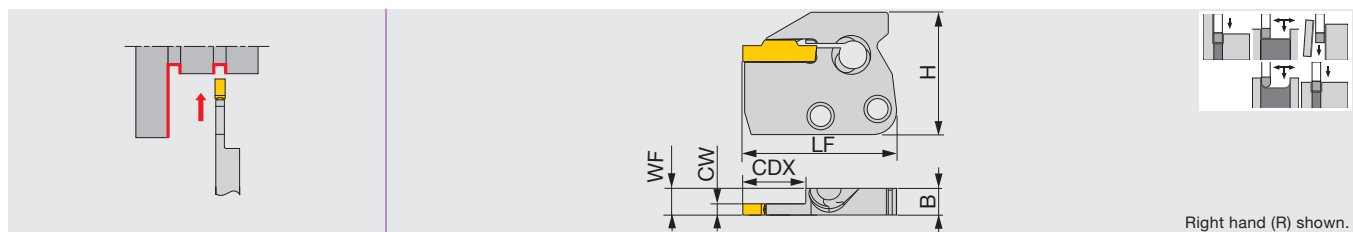
Right hand (R) shown.

Metric	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



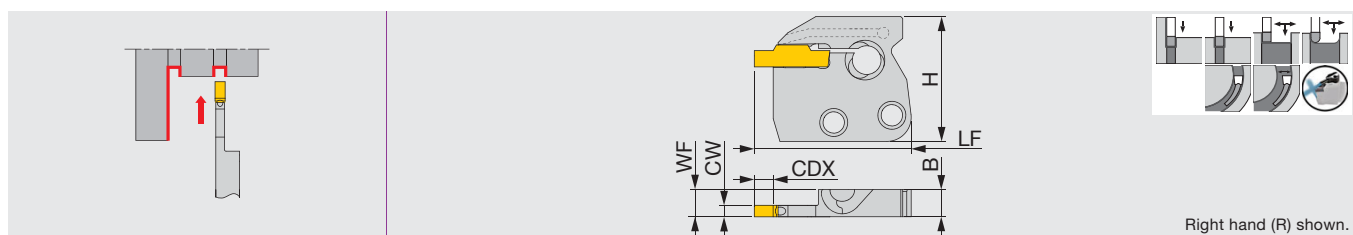
Right hand (R) shown.

Metric	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



Right hand (R) shown.

Metric	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

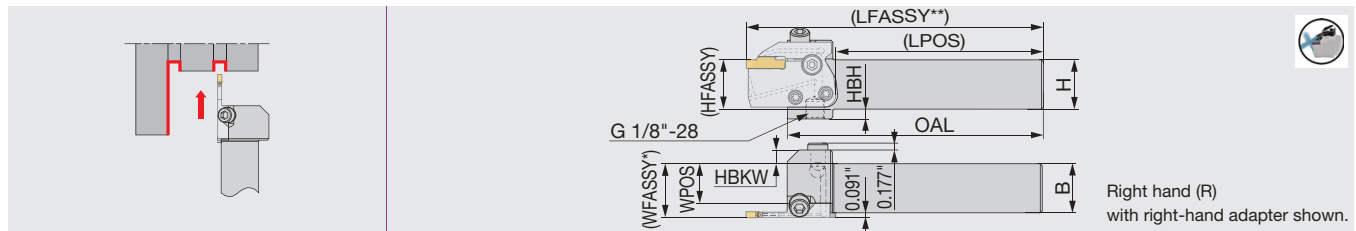
Use the right-hand insert for the right-hand holder with DTF insert.
(1) "WF" value is calculated with groove width "CW" shown in the table.

TUNG CUT

CHSR/L-CHP

Tube connection

Shank for adapter, with high pressure coolant capability



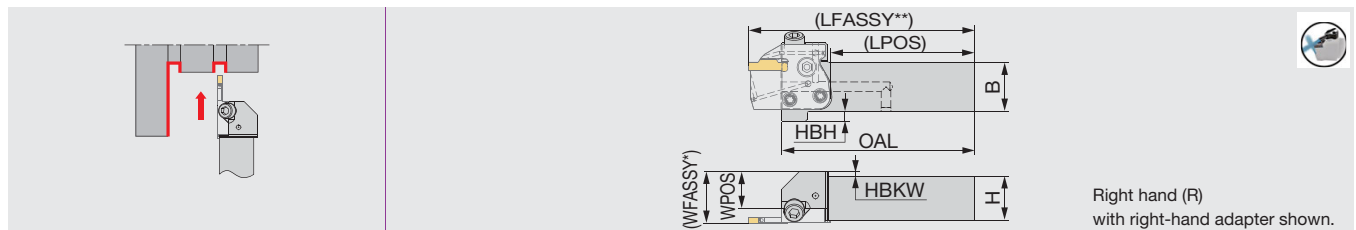
Inch	H	B	OAL	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque
CHSR/L12-CHP	0.750	0.750	5.000	4.035	0.560	0.510	0.750	0.190	CAE*R/L**-CHP, -MD	3.69
CHSR/L16-CHP	1.000	1.000	5.000	4.035	0.810	0.260	1.000	0.200	CAE*R/L**-CHP, -MD	3.69
CHSR/L20-CHP	1.250	1.25	5.5	-	1.057	0.177	1.250	-	CAE*R/L**-CHP, -MD	3.69
Metric	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
CHSR/L3232-CHP	32	32	140	115.5	27.1	-	32	-	CAE*R/L**-CHP, -MD	6.5

WFASSY* : Shank (WPOS) + adapter (WF)
 LFASSY** : Shank (LPOS) + adapter (LF)
 The LFASSY or WFASSY value may change depending on the adapter type
 Torque: Recommended clamping torque: lbs-ft (*N-m)
 Applicable for 30 MPa coolant
 Please see Tungaloy General catalog vol.5 page L059 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



Metric	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)
 The LFASSY or WFASSY value may change depending on the adapter type.
 Torque: Recommended clamping torque: N-m
 Applicable for 30 MPa coolant
 Please see Tungaloy General catalog vol.5 page L059 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	HW 5.0	OR 5X1N	PLUGG1/8ISO1179
CHSR/L**-CHP-MC	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW 5.0	OR 5X1N	-

Recommended clamping torque (lbs-ft, N-m)

Clamping screw	Torque (lbs-ft)	Torque (N-m)
SR M5-04451	1.84	2.5
SR M6X12DIN6912	4.79	6.5
SR M6X20-XT	4.79	6.5

Combination of adapter and shank

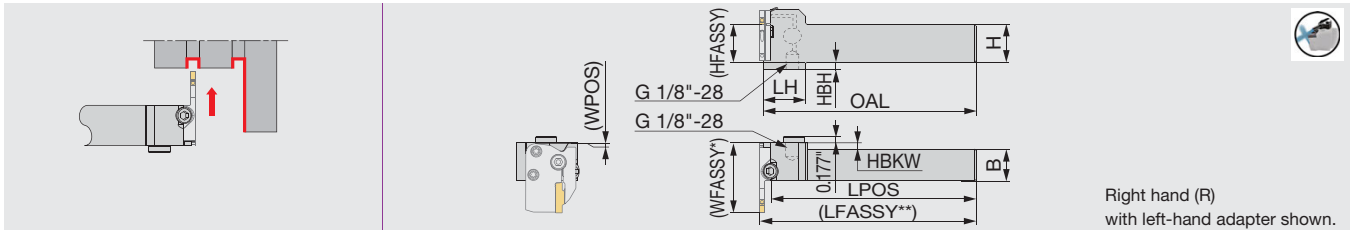
Shank	External grooving adapter		Face grooving adapter		External and face grooving adapter	
	CAER**-CHP, -MD	CAEL**-CHP, -MD	CAFR**-CHP	CAFL**-CHP	CAEFR**-CHP	CAEFL**-CHP
CHSR**-CHP (-MC)	●			●	●	
CHSL**-CHP (-MC)		●	●			●

● : Corresponding

CHFVR/L-CHP

Tube connection

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



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

Inch	H	B	OAL	LH	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque
CHFVR/L12-CHP	0.750	0.750	5.500	1.100	5.307	0.020	0.234	0.750	0.431	CAE*L/R**-CHP, -MD	3.69
CHFVR/L16-CHP	1.000	1.000	5.500	1.100	5.307	0.020	-	1.000	0.200	CAE*L/R**-CHP, -MD	3.69
CHFVR/L20-CHP	1.250	1.250	6	-	-	-	-	1.250	-	CAE*L/R**-CHP, -MD	3.69
Metric	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	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
CHFVR/L3232-CHP	32	32	150	-	145.1	7.3	-	32	-	CAE*L/R**-CHP, -MD	6.5

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

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

The LFASSY or WFASSY value may change depending on the adapter type.

Torque: Recommended clamping torque: lbs-ft (*N·m)

Applicable for 30 MPa coolant

Please see page L059 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	HW 5.0	OR 5X1N	PLUGG1/8ISO1179

Recommended clamping torque (lbs-ft, N·m)

Clamping screw	Torque (lbs-ft)	Torque (N·m)
SR M5-04451	1.84	2.5
SR M6X12DIN6912	4.79	6.5
SR M6X20-XT	4.79	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	●			●	●	

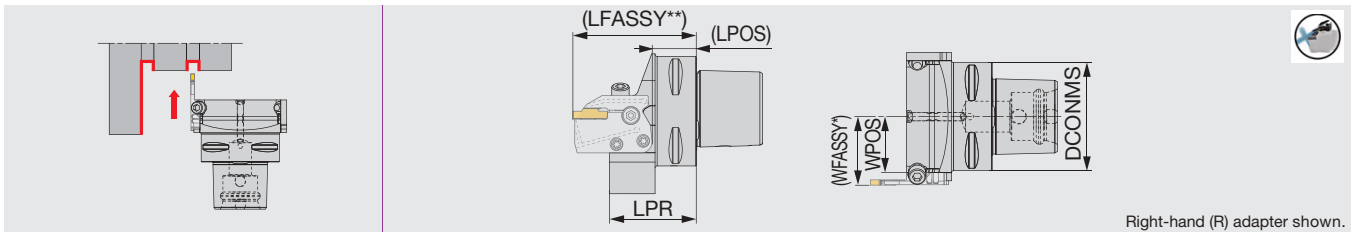
● : Corresponding

TUNGCAP

C*CHSN-CHP

Direct connection

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



Right-hand (R) adapter shown.

Metric	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)

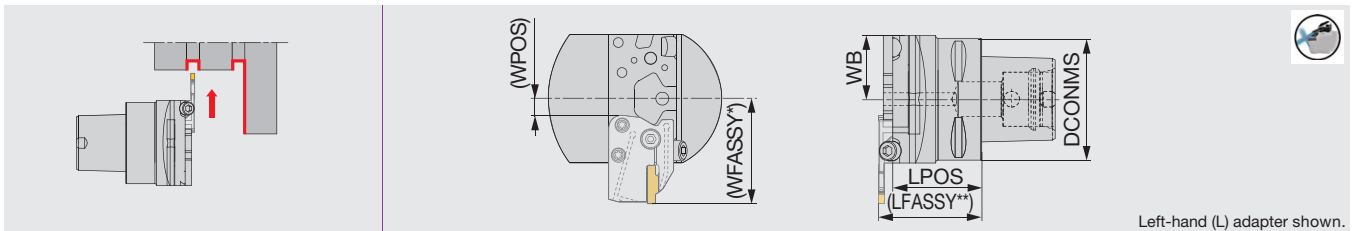
Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L059 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



Left-hand (L) adapter shown.

Metric	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 L059 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

Turning

Cast Iron

Grooving

Milling

Hardened Materials

Turning

CBN

Grooving

Hardened Materials

Turning

Cast Iron

Milling

Superalloys

Turning

Sintered metal

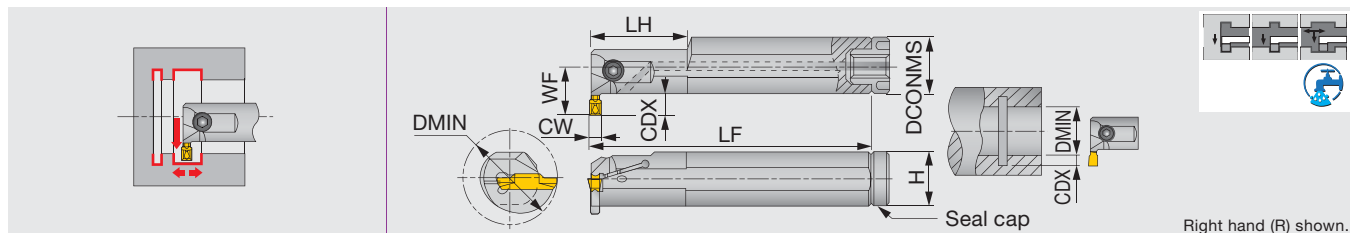
Turning

PCD

Non-Ferrous Materials

Grooving

Internal grooving and turning toolholder



Inch	CW	DMIN	Seat size	CDX	DCONMS	H	LF ⁽¹⁾	LH	WF	Insert	Torque
CTIR/L12-3T06-D16	0.118	1.000	3	0.236	0.750	0.551	6.500	1.575	0.609	DTI..., DTX...	3.69
CTIR/L16-3T05-D16	0.118	1.000	3	0.201	1.000	0.709	8.000	1.575	0.689	DTI..., DTX...	3.69
CTIR/L16-3T08-D20	0.118	1.250	3	0.315	1.000	0.709	8.000	1.575	0.846	DTI..., DTX...	3.69
CTIR/L20-3T10-D25	0.118	1.563	3	0.394	1.250	0.906	10.000	2.362	1.063	DTI..., DTX...	3.69
CTIR/L12-4T06-D16	0.157	1.000	4	0.236	0.750	0.906	6.500	1.575	0.609	DTI..., DTX...	3.69
CTIR/L16-4T08-D20	0.157	1.250	4	0.315	1.000	1.181	8.000	1.575	0.846	DTI..., DTX...	3.69
CTIR/L20-4T04-D20	0.157	1.250	4	0.157	1.250	0.709	10.000	2.362	0.819	DTI..., DTX...	3.69
CTIR/L20-4T10-D25	0.157	1.563	4	0.394	1.250	0.906	10.000	2.362	1.063	DTI..., DTX...	3.69
CTIR/L16-5T05-D20	0.197	1.250	5	0.197	1.000	1.181	8.000	2.362	0.681	DTI..., DTX...	6.27
CTIR/L20-5T10-D25	0.197	1.563	5	0.394	1.250	1.181	10.000	2.362	1.063	DTI..., DTX...	6.27
CTIR/L20-6T04-D20	0.236	1.250	6	0.157	1.250	0.906	10.000	2.362	0.820	DTI..., DTX...	6.27
CTIR/L20-6T10-D25	0.236	1.563	6	0.394	1.250	1.181	10.000	2.362	1.063	DTI..., DTX...	6.27
CTIR/L20-8T05-D23	0.315	1.438	8	0.197	1.250	1.181	10.000	2.362	0.839	DTI..., DTX...	6.27
CTIR/L24-8T05-D26	0.315	1.625	8	0.228	1.500	1.181	12.000	2.559	0.982	DTI..., DTX...	6.27

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

Torque: Recommended clamping torque: lbs-ft

INCH
SPARE PARTS


Designation	Clamping screw	Wrench	Seal cap	Thread type for connection
CTIR/L12-3T06-D16	CM5x0.8x12-A	P-4	CA-20	M6
CTIR/L16-3T05-D16	CM5x0.8x16-A	P-4	CA-25	R1/8"
CTIR/L16-3T08-D20	CM5x0.8x16-A	P-4	CA-25	R1/8"
CTIR/L20-3T10-D25	CM5x0.8x16-A	P-4	CA-32	R1/8"
CTIR/L12-4T06-D16	CM5x0.8x12-A	P-4	CA-20	M6
CTIR/L16-4T08-D20	CM5x0.8x16-A	P-4	CA-25	R1/8"
CTIR/L20-4T04-D20	CM5x0.8x16-A	P-4	CA-32	R1/8"
CTIR/L20-4T10-D25	CM5x0.8x16-A	P-4	CA-32	R1/8"
CTIR/L16-5T05-D20	CM6x1x16-A	P-5	CA-25	R1/8"
CTIR/L20-5T10-D25	CM6x1x20-A	P-5	CA-32	R1/8"
CTIR/L20-6T04-D20	CM6x1x20-A	P-5	CA-32	R1/8"
CTIR/L20-6T10-D25	CM6x1x20-A	P-5	CA-32	R1/8"
CTIR/L20-8T05-D23	CM6x1x20-A	P-5	CA-32	R1/8"
CTIR/L24-8T05-D26	CM6x1x25-A	P-5	CA-40	R1/8"

When using the inserts that are not in the above

Insert	Groove width CW (in)	Min. diameter DMIN (in)
DGM / DGS / SGN / DGL / DTM	0.079	1.969
DGM / DGS / SGN / DGL / DTM	0.118	1.969
DGM / DGS / SGN / DTM / DGL	0.157	1.969
DGM / DGS / DTM / DGL	0.197	2.362
DGM / DGS / DTM / DGL	0.236	2.362
DGM / DGS / DTM	0.315	2.756
DTE / DGG	0.118	1.575
DTE / DGG	0.157	1.575
DTE / DGG	0.197	1.969
DTE / DGG	0.236	1.969
DTE / DGG	0.315	2.441
DTR	0.079	1.772
DTR	0.118	1.496
DTR	0.157	1.496
DTR	0.197	1.693
DTR	0.236	1.811
DTR	0.315	2.205

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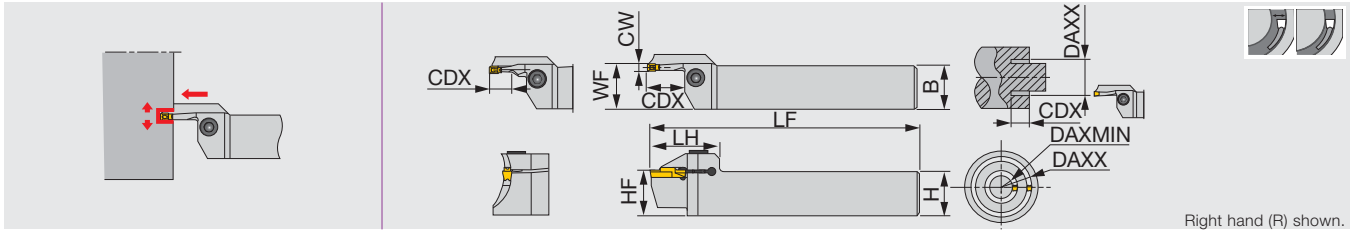
METRIC SPARE PARTS



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

Face grooving and turning toolholder



Metric	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

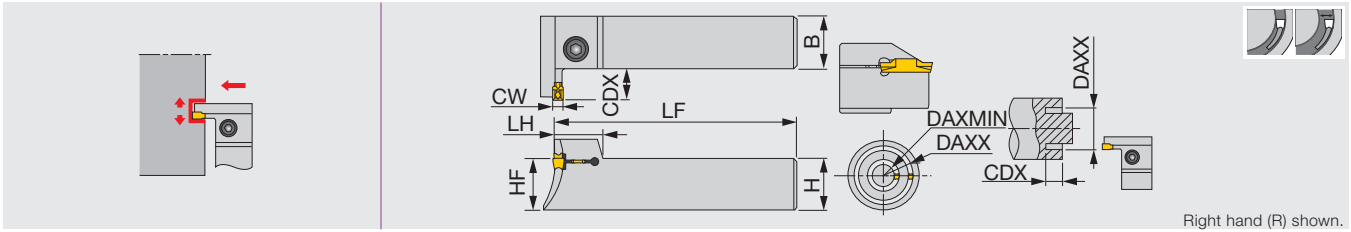
INSERT

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

CTFVR/L

Face grooving and turning perpendicular toolholder



Metric	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

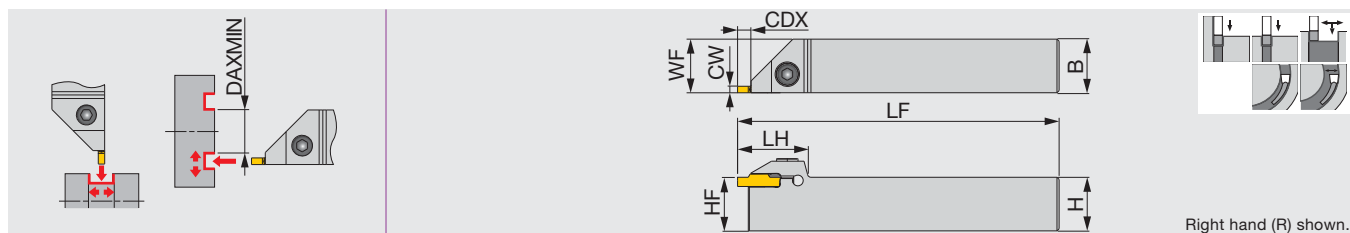
INSERT

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

External face grooving and turning toolholder



Right hand (R) shown.

Inch	CW	Seat size	CDX	H	B	LF	LH	HF	WF ⁽¹⁾	Torque
CTEFR/L12-4T04	0.157	2, 3, 4	0.189	0.750	0.750	5.000	1.300	0.750	0.770	6.27
CTEFR/L16-4T04	0.157	2, 3, 4	0.189	1.000	1.000	6.000	1.300	1.000	1.020	6.27
CTEFR/L12-6T04	0.236	5, 6	0.189	0.750	0.750	5.000	1.460	0.750	0.770	6.27
CTEFR/L16-6T04	0.236	5, 6	0.189	1.000	1.000	6.000	1.460	1.000	1.020	6.27

Metric	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

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

Torque: Recommended clamping torque: lbs-ft (*N·m)

INCH
SPARE PARTS

Designation	Clamping screw	Wrench
CTEFR/L12-4T04	CM6X1X20-A	P-5
CTEFR/L16-4T04	CM6X1X25-A	P-5
CTEFR/L12-6T04	CM6X1X20-A	P-5
CTEFR/L16-6T04	CM6X1X25-A	P-5

METRIC
SPARE PARTS

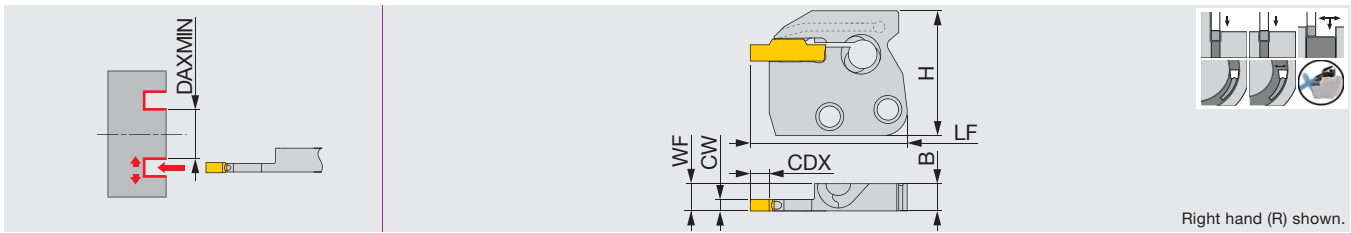
Designation	Clamping screw	Wrench
CTEFR/L2020-4T04	CM6X1X20-A	P-5
CTEFR/L2525-4T04	CM6X1X25-A	P-5
CTEFR/L2020-6T04	CM6X1X20-A	P-5
CTEFR/L2525-6T04	CM6X1X25-A	P-5

Insert	Groove width CW (in)	Face grooving Min. machining dia. DAXMIN (in)
DGM / DGS / SGN / DGL	0.079	11.614
DGM / DGS / SGN / DGL	0.118	3.622
DGM / DGS / SGN / DGL	0.157	1.457
DGM / DGS / SGN / DGL	0.197	2.362
DGM / DGS / DGL	0.236	2.244
DTX / DTM / DTR	0.079	11.614
DTE / DGG / DTM	0.118	2.441
DTE / DGG / DTM	0.157	1.654
DTE / DGG / DTM	0.197	2.520
DTE / DGG / DTM	0.236	2.402
DTR	0.118	1.732
DTR	0.157	1.260
DTR	0.197	1.890
DTR	0.236	1.890
DTX	0.118	0.866
DTX	0.157	0.787
DTX	0.197	0.787
DTX	0.236	0.906
DTF	0.118	0.787
DTF	0.157	0.787

Insert	Groove width CW (mm)	Face grooving Min. machining dia. DAXMIN (mm)
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
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

CAEFR/L-CHP

Face and external grooving adapter, with high pressure coolant capability



Right hand (R) shown.

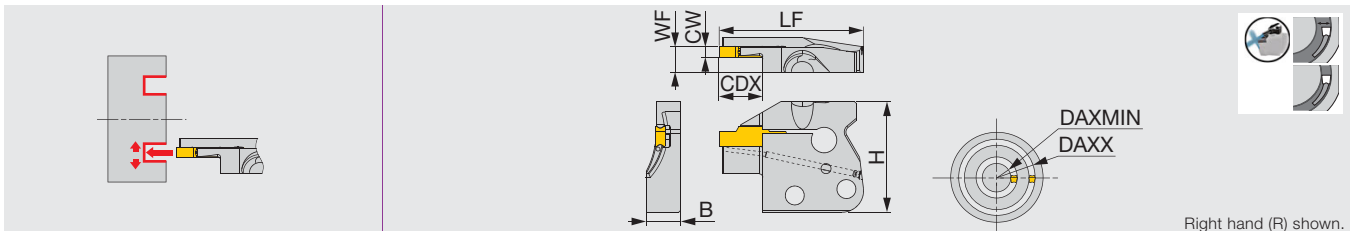
Metric	CW	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAEFR/L-4T04-CHP	4	2,3,4	4.8	33	7.2	41.5	7.7
CAEFR/L-6T04-CHP	6	5,6	4.8	33	7.2	46.3	7.8

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

TUNG CUT

CAFR/L-CHP

Face grooving and turning adapter, with high pressure coolant capability



Right hand (R) shown.

Metric	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

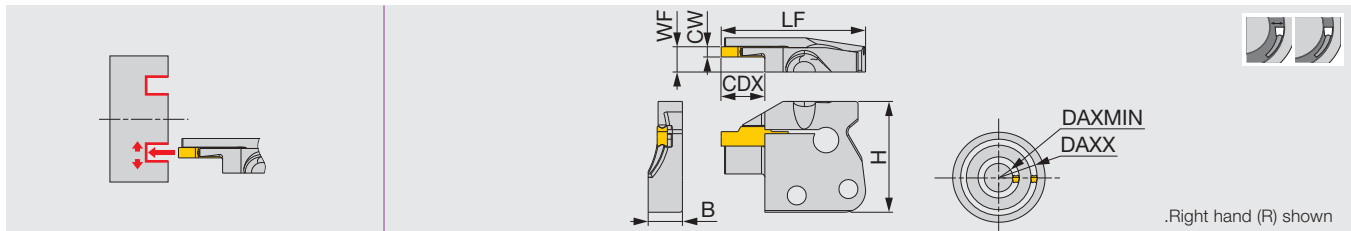
When groove depth is larger than (insert length - 1.5 mm), please use 1-cornered insert.
Max. groove depth will be 15 mm with DTF insert.

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



Metric	HAND	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAFR-3T12-040055-MD	R	0.118	1.575	2.165	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-040055-MD	L	0.118	1.575	2.165	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-055075-MD	R	0.118	2.165	2.953	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-055075-MD	L	0.118	2.165	2.953	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-075100-MD	R	0.118	2.953	3.937	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-075100-MD	L	0.118	2.953	3.937	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-100140-MD	R	0.118	3.937	5.512	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-100140-MD	L	0.118	3.937	5.512	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-140200-MD	R	0.118	5.512	7.874	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-140200-MD	L	0.118	5.512	7.874	3	0.472	1.299	0.402	1.693	0.295
CAFR-4T16-050070-MD	R	0.157	1.968	2.756	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-050070-MD	L	0.157	1.968	2.756	4	0.630	1.299	0.402	1.693	0.315
CAFR-4T16-070100-MD	R	0.157	2.756	3.937	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-070100-MD	L	0.157	2.756	3.937	4	0.630	1.299	0.402	1.693	0.315
CAFR-4T16-100150-MD	R	0.157	3.937	5.906	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-100150-MD	L	0.157	3.937	5.906	4	0.630	1.299	0.402	1.693	0.315
CAFR-4T16-150250-MD	R	0.157	5.906	9.843	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-150250-MD	L	0.157	5.906	9.843	4	0.630	1.299	0.402	1.693	0.315
CAFR-5T20-055080-MD	R	0.197	2.165	3.15	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-055080-MD	L	0.197	2.165	3.15	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-080120-MD	R	0.197	3.15	4.724	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-080120-MD	L	0.197	3.15	4.724	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-120180-MD	R	0.197	4.724	7.087	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-120180-MD	L	0.197	4.724	7.087	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-180300-MD	R	0.197	7.087	11.811	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-180300-MD	L	0.197	7.087	11.811	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-300000-MD	R	0.197	11.811	-	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-300000-MD	L	0.197	11.811	-	5	0.787	1.299	0.402	1.850	0.335
CAFR-6T25-060090-MD	R	0.236	2.362	3.543	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-060090-MD	L	0.236	2.362	3.543	6	0.984	1.299	0.402	2.047	0.354
CAFR-6T25-090150-MD	R	0.236	3.543	5.906	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-090150-MD	L	0.236	3.543	5.906	6	0.984	1.299	0.402	2.047	0.354
CAFR-6T25-150250-MD	R	0.236	5.906	9.843	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-150250-MD	L	0.236	5.906	9.843	6	0.984	1.299	0.402	2.047	0.354
CAFR-6T25-250400-MD	R	0.236	9.843	15.748	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-250400-MD	L	0.236	9.843	15.748	6	0.984	1.299	0.402	2.047	0.354

When groove depth is larger than (insert length - 0.059"), please use 1-cornered insert.

Max. groove depth will be 0.591" 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.

⁽²⁾ Non-stocked products (to be supplied on request)

Insert	Groove width CW (in)	Face grooving Min. machining dia. DAXMIN (in)
DGM / DGS / SGN / DGL	0.079	11.614
DGM / DGS / SGN / DGL	0.118	3.622
DGM / DGS / SGN / DGL	0.157	1.457
DGM / DGS / SGN / DGL	0.197	2.362
DGM / DGS / DGL	0.236	2.244
DTX / DTM / DTR	0.079	11.614
DTE / DGG / DTM	0.118	2.441
DTE / DGG / DTM	0.157	1.654
DTE / DGG / DTM	0.197	2.520
DTE / DGG / DTM	0.236	2.402

Insert	Groove width CW (in)	Face grooving Min. machining dia. DAXMIN (in)
DTR	0.118	1.732
DTR	0.157	1.260
DTR	0.197	1.890
DTR	0.236	1.890
DTX	0.118	0.866
DTX	0.157	0.787
DTX	0.197	0.787
DTX	0.236	0.906
DTF	0.118	0.787
DTF	0.157	0.787

Metric	HAND	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAFR-3T12-040055-MD	R	3	40	55	3	12	33	10.2	43	7.5
CAFL-3T12-040055-MD	L	3	40	55	3	12	33	10.2	43	7.5
CAFR-3T12-055075-MD	R	3	55	75	3	12	33	10.2	43	7.5
CAFL-3T12-055075-MD ⁽²⁾	L	3	55	75	3	12	33	10.2	43	7.5
CAFR-3T12-075100-MD	R	3	75	100	3	12	33	10.2	43	7.5
CAFL-3T12-075100-MD	L	3	75	100	3	12	33	10.2	43	7.5
CAFR-3T12-100140-MD	R	3	100	140	3	12	33	10.2	43	7.5
CAFL-3T12-100140-MD	L	3	100	140	3	12	33	10.2	43	7.5
CAFR-3T12-140200-MD	R	3	140	200	3	12	33	10.2	43	7.5
CAFL-3T12-140200-MD	L	3	140	200	3	12	33	10.2	43	7.5
CAFR-4T16-050070-MD	R	4	50	70	4	16	33	10.2	43	8
CAFL-4T16-050070-MD	L	4	50	70	4	16	33	10.2	43	8
CAFR-4T16-070100-MD	R	4	70	100	4	16	33	10.2	43	8
CAFL-4T16-070100-MD ⁽²⁾	L	4	70	100	4	16	33	10.2	43	8
CAFR-4T16-100150-MD	R	4	100	150	4	16	33	10.2	43	8
CAFL-4T16-100150-MD ⁽²⁾	L	4	100	150	4	16	33	10.2	43	8
CAFR-4T16-150250-MD	R	4	150	250	4	16	33	10.2	43	8
CAFL-4T16-150250-MD ⁽²⁾	L	4	150	250	4	16	33	10.2	43	8
CAFR-5T20-055080-MD	R	5	55	80	5	20	33	10.2	47	8.5
CAFL-5T20-055080-MD ⁽²⁾	L	5	55	80	5	20	33	10.2	47	8.5
CAFR-5T20-080120-MD ⁽²⁾	R	5	80	120	5	20	33	10.2	47	8.5
CAFL-5T20-080120-MD ⁽²⁾	L	5	80	120	5	20	33	10.2	47	8.5
CAFR-5T20-120180-MD	R	5	120	180	5	20	33	10.2	47	8.5
CAFL-5T20-120180-MD	L	5	120	180	5	20	33	10.2	47	8.5
CAFR-5T20-180300-MD	R	5	180	300	5	20	33	10.2	47	8.5
CAFL-5T20-180300-MD ⁽²⁾	L	5	180	300	5	20	33	10.2	47	8.5
CAFR-5T20-300000-MD	R	5	300	∞	5	20	33	10.2	47	8.5
CAFL-5T20-300000-MD	L	5	300	∞	5	20	33	10.2	47	8.5
CAFR-6T25-060090-MD ⁽²⁾	R	6	60	90	6	25	33	10.2	52	9
CAFL-6T25-060090-MD ⁽²⁾	L	6	60	90	6	25	33	10.2	52	9
CAFR-6T25-090150-MD	R	6	90	150	6	25	33	10.2	52	9
CAFL-6T25-090150-MD	L	6	90	150	6	25	33	10.2	52	9
CAFR-6T25-150250-MD	R	6	150	250	6	25	33	10.2	52	9
CAFL-6T25-150250-MD ⁽²⁾	L	6	150	250	6	25	33	10.2	52	9
CAFR-6T25-250400-MD ⁽²⁾	R	6	250	400	6	25	33	10.2	52	9
CAFL-6T25-250400-MD ⁽²⁾	L	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.

⁽²⁾ Non-stocked products (to be supplied on request)

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

Grooving

Milling

Turning

Grooving

Milling

Turning

Hardened Materials

Grooving

CBN

Turning

Grooving

Turning

Milling

Turning

Turning

Turning

PCD

Turning

Grooving

Milling

Turning

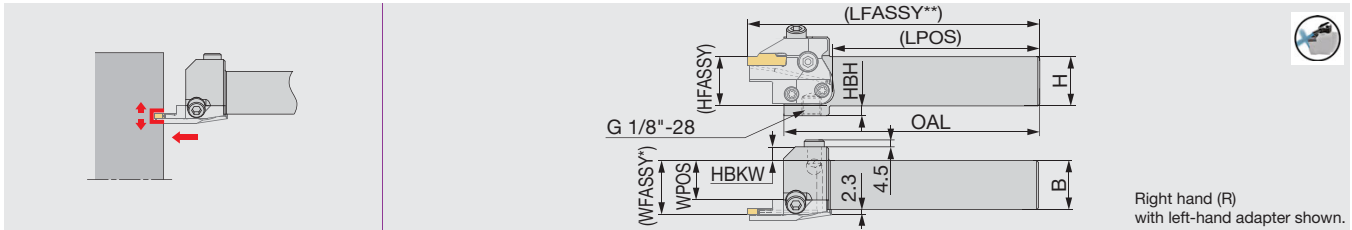
Grooving

Milling

CHSR/L-CHP

Tube connection

Shank for adapter, with high pressure coolant capability



Inch	H	B	OAL	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque
CHSR/L12-CHP	0.750	0.750	5.000	4.035	0.560	0.510	0.750	0.190	CAE*R/L**-CHP, -MD	3.69
CHSR/L16-CHP	1.000	1.000	5.000	4.035	0.810	0.260	1.000	0.200	CAE*R/L**-CHP, -MD	3.69
CHSR/L20-CHP	1.250	1.25	5.5	-	1.057	0.177	1.250	-	CAE*R/L**-CHP, -MD	3.69
Metric	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
CHSR/L3232-CHP	32	32	140	115.5	27.1	-	32	-	CAE*R/L**-CHP, -MD	6.5

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

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

The LFASSY or WFASSY value may change depending on the adapter type.

Torque: Recommended clamping torque: lbs-ft (*N-m)

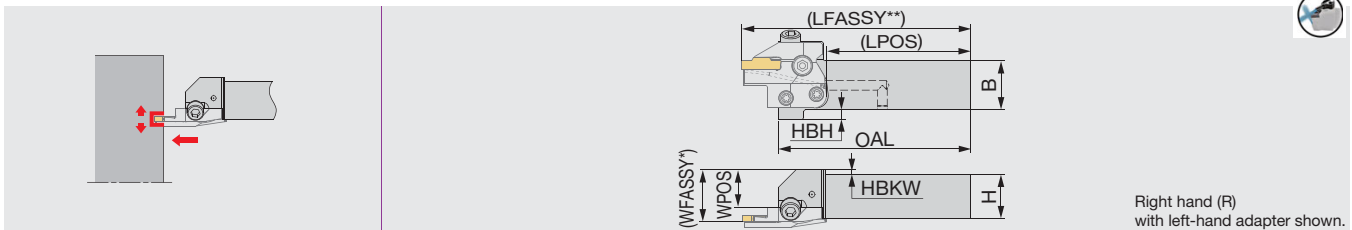
Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L059 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



Metric	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 L059 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	HW 5.0	OR 5X1N	PLUGG1/8ISO1179
CHSR/L**-CHP-MC	SR M5-04451	T-20/5	SR M6X12DIN6912	SR M6X20-XT	HW 5.0	OR 5X1N	-

Recommended clamping torque (lbs-ft, N-m)

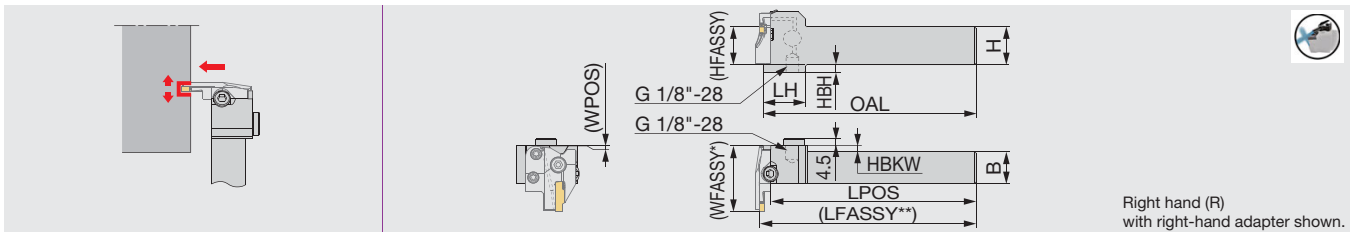
Clamping screw	Torque (lbs-ft)	Torque (N-m)
SR M5-04451	1.84	2.5
SR M6X12DIN6912	4.79	6.5
SR M6X20-XT	4.79	6.5

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



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

Inch	H	B	OAL	LH	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque
CHFVR/L12-CHP	0.750	0.750	5.500	1.100	5.307	0.020	0.234	0.750	0.431	CA*FR/L**-CHP	3.69
CHFVR/L16-CHP	1.000	1.000	5.500	1.100	5.307	0.020	-	1.000	0.200	CA*FR/L**-CHP	3.69
Metric	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)

The LFASSY or WFASSY value may change depending on the adapter type.

Torque: Recommended clamping torque: lbs-ft (*N-m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L059 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	HW 5.0	OR 5X1N	PLUGG1/8ISO1179

Recommended clamping torque (lbs-ft, N-m)

Clamping screw	Torque (lbs-ft)	Torque (N-m)
SR M5-04451	1.84	2.5
SR M6X12DIN6912	4.79	6.5
SR M6X20-XT	4.79	6.5

Combination of adapter and shank

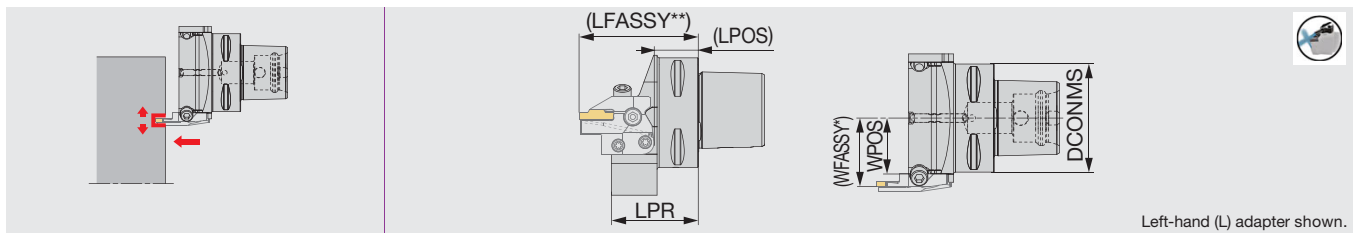
Shank	External grooving adapter		Face grooving adapter		External and face grooving adapter	
	CAER**-CHP, -MD	CAEL**-CHP, -MD	CAFR**-CHP	CAFL**-CHP	CAEFR**-CHP	CAEFL**-CHP
CHFVR**-CHP		●	●			●
CHFVL**-CHP	●			●	●	

● : Corresponding

C*CHSN-CHP

Direct connection

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



Left-hand (L) adapter shown.

Metric	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 L059 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

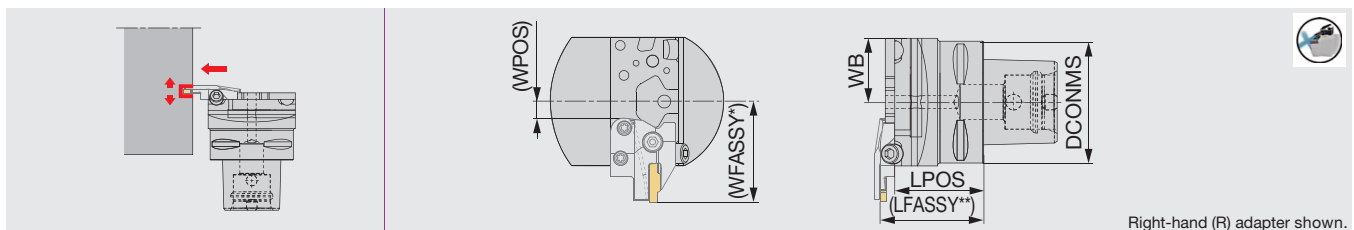
Recommended clamping torque (N·m)

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

C*CHFVN-CHP

Direct connection

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



Right-hand (R) adapter shown.

Metric	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 (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 L059 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

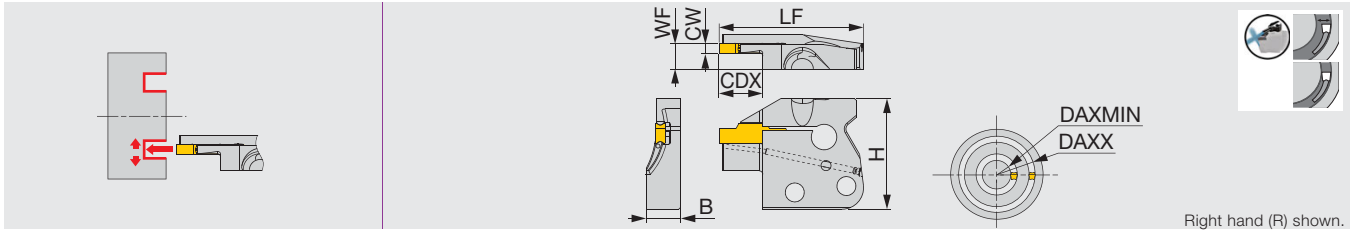
Recommended clamping torque (N·m)

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

TUNG CUT

CAFR/L-CHP

Face grooving and turning adapter, with high pressure coolant capability



Metric	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

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

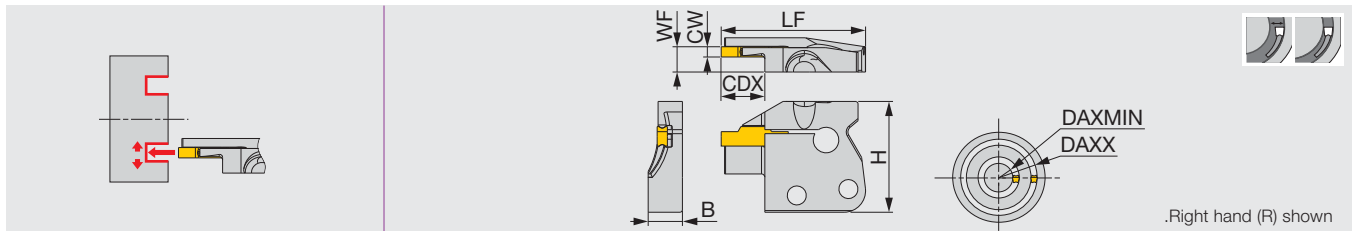
PCD

Turning

Grooving

Milling

Non-Ferrous Materials



Metric	HAND	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAFR-3T12-040055-MD	R	0.118	1.575	2.165	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-040055-MD	L	0.118	1.575	2.165	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-055075-MD	R	0.118	2.165	2.953	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-055075-MD	L	0.118	2.165	2.953	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-075100-MD	R	0.118	2.953	3.937	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-075100-MD	L	0.118	2.953	3.937	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-100140-MD	R	0.118	3.937	5.512	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-100140-MD	L	0.118	3.937	5.512	3	0.472	1.299	0.402	1.693	0.295
CAFR-3T12-140200-MD	R	0.118	5.512	7.874	3	0.472	1.299	0.402	1.693	0.295
CAFL-3T12-140200-MD	L	0.118	5.512	7.874	3	0.472	1.299	0.402	1.693	0.295
CAFR-4T16-050070-MD	R	0.157	1.968	2.756	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-050070-MD	L	0.157	1.968	2.756	4	0.630	1.299	0.402	1.693	0.315
CAFR-4T16-070100-MD	R	0.157	2.756	3.937	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-070100-MD	L	0.157	2.756	3.937	4	0.630	1.299	0.402	1.693	0.315
CAFR-4T16-100150-MD	R	0.157	3.937	5.906	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-100150-MD	L	0.157	3.937	5.906	4	0.630	1.299	0.402	1.693	0.315
CAFR-4T16-150250-MD	R	0.157	5.906	9.843	4	0.630	1.299	0.402	1.693	0.315
CAFL-4T16-150250-MD	L	0.157	5.906	9.843	4	0.630	1.299	0.402	1.693	0.315
CAFR-5T20-055080-MD	R	0.197	2.165	3.15	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-055080-MD	L	0.197	2.165	3.15	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-080120-MD	R	0.197	3.15	4.724	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-080120-MD	L	0.197	3.15	4.724	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-120180-MD	R	0.197	4.724	7.087	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-120180-MD	L	0.197	4.724	7.087	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-180300-MD	R	0.197	7.087	11.811	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-180300-MD	L	0.197	7.087	11.811	5	0.787	1.299	0.402	1.850	0.335
CAFR-5T20-300000-MD	R	0.197	11.811	-	5	0.787	1.299	0.402	1.850	0.335
CAFL-5T20-300000-MD	L	0.197	11.811	-	5	0.787	1.299	0.402	1.850	0.335
CAFR-6T25-060090-MD	R	0.236	2.362	3.543	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-060090-MD	L	0.236	2.362	3.543	6	0.984	1.299	0.402	2.047	0.354
CAFR-6T25-090150-MD	R	0.236	3.543	5.906	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-090150-MD	L	0.236	3.543	5.906	6	0.984	1.299	0.402	2.047	0.354
CAFR-6T25-150250-MD	R	0.236	5.906	9.843	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-150250-MD	L	0.236	5.906	9.843	6	0.984	1.299	0.402	2.047	0.354
CAFR-6T25-250400-MD	R	0.236	9.843	15.748	6	0.984	1.299	0.402	2.047	0.354
CAFL-6T25-250400-MD	L	0.236	9.843	15.748	6	0.984	1.299	0.402	2.047	0.354

When groove depth is larger than (insert length - 0.059"), please use 1-cornered insert.

Max. groove depth will be 0.591" 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.

⁽²⁾ Non-stocked products (to be supplied on request)

Insert	Groove width CW (in)	Face grooving Min. machining dia. DAXMIN (in)
DGM / DGS / SGN / DGL	0.079	11.614
DGM / DGS / SGN / DGL	0.118	3.622
DGM / DGS / SGN / DGL	0.157	1.457
DGM / DGS / SGN / DGL	0.197	2.362
DGM / DGS / DGL	0.236	2.244
DTX / DTM / DTR	0.079	11.614
DTE / DGG / DTM	0.118	2.441
DTE / DGG / DTM	0.157	1.654
DTE / DGG / DTM	0.197	2.520
DTE / DGG / DTM	0.236	2.402

Insert	Groove width CW (in)	Face grooving Min. machining dia. DAXMIN (in)
DTR	0.118	1.732
DTR	0.157	1.260
DTR	0.197	1.890
DTR	0.236	1.890
DTX	0.118	0.866
DTX	0.157	0.787
DTX	0.197	0.787
DTX	0.236	0.906
DTF	0.118	0.787
DTF	0.157	0.787

Metric	HAND	CW	DAXMIN	DAXX	Seat size	CDX	H	B	LF	WF ⁽¹⁾
CAFR-3T12-040055-MD	R	3	40	55	3	12	33	10.2	43	7.5
CAFL-3T12-040055-MD	L	3	40	55	3	12	33	10.2	43	7.5
CAFR-3T12-055075-MD	R	3	55	75	3	12	33	10.2	43	7.5
CAFL-3T12-055075-MD ⁽²⁾	L	3	55	75	3	12	33	10.2	43	7.5
CAFR-3T12-075100-MD	R	3	75	100	3	12	33	10.2	43	7.5
CAFL-3T12-075100-MD	L	3	75	100	3	12	33	10.2	43	7.5
CAFR-3T12-100140-MD	R	3	100	140	3	12	33	10.2	43	7.5
CAFL-3T12-100140-MD	L	3	100	140	3	12	33	10.2	43	7.5
CAFR-3T12-140200-MD	R	3	140	200	3	12	33	10.2	43	7.5
CAFL-3T12-140200-MD	L	3	140	200	3	12	33	10.2	43	7.5
CAFR-4T16-050070-MD	R	4	50	70	4	16	33	10.2	43	8
CAFL-4T16-050070-MD	L	4	50	70	4	16	33	10.2	43	8
CAFR-4T16-070100-MD	R	4	70	100	4	16	33	10.2	43	8
CAFL-4T16-070100-MD ⁽²⁾	L	4	70	100	4	16	33	10.2	43	8
CAFR-4T16-100150-MD	R	4	100	150	4	16	33	10.2	43	8
CAFL-4T16-100150-MD ⁽²⁾	L	4	100	150	4	16	33	10.2	43	8
CAFR-4T16-150250-MD	R	4	150	250	4	16	33	10.2	43	8
CAFL-4T16-150250-MD ⁽²⁾	L	4	150	250	4	16	33	10.2	43	8
CAFR-5T20-055080-MD	R	5	55	80	5	20	33	10.2	47	8.5
CAFL-5T20-055080-MD ⁽²⁾	L	5	55	80	5	20	33	10.2	47	8.5
CAFR-5T20-080120-MD ⁽²⁾	R	5	80	120	5	20	33	10.2	47	8.5
CAFL-5T20-080120-MD ⁽²⁾	L	5	80	120	5	20	33	10.2	47	8.5
CAFR-5T20-120180-MD	R	5	120	180	5	20	33	10.2	47	8.5
CAFL-5T20-120180-MD	L	5	120	180	5	20	33	10.2	47	8.5
CAFR-5T20-180300-MD	R	5	180	300	5	20	33	10.2	47	8.5
CAFL-5T20-180300-MD ⁽²⁾	L	5	180	300	5	20	33	10.2	47	8.5
CAFR-5T20-300000-MD	R	5	300	∞	5	20	33	10.2	47	8.5
CAFL-5T20-300000-MD	L	5	300	∞	5	20	33	10.2	47	8.5
CAFR-6T25-060090-MD ⁽²⁾	R	6	60	90	6	25	33	10.2	52	9
CAFL-6T25-060090-MD ⁽²⁾	L	6	60	90	6	25	33	10.2	52	9
CAFR-6T25-090150-MD	R	6	90	150	6	25	33	10.2	52	9
CAFL-6T25-090150-MD	L	6	90	150	6	25	33	10.2	52	9
CAFR-6T25-150250-MD	R	6	150	250	6	25	33	10.2	52	9
CAFL-6T25-150250-MD ⁽²⁾	L	6	150	250	6	25	33	10.2	52	9
CAFR-6T25-250400-MD ⁽²⁾	R	6	250	400	6	25	33	10.2	52	9
CAFL-6T25-250400-MD ⁽²⁾	L	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.

⁽²⁾ Non-stocked products (to be supplied on request)

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

Grooving

Milling

Turning

Grooving

Milling

Turning

Hardened Materials

CBN

Turning

Grooving

Turning

Milling

Turning

Turning

Sintered metal

PCD

Turning

Grooving

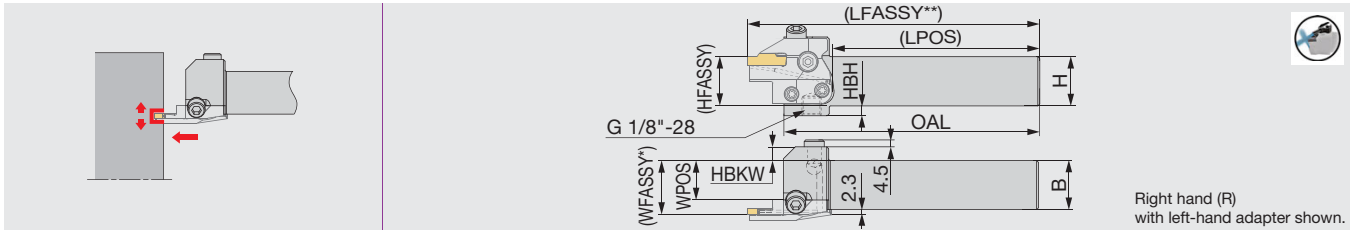
Milling

Turning

Grooving

Milling

Shank for adapter, with high pressure coolant capability



Inch	H	B	OAL	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque
CHSR/L12-CHP	0.750	0.750	5.000	4.035	0.560	0.510	0.750	0.190	CAE*R/L**-CHP, -MD	3.69
CHSR/L16-CHP	1.000	1.000	5.000	4.035	0.810	0.260	1.000	0.200	CAE*R/L**-CHP, -MD	3.69
CHSR/L20-CHP	1.250	1.25	5.5	-	1.057	0.177	1.250	-	CAE*R/L**-CHP, -MD	3.69
Metric	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
CHSR/L3232-CHP	32	32	140	115.5	27.1	-	32	-	CAE*R/L**-CHP, -MD	6.5

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

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

The LFASSY or WFASSY value may change depending on the adapter type.

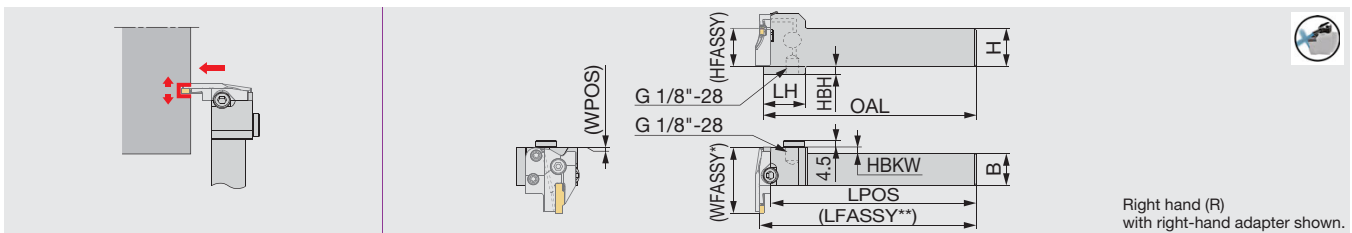
Torque: Recommended clamping torque: lbs-ft (*N-m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L059 for instructions on installing and removing the adapter or the insert.

CHFVR/L-CHP

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



Inch	H	B	OAL	LH	LPOS	WPOS	HBKW	HFASSY	HBH	Adapter (Option)	Torque
CHFVR/L12-CHP	0.750	0.750	5.500	1.100	5.307	0.020	0.234	0.750	0.431	CA*FR/L**-CHP	3.69
CHFVR/L16-CHP	1.000	1.000	5.500	1.100	5.307	0.020	-	1.000	0.200	CA*FR/L**-CHP	3.69
Metric	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)

The LFASSY or WFASSY value may change depending on the adapter type.

Torque: Recommended clamping torque: lbs-ft (*N-m)

Applicable for 30 MPa coolant

Please see Tungaloy General catalog vol.5 page L059 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	HW 5.0	OR 5X1N	PLUGG1/8ISO1179

Recommended clamping torque (lbs-ft, N-m)

Clamping screw	Torque (lbs-ft)	Torque (N-m)
SR M5-04451	1.84	2.5
SR M6X12DIN6912	4.79	6.5
SR M6X20-XT	4.79	6.5

Combination of adapter and shank

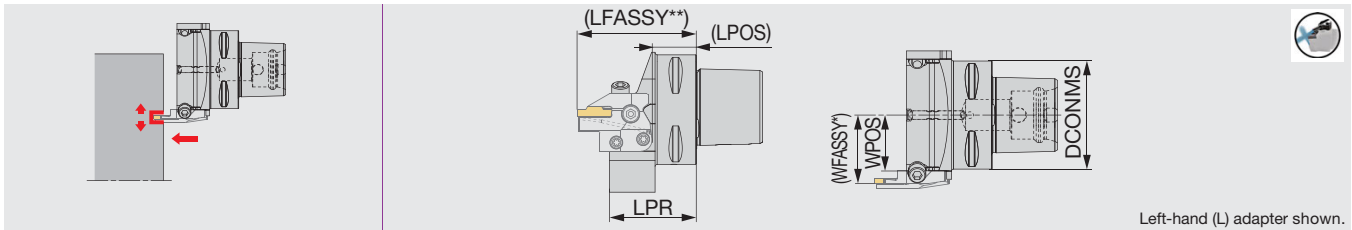
Shank	External grooving adapter		Face grooving adapter		External and face grooving adapter	
	CAER**-CHP, -MD	CAEL**-CHP, -MD	CAFR**-CHP	CAFL**-CHP	CAEFR**-CHP	CAEFL**-CHP
CHFVR**-CHP	●	●	●	●	●	●
CHFVL**-CHP	●	●	●	●	●	●

● : Corresponding

C*CHSN-CHP

Direct connection

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



Metric	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 L059 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

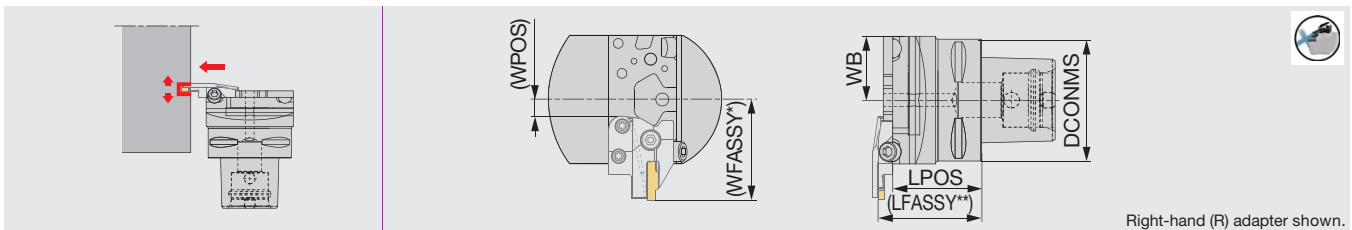
Recommended clamping torque (N·m)

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

C*CHFVN-CHP

Direct connection

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



Metric	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 (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 L059 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

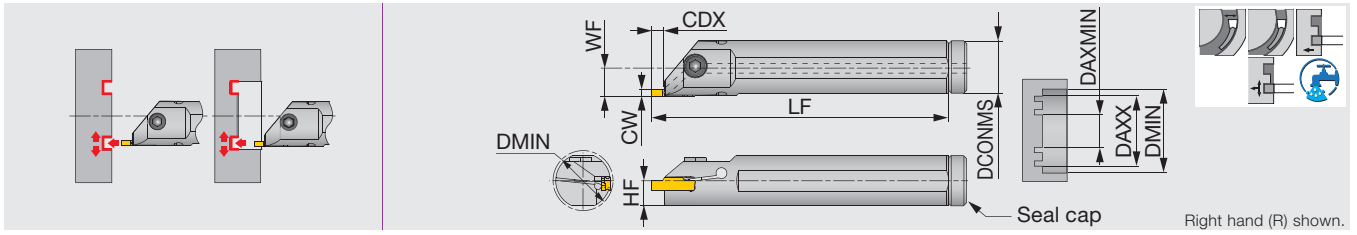
Recommended clamping torque (N·m)

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

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

CTIFR/L

External/Internal face grooving and turning toolholder



Inch	CW	Seat size	CDX	DCONMS	LF	HF	WF ⁽¹⁾	Torque
CTIFR/L16-4T05-D17	0.157	2, 3, 4	0.217	1.000	8.000	0.450	0.531	3.69
CTIFR/L20-4T05-D22	0.157	2, 3, 4	0.217	1.250	10.000	0.590	0.656	3.69
CTIFR/L16-5T05-D17	0.236	5, 6	0.217	1.000	8.000	0.450	0.531	3.69
CTIFR/L20-5T05-D22	0.236	5, 6	0.217	1.250	10.000	0.590	0.656	3.69

Metric	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: lbs-ft (*N-m)

INCH SPARE PARTS

Designation	Clamping screw	Wrench	Seal cap
CTIFR/L16...	CM6X1X16-A	P-5	CA-25
CTIFR/L20...	CM6X1X20-A	P-5	CA-32

Seat size	Min. machining dia.: DMIN (in)	
	DCONMS = 1.000"	DCONMS = 1.250"
2	11.772	11.772
3	1.035	1.311
4	1.055	1.331
5	1.035	1.311
6	1.055	1.331

METRIC SPARE PARTS

Designation	Clamping screw	Wrench	Seal cap
CTIFR/L25...	CM6X1X16-A	P-5	CA-25
CTIFR/L32...	CM6X1X20-A	P-5	CA-32

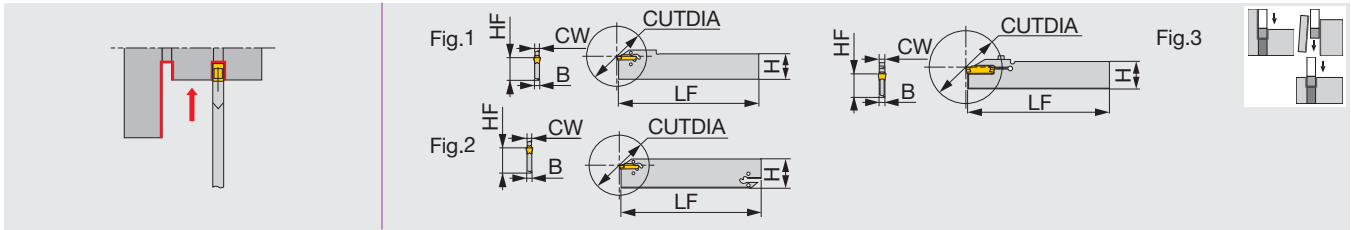
Seat size	Min. machining dia.: DMIN (mm)	
	DCONMS = 25 mm	DCONMS = 32 mm
2	299	299
3	26.3	33.3
4	26.8	33.8
5	26.3	33.3
6	26.8	33.8

Insert	Groove width CW (in)	Face grooving Min. machining dia. DAXMIN (in)
DGM / DGS / SGN / DGL	0.079	11.614
DGM / DGS / SGN / DGL	0.118	3.622
DGM / DGS / SGN / DGL	0.157	1.457
DGM / DGS / SGN / DGL	0.197	2.362
DGM / DGS / DGL	0.236	2.244
DTX / DTM / DTR	0.079	11.614
DTE / DGG / DTM	0.118	2.441
DTE / DGG / DTM	0.157	1.654
DTE / DGG / DTM	0.197	2.520
DTE / DGG / DTM	0.236	2.402
DTR	0.118	1.732
DTR	0.157	1.260
DTR	0.197	1.890
DTR	0.236	1.890
DTX	0.118	0.866
DTX	0.157	0.787
DTX	0.197	0.787
DTX	0.236	0.906
DTF	0.118	0.787
DTF	0.157	0.787

Insert	Groove width CW (mm)	Face grooving Min. machining dia. DAXMIN (mm)
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
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

CGP

External deep grooving and parting blade



Metric	CW	Seat size	CUTDIA	H	B	LF	HF	Fig.	Torque*
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**-2/3/4/5/6	-	-	CRW33
CGP32-8S-CL	CM4X0.7X20-M0-A	P-3	-

Caution

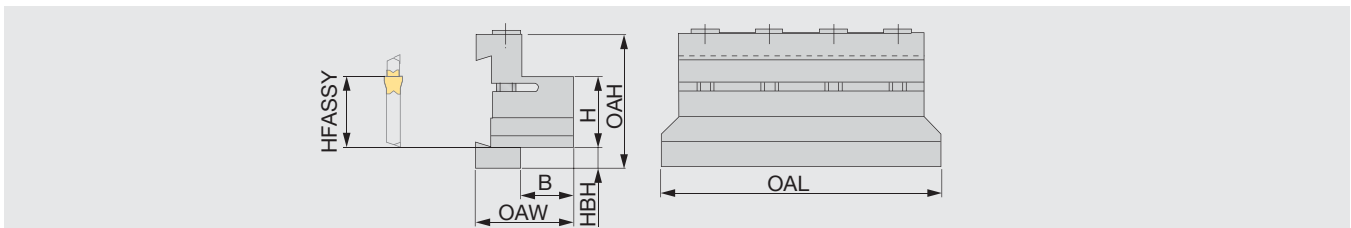
Newly developed clamp

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



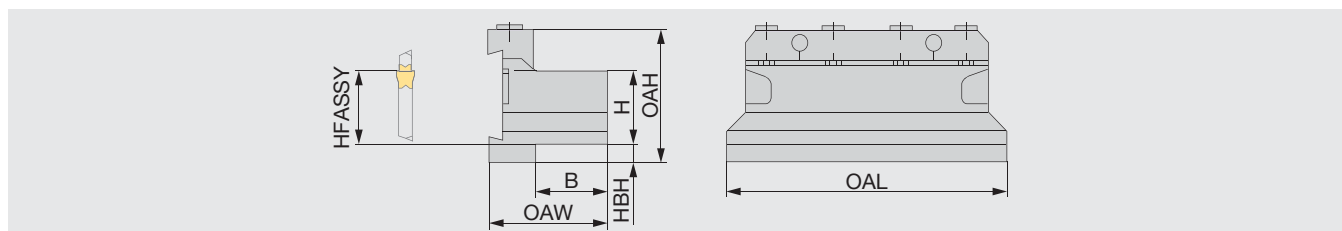
CTBF

Tool block for CGP blade, mono block



Metric	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...

Tool block for CGP blade



Inch	H	B	OAL	HFASSY	HBH	OAH	OAW	Blade (Optional)
CTBU12-26-U	0.750	0.827	3.386	0.750	0.354	1.693	1.496	QSP26...
CTBU16-26-U	1.000	0.906	4.331	1.000	0.197	1.772	1.654	QSP26...
CTBU12-32-U	0.750	0.748	3.937	0.750	0.512	1.969	1.496	QSP32...
CTBU16-32-U	1.000	0.906	4.331	1.000	0.315	1.969	1.654	QSP32...
CTBU20-32-U	1.250	1.142	4.331	1.250	0.197	2.126	1.890	QSP32...

Metric	H	B	OAL	HFASSY	HBH	OAH	OAW	Blade (Optional)
CTBU20-26	20	21	86	20	9	43	38	QSP26...
CTBU25-26	25	23	110	25	5	45	43	QSP26...
CTBU20-32	20	19	100	20	13	50	38	QSP32...
CTBU25-32	25	23	110	25	8	50	42	QSP32...
CTBU32-32	32	29	110	32	5	54	48	QSP32...

INCH
SPARE PARTS

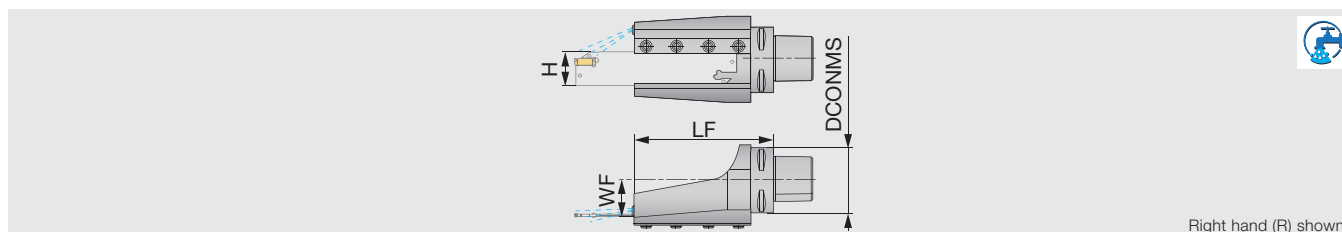
Designation	Clamp	Clamping screw	Wrench
CTBU12-26-U	CT-86	CM6X30-S	P-5
CTBU16-26-U	CT-100	CM6X30-S	P-5
CTBU12-32-U	CT-105	CM6X30-S	P-5
CTBU16-32-U	CT-110	CM6X30-S	P-5
CTBU20-32-U	CT-110	CM6X30-S	P-5

METRIC
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



Right hand (R) shown.

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

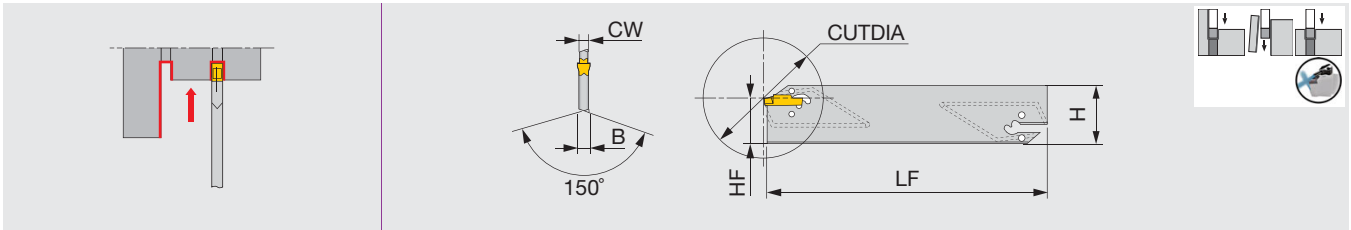
Applicable for 3 MPa coolant

SPARE PARTS

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

CGP32-CHP

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



Metric	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.

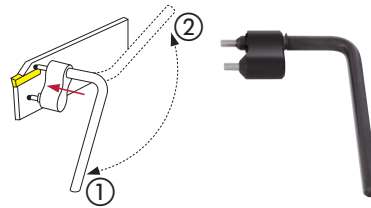
SPARE PARTS

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

Caution

Newly developed clamp

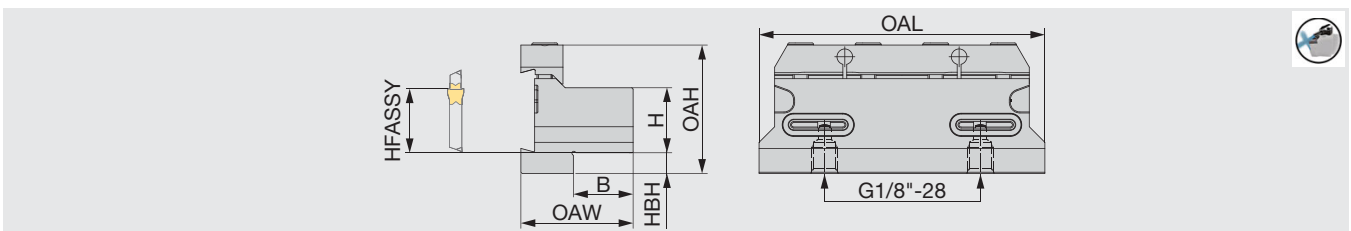
Insert is clamped by the elastic deformation of upper jaw.
Low clamping stress increases the stability and tool life.



①→② : unclamp
②→① : clamp

CTBU-CHP

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



Inch	H	B	OAL	HFASSY	HBH	OAH	OAW	Blade (Optional)
CTBU16-32-U-CHP	1.000	0.906	4.331	1.000	0.315	1.97	1.654	CGP32-*D-CHP

Metric	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

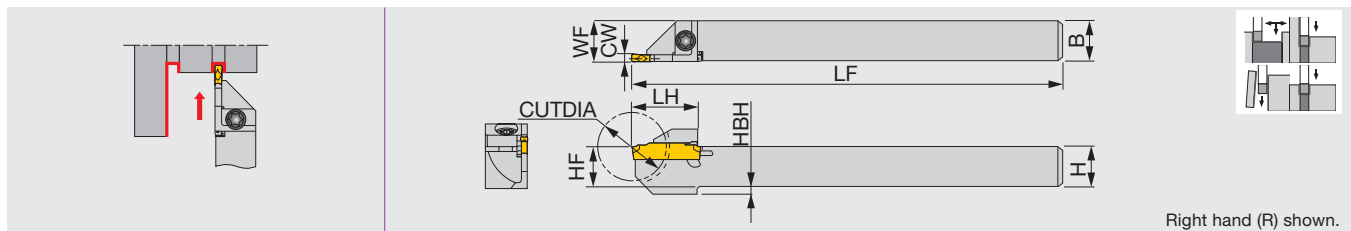
SPARE PARTS

Designation	Clamping screw	Clamp	Wrench	O-ring
CTBU...	SRM6X16DIN912-12.9	CT-110	P-5	OR 14X2.5N N

Turning
Grooving
Milling
Turning
Grooving
Milling
Turning
Turning
Grooving
Turning
Milling
Turning
Grooving
Milling

JCTER/L

External grooving and parting toolholder, for Swiss lathes



Inch	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	HBH	Torque
JCTER/L08-2T12	0.079	2	0.945	0.500	0.500	4.750	0.748	0.500	0.005/0.505	0.079	2.21
JCTER/L08-3T12	0.118	3	0.945	0.500	0.500	4.750	0.748	0.500	0.012/0.512	0.079	2.21
JCTER/L10-2T16	0.079	2	1.260	0.625	0.625	4.750	0.945	0.625	0.005/0.630	-	2.21
JCTER/L10-3T16	0.118	3	1.260	0.625	0.625	4.750	0.945	0.625	0.012/0.637	-	2.21

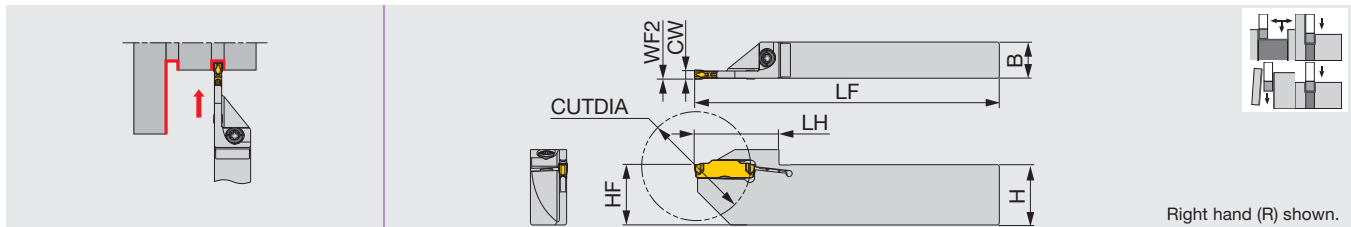
Metric	CW	Seat size	CUTDIA	H	B	LF	LH	HF	WF2 ⁽¹⁾	HBH	Torque*
JCTER/L1010X2T10	2	2	20	10	10	120	19	10	0.1/10.1	2	3
JCTER/L1212F2T12	2	2	24	12	12	85	19	12	0.1/12.1	2	3
JCTER/L1212X2T12	2	2	24	12	12	120	19	12	0.1/12.1	2	3
JCTER/L1414-2T12	2	2	24	14	14	125	19	14	0.1/14.1	-	3
JCTER/L1616X2T16	2	2	32	16	16	120	24	16	0.1/16.1	-	3
JCTER/L1212F3T12	3	3	24	12	12	85	19	12	0.3/12.3	2	3
JCTER/L1212X3T12	3	3	24	12	12	120	19	12	0.3/12.3	2	3
JCTER/L1616X3T16	3	3	32	16	16	120	24	16	0.3/16.3	-	3
JCTER/L2020H3T16	3	3	32	20	20	100	24	20	0.3/20.3	-	3

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

Torque: Recommended clamping torque: lbs-ft (*N·m)

JCTER/L2012

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



Metric	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

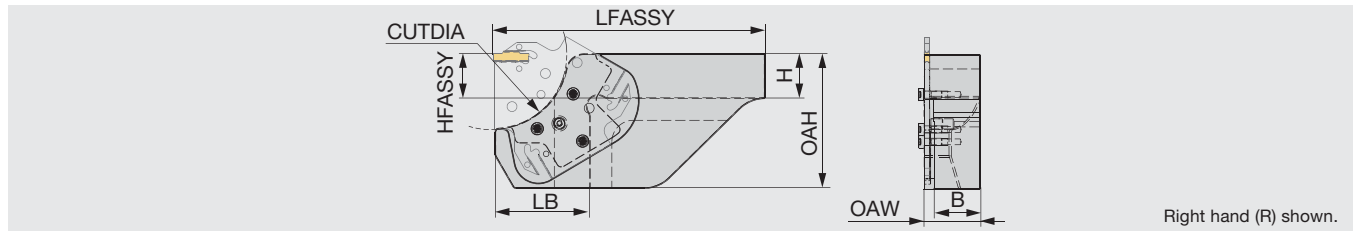
⁽¹⁾ "WF2" value is calculated with groove width "CW" shown in the table.

Torque*: Recommended clamping torque (N·m)

SPARE PARTS

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





Inch	CUTDIA	H	B	LFASSY	HFASSY	OAH	OAW	LB	Blade
CHTBR/L12-52	2.047	0.750	0.770	4.000	0.750	1.968	1.000	1.457	QSG52...
CHTBR/L16-52	2.047	1.000	1.020	5.000	1.000	1.968	1.250	1.457	QSG52...
CHTBR/L12-82	3.228	0.750	0.770	5.500	0.750	2.953	1.000	2.087	QSG82...
CHTBR/L16-82	3.228	1.000	1.020	6.000	1.000	2.953	1.250	2.087	QSG82...
CHTBR/L16-120	4.724	1.000	1.020	6.500	1.000	3.937	1.250	2.638	QSG120...
CHTBR/L20-120	4.724	1.250	1.270	6.500	1.250	3.937	1.500	2.638	QSG120...

Metric	CUTDIA	H	B	LFASSY	HFASSY	OAH	OAW	LB	Blade
CHTBR/L2020-52	52	20	20.5	100	20	50	26.5	37	QSG52...
CHTBR/L2525-52	52	25	25.5	125	25	50	31.5	37	QSG52...
CHTBR/L2020-82	82	20	20.5	140	20	75	26.5	53	QSG82...
CHTBR/L2525-82	82	25	25.5	150	25	75	31.5	53	QSG82...
CHTBR/L2525-120	120	25	25.5	165	25	100	31.5	67	QSG120...
CHTBR/L3232-120	120	32	32.5	165	32	100	38.5	67	QSG120...

The blade clamping screw heads protrude out for as much as 0.122" (3.1 mm) over the insert cutting edge point. Maintain the clearance from the chucking device to avoid interference.

SPARE PARTS



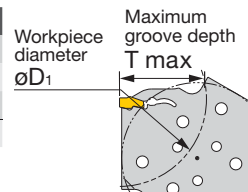
Designation	Clamping screw	Grip	Torx bit
CHTBR/L...	SR ISO 14580 M4X10	SW6-SD	BLDT20/S7

Maximum groove depth (T max) as function of workpiece diameter (øD₁)

Designation	øD ₁ (in)															
CHTBR/L**-52	2.087	2.126	2.165	2.205	2.283	2.362	2.441	2.559	2.677	2.835	3.071	3.307	3.622	4.016	4.528	5.236
CHTBR/L**-82	4.094	4.252	4.409	4.567	4.764	5.000	5.276	5.591	5.945	6.378	6.929	7.559	8.346	9.331	10.630	12.323
CHTBR/L**-120	8.071	8.425	8.819	9.252	9.724	10.276	10.945	11.693	12.559	13.583	14.803	16.299	18.189	20.551	23.661	27.913
T max (in)	0.827	0.787	0.748	0.709	0.669	0.630	0.591	0.551	0.512	0.472	0.433	0.394	0.354	0.315	0.276	0.236

Designation	øD ₁ (in)															
CHTBR/L**-82	3.268	3.307	3.307	3.346	3.386	3.425	3.504	3.543	3.622	3.701	3.780	3.858	3.976			
CHTBR/L**-120	5.669	5.787	5.906	6.024	6.142	6.299	6.457	6.614	6.811	7.008	7.244	7.480	7.756			
T max (in)	1.339	1.299	1.260	1.220	1.181	1.142	1.102	1.063	1.024	0.984	0.945	0.906	0.866			

Designation	øD ₁ (in)															
CHTBR/L**-120	4.764	4.803	4.843	4.882	4.921	4.961	5.000	5.039	5.079	5.118	5.157	5.236	5.276	5.354	5.433	5.512
T max (in)	2.165	2.047	1.969	1.890	1.850	1.811	1.772	1.732	1.693	1.654	1.614	1.575	1.535	1.496	1.457	1.417



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 (sfm)	500 - 800	800 - 3500	800 - 1200
Grade	Carbide 	Ceramic 	CBN 
Tool cost	Low	Low	High



■ Ductile Cast Iron

Cutting speed Vc (sfm)	500 - 750	500 - 1800	600 - 900
Grade	Carbide 	Ceramic 	CBN 
Tool cost	Low	Low	High

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

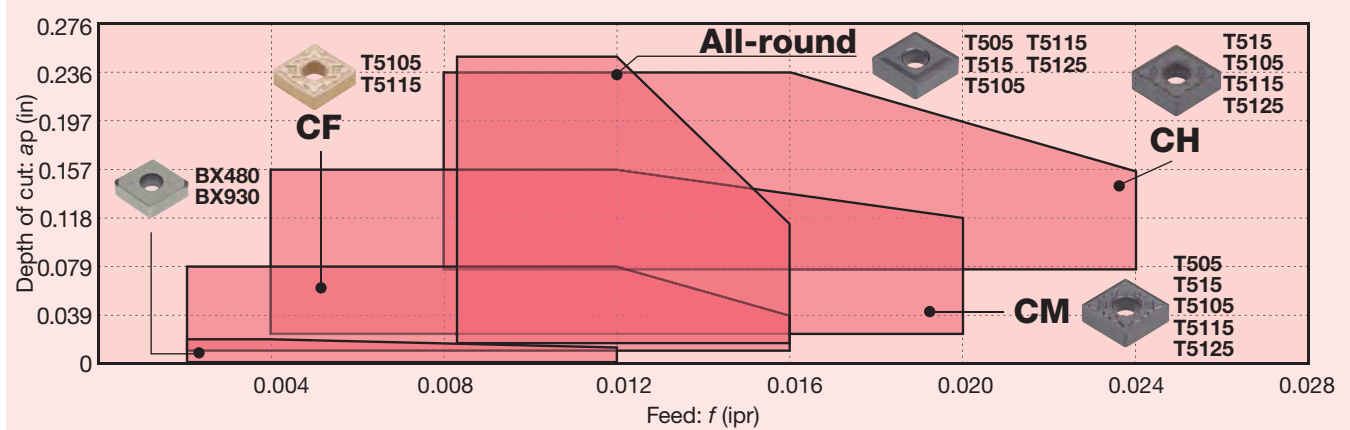
Turning
Grooving
Milling

Chipbreaker Guide

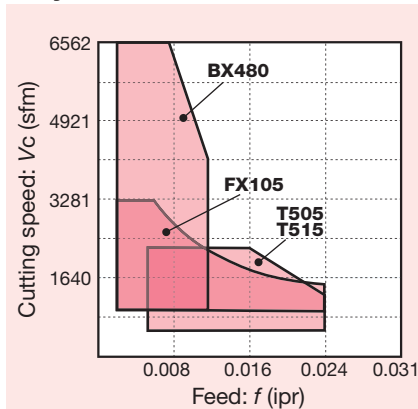
BASIC CHIPBREAKER: NEGATIVE TYPE

K Cast Iron

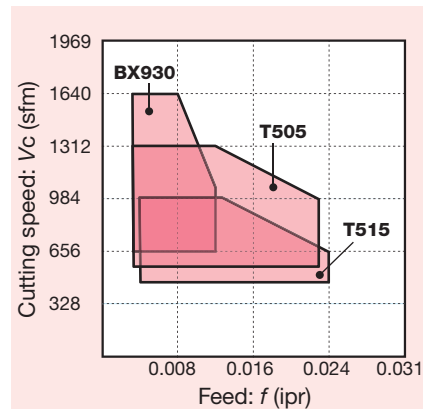
Chipbreaker System for Turning (Negative type)



Grey cast iron



Ductile cast iron



Chipbreaker	Shape	Feature	Chip-breaker	Shape	Feature
-		Excellent performance in high-speed finishing of cast iron with CBN sintered body on the cutting edge.	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.
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.	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.
All-round		Excellent performance in interrupted cutting. Highly reliable chipbreaker with great stability.			

STANDARD CUTTING CONDITIONS

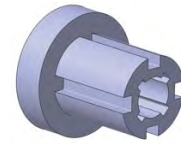
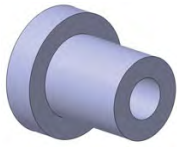
ISO	Operation	Chip-breaker	Grade	Depth of cut a_p (in)	Feed f (ipr)	Cutting speed: V_c (sfm)	
						Grey cast iron	Ductile cast iron
K	High speed cutting	-	BX930	0.002 - 0.020	0.002 - 0.008	984 - 3937	656 - 1640
		-	BX480	0.002 - 0.020	0.002 - 0.012	984 - 6562	656 - 984
	Finishing	All-round	T505	0.039 - 0.197	0.004 - 0.020	591 - 2297	591 - 1312
		All-round	T515	0.039 - 0.197	0.004 - 0.020	492 - 2297	492 - 984
		All-round	T505	0.039 - 0.197	0.004 - 0.020	591 - 2297	591 - 1312
	Medium cutting	All-round	T515	0.039 - 0.197	0.004 - 0.020	492 - 2297	492 - 984
		CH	T515	0.118 - 0.197	0.008 - 0.024	492 - 2297	492 - 984
	Medium to heavy cutting	All-round	T515	0.039 - 0.197	0.004 - 0.020	492 - 2297	492 - 984
		CH	T515	0.118 - 0.236	0.008 - 0.024	492 - 2297	492 - 984

Grey cast iron: Class 25, etc. Ductile cast iron: 65-45-12, etc.

Selection System

SELECTION SYSTEM: NEGATIVE TYPE

K Cast Iron



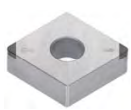
Continuous

Light interrupted

Heavy interrupted

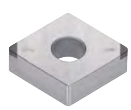
Precision finishing
[$a_p = \sim 0.020''$]

Basic



BX480

Basic



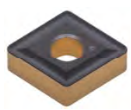
BX480



**All-round
T515**

Finishing
[$a_p = 0.020'' \sim 0.079''$]

Basic



**All-round
T505**

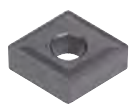


**All-round
T515**



**CF
T5105**

Basic



**All-round
T515**



**All-round
T505**

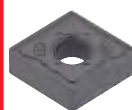


**CH
T515**



**CF
T5115**

Basic



**CH
T515**



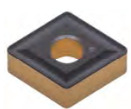
**All-round
T505**



**All-round
T515**

Medium cutting
[$a_p = 0.039'' \sim 0.197''$]

Basic



**All-round
T505**

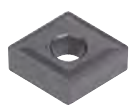


**All-round
T515**



**CF
T5105**

Basic



**All-round
T515**



**All-round
T505**

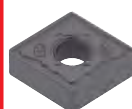


**CH
T515**



**CF
T5115**

Basic



**CH
T515**



**All-round
T505**



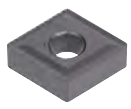
**CH
T5125**



**All-round
T515**

Medium to heavy cutting
[$a_p = 0.118'' \sim 0.236''$]

Basic



**All-round
T515**

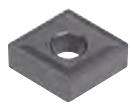


**All-round
T505**



**CF
T5105**

Basic



**All-round
T515**



**All-round
T505**

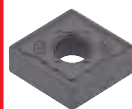


**CH
T515**



**CF
T5115**

Basic



**CH
T515**



**All-round
T505**



**CH
T5125**



**All-round
T515**

CER

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Hardened Materials

CBN

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Grooving

Milling

IC : 0.500"
D1 : 0.203"
S : 0.187"

[illegible]

● : Line up

[illegible]

● : Line up

[illegible]

● : Line up



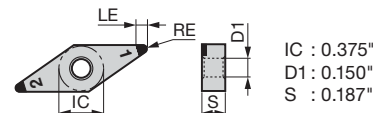
● : Line up

[illegible]

VN



35° Rhombic with hole

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BX480	BX930																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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C

D

G

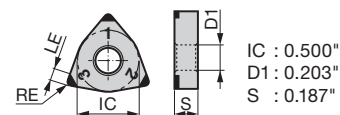
S

T

WN



80° Trigon with hole

[illegible][illegible]

VN



Ex.Toolholder



In.Toolholder



WN

Ex.Toolholder



In.Toolholder

- ## Turning



Milling



Turning

Cast Iron



Hardened Materials



Turning

Harden

Cast Iron



alloys



Materials

Groov

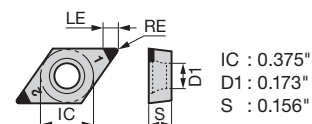


Ex Toolholder



Ex Toolholder

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

[illegible][illegible]

● : Line up



Technical drawing of the IC/S component. The top view shows a square component with a central circular hole. Dimensions include LE (left edge), RE (right edge), IC (inner circle), and S (side view). The side view shows a rectangular component with a central circular hole. Dimensions include D1 (inner diameter) and S (side view).

IC : 0.375"
D1 : 0.173"
S : 0.156"

[illegible]

● : Line up



IC : 0.500"
D1 : 0.217"
S : 0.187"

[illegible]

● : Line up



Ex Toolholder

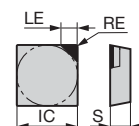


In Toolholder



In Toolholder

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



IC : 0.500"
S : 0.125"

SP



Square Positive 11° without hole

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

TP



Triangular Positive 11° with hole



IC : 0.219"
D1 : 0.098"
S : 0.094"

[illegible]

● : Line up

TP



Triangular Positive 11° with hole



IC : 0.250"
D1 : 0.109"
S : 0.094"

[illegible]

● : Line up



SP

In.Toolholder



TP

In.Toolholder

TP

[illegible]

● : Line up

C

D

G

S

V

w

TP

[illegible]

● : Line up

TP

[illegible]

● : Line up



In.Toolholder

Superalloys

Cast Iron

A diagram of a triangular cross-section of a roof. The roof is represented by a large triangle with a smaller, shaded circular area in the center. The label 'LE' points to the left slope of the roof. The label 'RE' points to the right slope of the roof. The label 'IC' points to the horizontal base of the roof.

Hardened Materials

CBN

ed Materials

Groovin

Turning

Cas



Sintered metal

Materials



● : Line up

Technical drawing of a mechanical part with dimensions:

- IC : 0.250"
- D1 : 0.110"
- S : 0.125"

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BX930																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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C

D

G

S

T

V

[illegible][illegible]

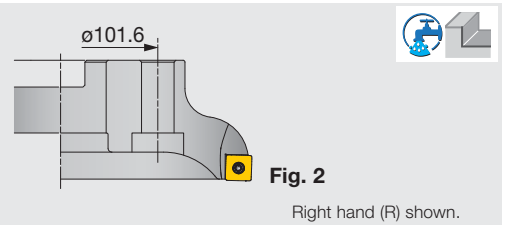
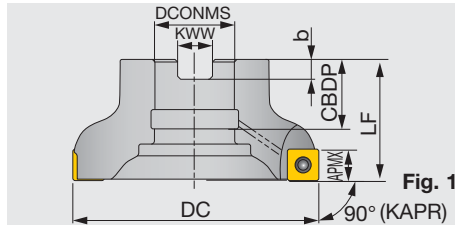
CBN-108

CBN Milling

TPW / EPW

TPW13

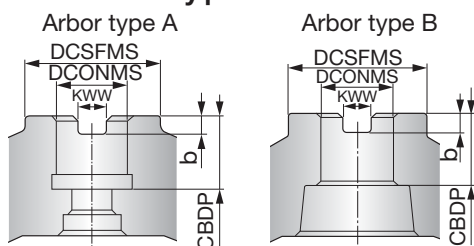
Square shoulder mill, with screw clamp system



Inch	APMX	DC	CICT	LF	DCONMS	CBDP	KWW	b	WT(lb)	Air hole	Insert	Arbor type	Fig.
TPW13R200U0075A03	0.394	2.000	3	1.575	0.750	0.750	0.315	0.197	0.660	With	SW*T1304...	A	1
TPW13R200U0075A04	0.394	2.000	4	1.575	0.750	0.750	0.315	0.197	0.660	With	SW*T1304...	A	1
TPW13R200U0075A05	0.394	2.000	5	1.575	0.750	0.750	0.315	0.197	0.660	With	SW*T1304...	A	1
TPW13R300U0100A04	0.394	3.000	4	1.969	1.000	1.024	0.374	0.236	1.760	With	SW*T1304...	A	1
TPW13R300U0100A06	0.394	3.000	6	1.969	1.000	1.024	0.374	0.236	1.540	With	SW*T1304...	A	1
TPW13R300U0100A08	0.394	3.000	8	1.969	1.000	1.024	0.374	0.236	1.760	With	SW*T1304...	A	1
TPW13R400U0150A05	0.394	4.000	5	1.969	1.500	1.378	0.626	0.394	3.530	With	SW*T1304...	B	1
TPW13R400U0150A07	0.394	4.000	7	1.969	1.500	1.378	0.626	0.394	3.310	With	SW*T1304...	B	1
TPW13R400U0150A10	0.394	4.000	10	1.969	1.500	1.378	0.626	0.394	3.310	With	SW*T1304...	B	1
TPW13R500U0150A06	0.394	5.000	6	2.480	1.500	1.457	0.626	0.394	5.510	With	SW*T1304...	B	1
TPW13R500U0150A08	0.394	5.000	8	2.480	1.500	1.457	0.626	0.394	5.290	With	SW*T1304...	B	1
TPW13R500U0150A12	0.394	5.000	12	2.480	1.500	1.457	0.626	0.394	5.510	Without	SW*T1304...	B	1
TPW13R600U0200A08	0.394	6.000	8	2.480	2.000	1.496	0.748	0.433	7.940	Without	SW*T1304...	B	1
TPW13R600U0200A12	0.394	6.000	12	2.480	2.000	1.496	0.748	0.433	8.160	Without	SW*T1304...	B	1
TPW13R600U0200A15	0.394	6.000	15	2.480	2.000	1.496	0.748	0.433	8.160		SW*T1304...	B	1

Metric	APMX	DC	CICT	LF	DCONMS	CBDP	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

Arbor type



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

SPARE PARTS

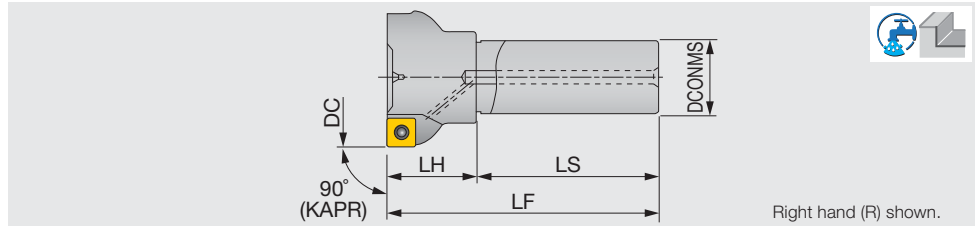
Designation	Clamping screw	Lubricant	Shim screw	Shell locking bolt 1	Shell locking bolt 2	Shim	Wrench 1	Wrench 2
TPW13R200U...	CSPB-3.5	M-1000	DTS5-3.5SS	-	C0.375X1.125H	FSSP1102	IP-15D	P-3.5
TPW13R300U...	CSPB-3.5	M-1000	DTS5-3.5SS	-	C0.500X1.375H	FSSP1102	IP-15D	P-3.5
TPW13R400, 500U...	CSPB-3.5	M-1000	DTS5-3.5SS	-	TMBA-0.750H	FSSP1102	IP-15D	P-3.5
TPW13R600U...	CSPB-3.5	M-1000	DTS5-3.5SS	-	-	FSSP1102	IP-15D	P-3.5
TPW13R050, 063M...	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, 200M...	CSPB-3.5	M-1000	DTS5-3.5SS	-	-	FSSP1102	IP-15D	P-3.5

Recommended clamping torque: 2.58 lbs-ft, 3.5 N-m

EPW13

Square shoulder endmill, shank type, with screw clamp system

GAMP = +11.5°, GAMF = -13° ~ -10.5°



Metric	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...

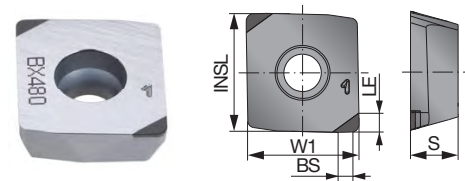
SPARE PARTS

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

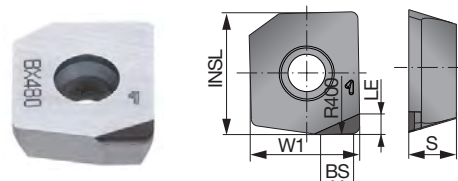
Recommended clamping torque : 3.5 N-m

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
F2-SWGW130508PDLR	0.031	0.020	●	0.079	0.543	0.516	0.220	0.059
WSGW130508PDLR	0.031	-	●	0.079	0.563	0.504	0.220	0.146

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

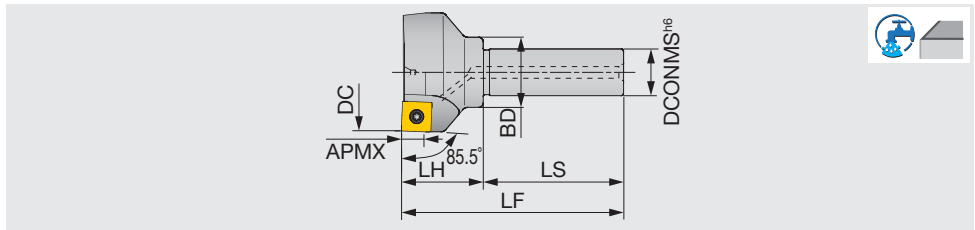
ISO	Workpiece materials	Grades	Shape	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
K	Grey cast iron Class 25, etc.	BX480	2-SWGW130508PDLR	2625 - 4921	0.002 - 0.012

EFE / TFE

EFE12R

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

GAMP = +13°, GAMF = +7°

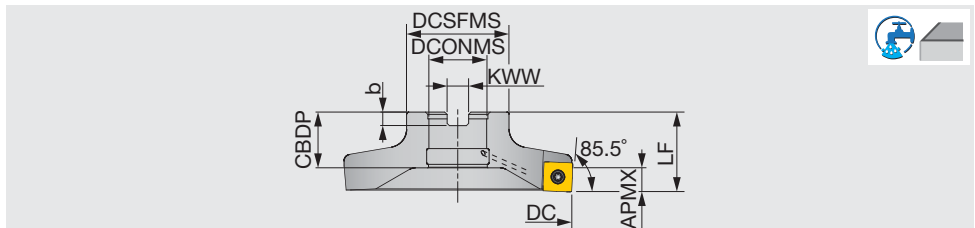


Inch	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT (lb)	Air hole	Insert
EFE12200RU	0.315	2.000	3	0.750	1.180	2.362	1.375	3.406	0.77	With	SEG*12X4...
Metric	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EFE12050R	8	50	3	20	30	60	35	95	0.37	With	SEG*12X4...

TFE12R

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

GAMP = +13°, GAMF = +7°

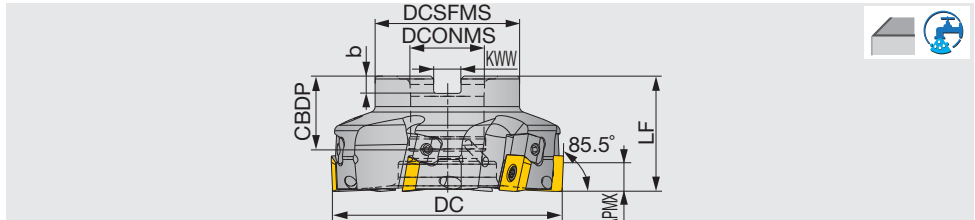


Inch	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT (lb)	Air hole	Insert
TFE12300RU	0.315	3.000	4	1.970	1.380	1.000	0.964	0.375	0.236	0.880	With	SEG*12X4...
TFE12400RU	0.315	4.000	6	1.970	1.380	1.000	0.964	0.375	0.236	1.340	With	SEG*12X4...
Metric	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT(kg)	Air hole	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 aluminum machining, with screw clamp system

GAMP = +13°, GAMF = +7°



Metric	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



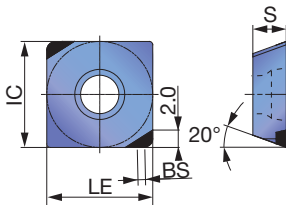
Designation	Clamping screw	Adjustable Wedge	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Right-left screw	Wrench	Wrench
EFE12...	CSPB-4S	-	M-1000	-	-	-	-	IP-15D
TFE12300RU, TFE12400RU	CSPB-4S	-	M-1000	-	TMBA-0.500H	-	-	IP-15D
TFE12063R	CSPB-4S	-	M-1000	-	CM10X30H	-	-	IP-15D
TFE12080R - TFE12125R	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: 2.58 lbs-ft, 3.5 N-m

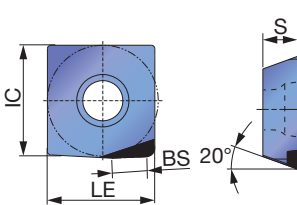
Reference pages: Inserts, Standard cutting conditions → **CBN-112**

INSERT

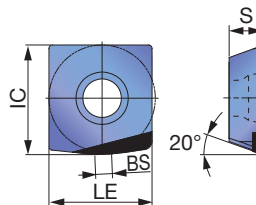
2QP-SECW12X412ZETR



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	0.059	●				0.500	0.500	0.157	0.035
1QP-SECW12X4ZETR-W	-	●				0.508	0.484	0.157	0.157
1QP-SECW12X4ZETR-B	-	●				0.516	0.484	0.157	0.079

● : Line up

BX480: 1 piece per package

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Grade	Designation	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
K	Gray and ductile cast irons	150 - 250 HB	AH120	SEGW12X4ZEPR	328 - 656	0.001 - 0.006
	Gray cast iron	150 - 250 HB	BX480	2QP-SECW12X412ZETR	2625 - 4921	0.002 - 0.012
	Ductile cast irons	150 - 250 HB	BX480	2QP-SECW12X412ZETR	1640 - 2625	0.002 - 0.008

Notes:

- In milling aluminum 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 aluminum 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.

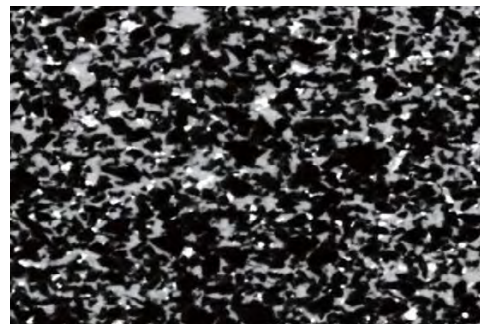
CBN Turning

S Superalloys

New CBN grade for high speed finishing of super alloys

BX815

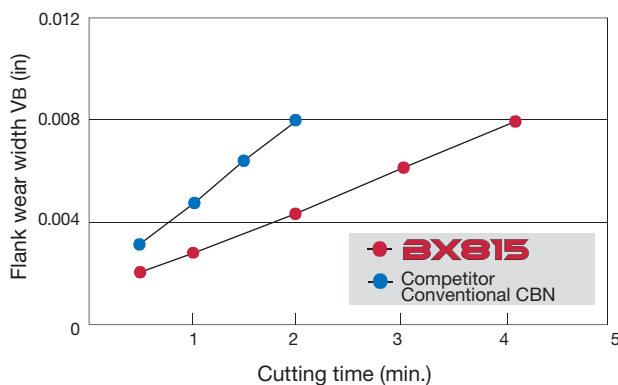
- Heat resistance and oxidation resistance are improved by using Alumina-based binders. Maximizes high-speed machining of super alloys
- Well-dispersed Zirconia grains improve fracture resistance
- Excellent finished surface is obtained by using fine cBN particles.



Microstructure image of BX815

CUTTING PERFORMANCE

Comparison of wear resistance



S

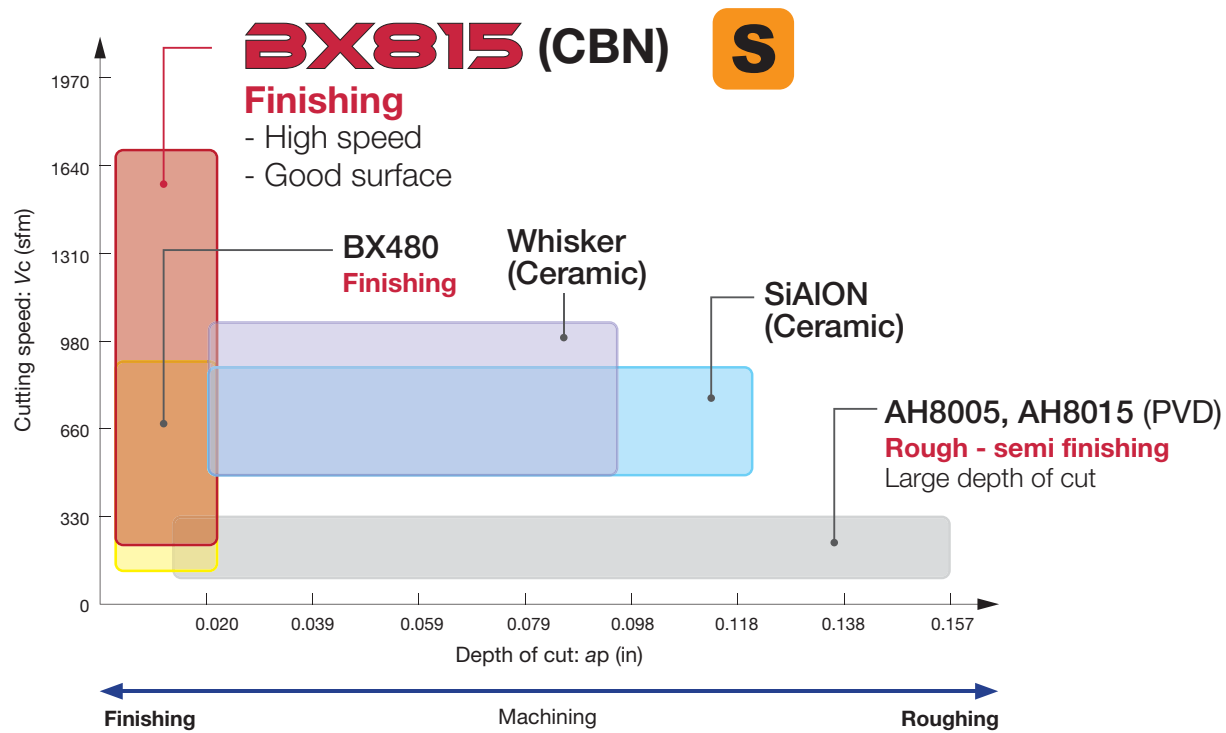
Insert : DNGA150412 BX815
 Workpiece material : Inconel 718 (44 HRC) Continuous cutting
 Cutting speed : **$V_c = 1312$ sfm**
 Feed : $f = 0.008$ ipr
 Depth of cut : $a_p = 0.008$ "
 Coolant : Wet

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

Negative

Positive

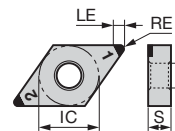
APPLICATION AREAS



CN



● : Line up



IC : 0.500"
D1 : 0.203"
S : 0.187"

DN



● : Line up

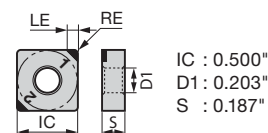


DN

In Toolholder



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

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BX480																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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● : Line up

W



IC : 0.375"
D1 : 0.150"
S : 0.187"

[illegible][illegible]

● : Line up



SN Ex Toolholder



In Toolholder



TN Ex Toolholder



In Toolholder

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

Turning

Superalloys

Grooving

Milling

Cast Iron

Turning

Hardened Materials

CBN

ing

Hardened Materials

Grooving
Turning

Iron

Cast

Superalloys

Turning

Sintered metal

Non-Ferrous Materials

7

Standard	Problem				BX480	Cast iron	Superalloy	Hard material	Sintered metal
	Burr	Flank wear	Crater wear	Chipping					
	○								
○					●				

WN

Standard	Problem				BX480
	Burr	Flank wear	Grater wear	Chipping	
○					●

VN



WN



In.Toolholder

CC



● : Line up

W

CC



● : Line up

DC



● : Line up



In Toolholder

CBN-118

IC : 0.375"
D1 : 0.173"
S : 0.156"

[illegible]

Technical drawing of a triangular plate. The top view shows a triangle with a central circular hole. Dimensions are labeled: LE (length of the top edge), RE (radius of the hole), and IC (inner circle diameter). The side view shows a rectangular cross-section with dimensions D1 (height) and S (thickness).

IC : 0.250"
D1 : 0.134"
S : 0.125"

[illegible]

IC : 0.313"
D1 : 0.134"
S : 0.125"

[illegible]

CBN-119

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

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



IC : 0.375"
D1 : 0.173"
S : 0.156"

TP



Triangular Positive 11° with hole

[illegible]

● : Line up

TP



Triangular Positive 11° without hole



IC : 0.250"
S : 0.125"

[illegible]

● : Line up

TP



Triangular Positive 11° without hole



IC : 0.375"
S : 0.125"

[illegible]

● : Line up



In.Toolholder

 Sintered Metal

CN



80° Rhombic with hole

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem				BX470	BX480																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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DN



55° Rhombic with hole

[illegible]

GN



70° Rhombic with hole

[illegible]

● : Line up



CN, GN

Ex.Toolholder



In.Toolholder



DN

Ex Toolholder



In Toolholder

Superalloys

Grooving

Cast Iron

CBN

Hardened Materials

Grooving
Turning

Iron

Case

Superalloys

Sintered metal

Turning

Non-Ferrous Materials

[illegible][illegible]

VN



WN



In.Toolholder

IC : 0.141"

D1 : 0.075"

S : 0.055"

[illegible]

● : Line up

C

D

G

S

T

V

w

[illegible]

● : Line up

[illegible]

● : Line up





Willing

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Turn
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Hardened
Materials

CBN

Turning

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Groo

Cast Iron

○

Turning



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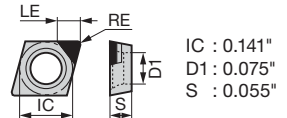
Sim m

Material

-Ferrous

Non-

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



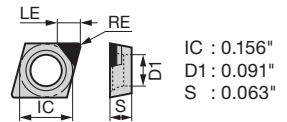
EP



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

[illegible]

● : Line up



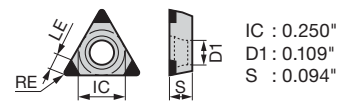
EP



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

[illegible]

● : Line up



TP



Triangular Positive 11° with hole

[illegible]

● : Line up



EP

In.Toolholder



TP

In.Toolholder

[illegible]

Application	Designation		Dimension (in)		No. of corners	Wiper	Standard	Problem			
			RE	LE				Burr	Flank wear	Crater wear	Chipping
Finishing	Inch	Metric	RE	LE							
	3QP-TPGN 220.5	3QP-TPGN110302	0.008	0.091	3	○					●
	3QP-TPGN 221	3QP-TPGN110304	0.016	0.087	3	○					●
	3QP-TPGN 222	3QP-TPGN110308	0.031	0.075	3	○					●

S

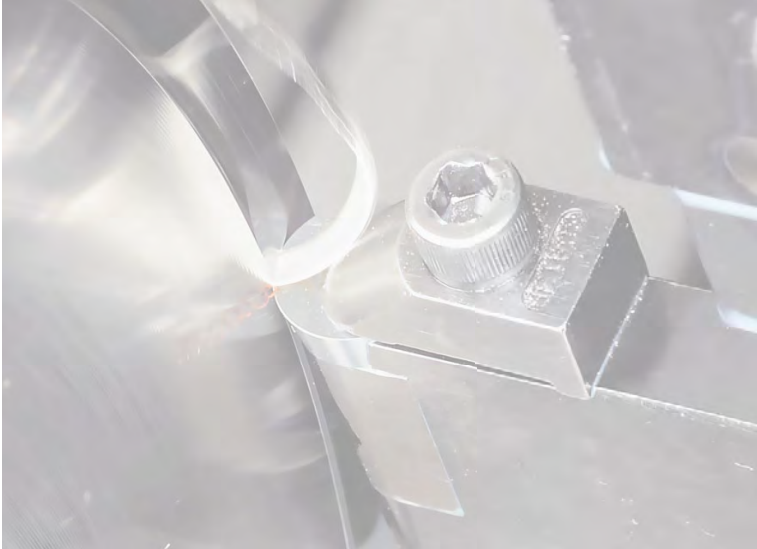
[illegible][illegible]

W



ADVANCED

MATERIALS SOLUTIONS



CERAMIC

SOLUTIONS



CBN

SOLUTIONS



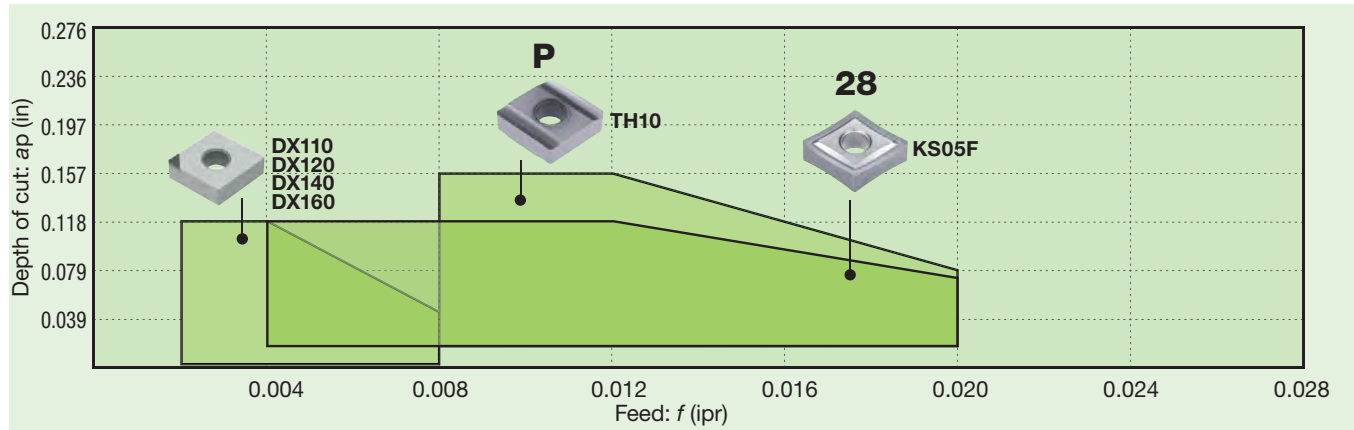
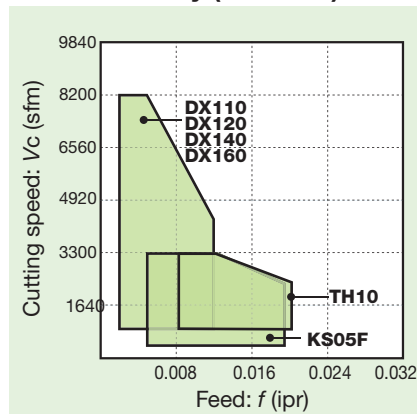
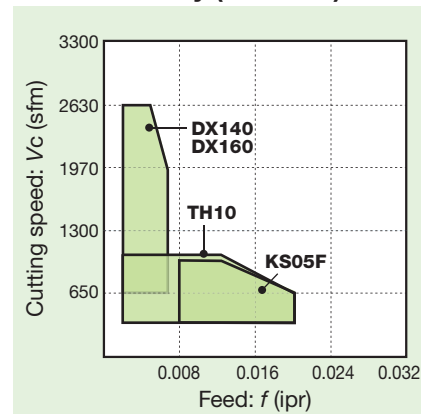
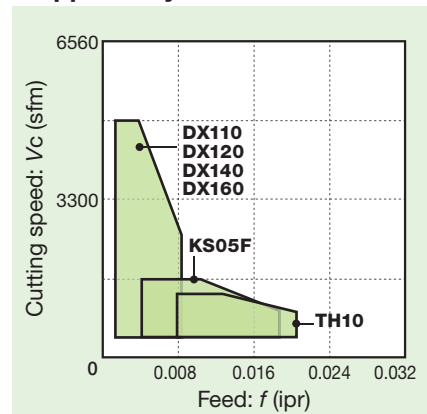
PCD

SOLUTIONS

PCD Turning

Chipbreaker Guide

N Non-Ferrous Metal

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

Aluminum alloy (Si < 12%)

Aluminum alloy (Si ≥ 12%)

Copper alloy


Chipbreaker	Shape	Feature	Chipbreaker	Shape	Feature
-		Excellent performance in high-speed finishing of non-ferrous metal, such as aluminum 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 aluminum and copper alloy.	28		Low cutting geometry with large inclination for finishing to medium cutting range.

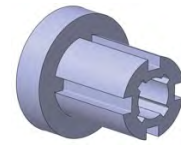
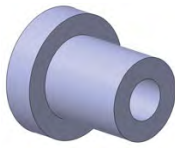
STANDARD CUTTING CONDITIONS

ISO	Operation	Chip-breaker	Grade	Depth of cut ap (in)	Feed f (ipr)	Cutting speed: Vc (sfm)		
						Aluminum alloy (Si < 12%)	Aluminum alloy (Si ≥ 12%)	Copper alloy
N	Precision finishing	With	DX160	0.001 - 0.02	0.002 - 0.006	984 - 8202	984 - 2625	984 - 4921
	Finishing	With	DX160	0.002 - 0.079	0.002 - 0.006	1640 - 8202	1312 - 2625	1640 - 4921
		P	TH10	0.02 - 0.157	0.008 - 0.02	328 - 3281	328 - 984	328 - 984
	Medium cutting	P	KS05F	0.02 - 0.118	0.004 - 0.02	328 - 3937	328 - 984	328 - 984
		P	KS05F	0.02 - 0.118	0.004 - 0.02	328 - 3937	328 - 984	328 - 984
		P	TH10	0.02 - 0.157	0.008 - 0.02	328 - 3281	328 - 984	328 - 984

Selection System

SELECTION SYSTEM: NEGATIVE TYPE

N Non-ferrous Metal



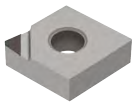
Continuous

Light interrupted

Heavy interrupted

Precision finishing
[$a_p \approx 0.020''$]

Basic

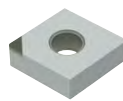


With chipbreaker
DX160

Surface quality

With chipbreaker
DX110

Basic



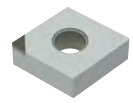
DX160

Surface quality

With chipbreaker
DX110

Finishing
[$a_p = 0.020 - 0.079''$]

Basic

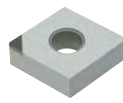


With chipbreaker
DX160

Surface quality

With chipbreaker
DX110

Basic

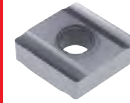


DX160

Fracture

P TH10

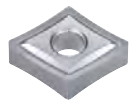
Basic



P TH10

Medium cutting
[$a_p = 0.039 - 0.157''$]

Basic

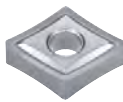


28 KS05F

Wear

DX160

Basic

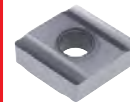


28 KS05F

Wear

DX160

Basic



P TH10

Superalloys

Turning

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



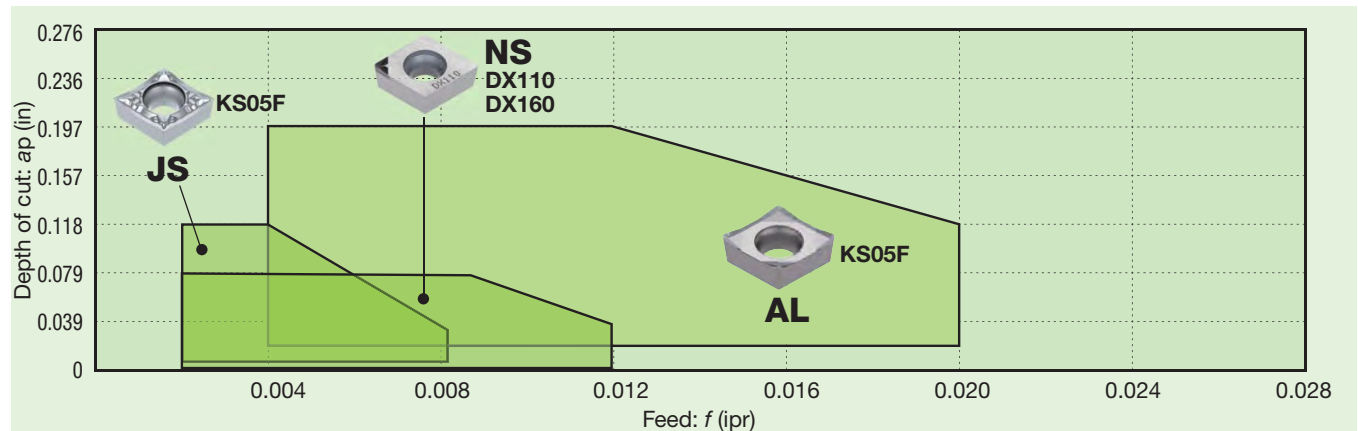
More info

Chipbreaker Guide

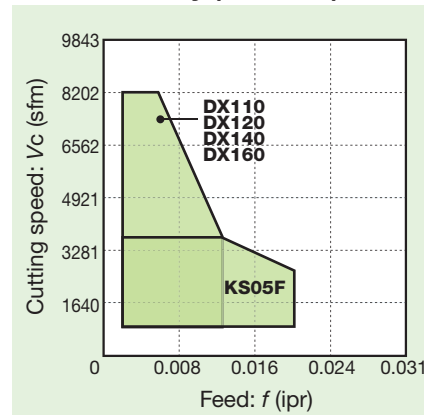
BASIC CHIPBREAKER: POSITIVE TYPE

N Non-ferrous Metal

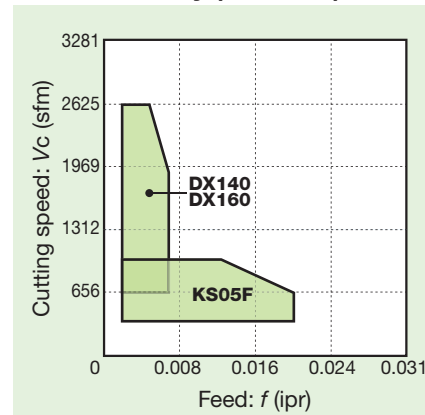
Chipbreaker System for Turning (Positive Type)



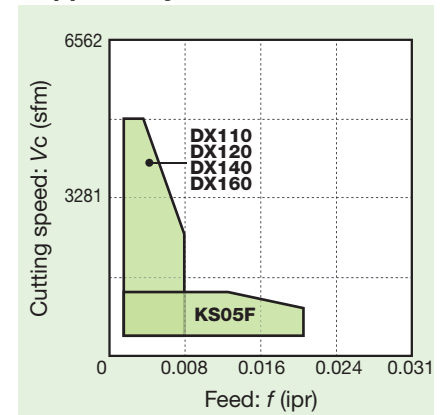
Aluminum alloy (Si < 12%)



Aluminum 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.	JS		Chipbreaker geometry that allows light cutting action and excellent chip breaking

STANDARD CUTTING CONDITIONS

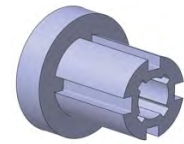
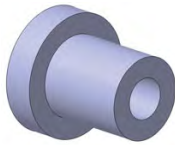
ISO	Operation	Chip-breaker	Grade	Depth of cut ap (in)	Feed f (ipr)	Cutting speed: Vc (sfm)		
						Aluminum alloy (Si < 12%)	Aluminum alloy (Si ≥ 12%)	Copper alloy
N	Precision finishing	NS	DX160	0.001 - 0.02	0.001 - 0.006	984 - 8202	984 - 2625	984 - 4921
		-	DX160	0.001 - 0.02	0.002 - 0.008	984 - 8202	984 - 1969	984 - 4921
	Finishing	NS	DX160	0.002 - 0.079	0.001 - 0.012	984 - 8202	984 - 2625	984 - 4921
		-	DX160	0.002 - 0.039	0.002 - 0.006	984 - 5906	984 - 1969	984 - 3937
		AL	KS05F	0.02 - 0.197	0.004 - 0.02	328 - 1969	328 - 656	328 - 656
		JS	KS05F	0.02 - 0.118	0.001 - 0.008	328 - 3937	328 - 984	328 - 984
	Medium cutting	AL	KS05F	0.02 - 0.197	0.004 - 0.02	328 - 3937	328 - 984	328 - 984
		AL	KS05F	0.02 - 0.197	0.004 - 0.02	328 - 2953	328 - 656	328 - 656
		AL	KS05F	0.02 - 0.197	0.004 - 0.02	328 - 1969	328 - 656	-

Selection System

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

SELECTION SYSTEM: POSITIVE TYPE

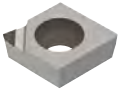
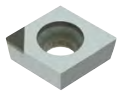
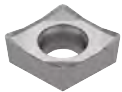
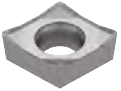
N Non-ferrous Metal



Continuous

Light interrupted

Heavy interrupted

	Continuous	Light interrupted	Heavy interrupted
Precision finishing [$a_p = \sim 0.020''$]	Basic  NS DX160 Surface quality → NS DX110	Basic  Surface quality → With chipbreaker DX110 Fracture → DX160	
Finishing [$a_p = 0.020 \sim 0.079''$]	Basic  NS DX160 Surface quality → NS DX110	Basic  DX160 Fracture → AL KS05F	Basic  AL KS05F
Medium cutting [$a_p = 0.039 \sim 0.197''$]	Basic  AL KS05F Wear → With chipbreaker DX160	Basic  AL KS05F Wear → DX160	Basic  AL KS05F

CER

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Turning

CBN

Turning

Grooving

Turning

Milling

Turning

Turning

Turning

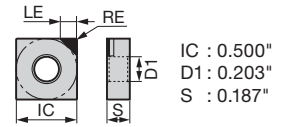
PCD

Turning

Grooving

Milling

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



SN



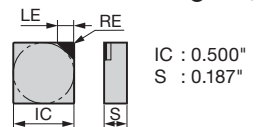
Square with hole

Application	Designation	Dimension (in)		No. of corners	Chipbreaker											
		RE	LE			RE	LE	RE	LE	RE	LE	RE	LE	RE	LE	
Finishing	SNGA 431 DIA	SNGA120404-DIA	0.016	0.142	1	●	DX140	●								
	SNGA 432 DIA	SNGA120408-DIA	0.031	0.142	1	●										

SN



Square without hole

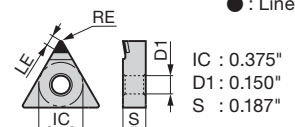


N		Non-ferrous		●	●														
Dimension (in)				No. of corners	Chipbreaker														
E	LE					DX140													
0.031	0.142	1				●													

TN



Triangular with hole



Application		Designation		Dimension (in)		No. of corners		Chipbreaker		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE		LE		RE	
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SN



Ex.Toolholder



In.Toolholder

TN



Ex.Toolholder



In.Toolholder

CER

Turning

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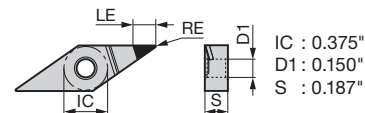
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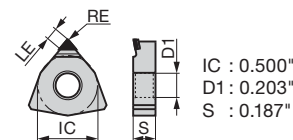
VN**35° Rhombic
with hole**

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



 35° Rhombic with hole			N		Non-ferrous		cc		cc																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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● : Line up

WN**80° Trigon
with hole**

 80° Trigon with hole			N Non-ferrous		●●														
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX160												
			RE	LE															
Finishing	1QP-WNMM 430.5F	1QP-WNMM080402F	0.008	0.102	1	○	●												
	1QP-WNMM 431F	1QP-WNMM080404F	0.016	0.102	1	○	●												

● : Line up

VN



Ex.Toolholder



In.Toolholder

WN



Ex.Toolholder



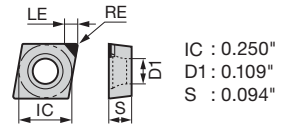
In.Toolholder

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

CC



**80°Rhombic
Positive 7°
with hole**



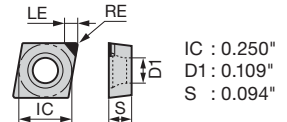
 80° Rhombic Positive 7° with hole			N Non-ferrous		●●														
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX200												
			RE	LE															
Finishing	1QP-CCGW 5.52.20.5F	1QP-CCGW04T102F	0.008	0.067	1		●												
	1QP-CCGW 5.52.21F	1QP-CCGW04T104F	0.016	0.063	1		●												

● : Line up

CC



**80°Rhombic
Positive 7°
with hole**



80°Rhombic Positive 7° with hole			N		Non-ferrous		●●		●●		●●		●●		●●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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● : Line up



Ex. Toolholder



In. Toolholder

LE RE

IC S

IC : 0.375"
D1 : 0.173"
S : 0.156"

[illegible]

● : Line up

[illegible]

● : Line up



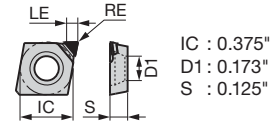
In-Toolholder

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

CP



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



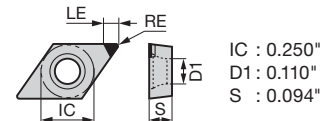
Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	1QP-CPMT 320.5F	1QP-CPMT090302F	0.008	0.079	1	○	●									
	1QP-CPMT 321F	1QP-CPMT090304F	0.016	0.079	1	○	●									
	1QP-CPMT 322F	1QP-CPMT090308F	0.031	0.075	1	○	●									

● : Line up

DC



**55° Rhombic
Positive 7°
with hole**



Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	DCGW 21.5V DIA	DCGW070200-DIA	0.002	0.094	1		DX110	DX120	DX140	DX160	DX200					
	1QP-DCGT 21.50 NS	1QP-DCGT070201-NS	0.004	0.130	1	○	●		●							
	1QP-DCGT 21.50.5 NS	1QP-DCGT070202-NS		0.126	1	○	●			●						
	1QP-DCMT 21.50.5F	1QP-DCMT070202F		0.098	1	○				●						
	DCMT 21.50.5 DIA	DCMT070202-DIA	0.008	0.091	1	○		●								
	1QP-DCGW 21.50.5F	1QP-DCGW070202F		0.118	1						●					
	DCGW 21.50.5 DIA	DCGW070202-DIA		0.091	1			●	●							
	1QP-DCGT 21.51 NS	1QP-DCGT070204-NS		0.118	1	○	●			●						
	1QP-DCMT 21.51F	1QP-DCMT070204F		0.098	1	○				●						
	DCMT 21.51 DIA	DCMT070204-DIA	0.016	0.083	1	○		●								
	1QP-DCGW 21.51F	1QP-DCGW070204F		0.118	1						●					
	DCGW 21.51 DIA	DCGW070204-DIA		0.083	1				●							

● : Line up

CP



Ex.Toolholder



In.Toolholder

DC



Ex.Toolholder



In.Toolholder

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

[illegible]

● : Line up

[illegible]

● : Line up



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

SP



**Square
Positive 11°
without hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker												
			RE	LE														
Finishing	Inch	Metric	0.031	0.142	1		●											
	SPGN 322 DIA	SPGN090308-DIA																

● : Line up

SP



**Square
Positive 11°
without hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker												
			RE	LE			DX140	DX160										
Finishing	Inch	Metric																
	SPGN 420 DIA	SPGN120302-DIA	0.008	0.142	1		●											
	SPGN 421 DIA	SPGN120304-DIA	0.016	0.142	1		●											
	SPGN 422 DIA	SPGN120308-DIA	0.031	0.142	1		●	●										

● : Line up

TC



**Triangular
Positive 7°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker													
			RE	LE															
Finishing	Inch	Metric	RE	LE			DX120												
	TCMT 63Y DIA	TCMT080202-DIA	0.008	0.087	1	○	●												
	TCMT 631 DIA	TCMT080204-DIA	0.016	0.079	1	○	●												

● : Line up



SP In.Toolholder



TP Ex.Toolholder



TC In.Toolholder

CER

Turning
Grooving
Milling

Cast Iron
Grooving
Turning

Milling
Turning

Hardened Materials

CBN

Hardened Materials
Turning
Grooving

Cast Iron
Turning
Milling

Superalloys
Turning

Sintered metal

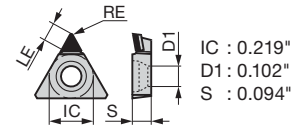
Turning

PCD

Turning
Grooving

Non-Ferrous Materials
Milling

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

**TC**

**Triangular
Positive 7°
with hole**

 Triangular Positive 7° with hole			N Non-ferrous		●●		●●													
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX110	DX160												
			RE	LE																
Finishing	Inch	Metric	0.008	0.122	1	○	●	●												
	1QP-TCGT 730.5 NS	1QP-TCGT090202-NS		0.091	1	○		●												
	1QP-TCMT 730.5F	1QP-TCMT090202F		0.118	1	○		●												
	1QP-TCGT 731 NS	1QP-TCGT090204-NS	0.016	0.087	1	○		●												
	1QP-TCGT 731F	1QP-TCMT090204F						●												

● : Line up

TC

**Triangular
Positive 7°
with hole**

 Triangular Positive 7° with hole			N Non-ferrous		●●														
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX160												
			RE	LE															
Finishing	1QP-TCGT 21.50.5 NS	1QP-TCGT110202-NS	0.008	0.122	1	○	●												
	1QP-TCGT 21.51 NS	1QP-TCGT110204-NS	0.016	0.118	1	○	●												

● : Line up

TC

**Triangular
Positive 7°
with hole**

 Triangular Positive 7° with hole			N Non-ferrous		●●														
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX160												
			RE	LE															
Finishing	Inch	Metric																	
	1QP-TCGT 32.51 NS	1QP-TCGT16T304-NS	0.016	0.118	1	○	●												
	1QP-TCGT 32.52 NS	1QP-TCGT16T308-NS	0.031	0.122	1	○	●												

● : Line up

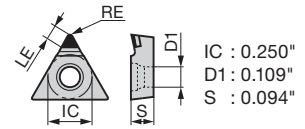


Ex. Toolholder



In. Toolholder

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



TC



**Triangular
Positive 7°
with hole**

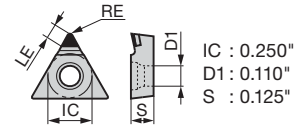
Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE			DX120		DX160							
	Inch	Metric														
Finishing	1QP-TCMT 21.50.5F	1QP-TCMT110202F	0.008	0.091	1	○	●	●								
	TCMT 21.50.5 DIA	TCMT110202-DIA		0.094	1	○	●	●								
	1QP-TCMT 21.51F	1QP-TCMT110204F	0.016	0.087	1	○	●	●								
	TCMT 21.51 DIA	TCMT110204-DIA		0.087	1	○	●	●								

● : Line up

TC



**Triangular
Positive 7°
with hole**



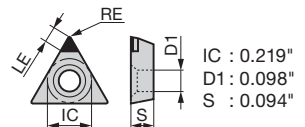
Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE			DX110		DX120							
	Inch	Metric														
Finishing	TCMT 220.5 DIA	TCMT110302-DIA	0.008	0.094	1	○	●	●								
	1QP-TCMT 221	1QP-TCMT110304		0.087	1	○	●	●								
	TCMT 221 DIA	TCMT110304-DIA	0.016	0.087	1	○	●	●								

● : Line up

TP



**Triangular
Positive 11°
with hole**



Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE			DX140									
	Inch	Metric														
Finishing	TPGA 73Y DIA	TPGA090202-DIA	0.008	0.094	1		●									
	TPGA 731 DIA	TPGA090204-DIA	0.016	0.087	1		●									

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

● : Line up



TC Ex.Toolholder



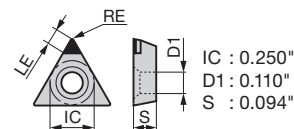
TC In.Toolholder



TP In.Toolholder

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

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



Triangular Positive 11° with hole

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

● : Line up

C

D

S

V

W



Triangular Positive 11° with hole

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

● : Line up

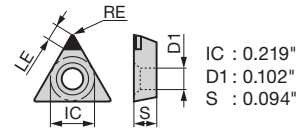
**Triangular
Positive 11°
with hole**

● : Line up



In-Toolholder

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



TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric	RE	LE	No. of corners	Chipbreaker										
Finishing	1QP-TPGT 730.5 NS	1QP-TPGT090202-NS	0.008	0.122	1	○	●									
	1QP-TPGT 731 NS	1QP-TPGT090204-NS	0.016	0.118	1	○	●									

● : Line up

TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric	RE	LE	No. of corners	Chipbreaker										
Finishing	1QP-TPGT 220.5 NS	1QP-TPGT110302-NS	0.008	0.122	1	○	●									
	1QP-TPGT 221 NS	1QP-TPGT110304-NS	0.016	0.118	1	○	●									

● : Line up

TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric	RE	LE	No. of corners	Chipbreaker										
Finishing	TPGA 320.5 DIA	TPGA160302-DIA	0.008	0.130	1		●									
	TPGA 321 DIA	TPGA160304-DIA	0.016	0.125	1		●									
	TPGA 322 DIA	TPGA160308-DIA	0.031	0.114	1		●									

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

● : Line up



In.Toolholder

CER

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Hardened Materials

CBN

Turning

Grooving

Turning

Milling

Cast Iron

Turning

Grooving

Sintered metal

Turning

PCD

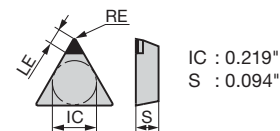
Turning

Grooving

Milling

Non-Ferrous Materials

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

**TP**

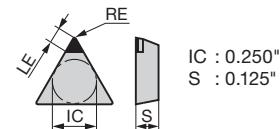
**Triangular
Positive 11°
without hole**

N Non-ferrous

● ●

Application	Designation	Dimension (in)		No. of corners	Chipbreaker										
	Inch	Metric	RE	LE											
Finishing	TPGN 731 DIA	TPGN090204-DIA	0.016	0.087	1	DX140	●								

● : Line up

**TP**

**Triangular
Positive 11°
without hole**

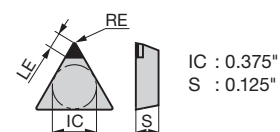
N Non-ferrous

● ●

● ●

Application	Designation	Dimension (in)		No. of corners	Chipbreaker										
	Inch	Metric	RE	LE											
Finishing	TPGN 221 DIA	TPGN110304-DIA	0.016	0.126	1	DX120	●	●							
	TPGN 222 DIA	TPGN110308-DIA	0.031	0.114	1	DX140	●								

● : Line up

**TP**

**Triangular
Positive 11°
without hole**

N Non-ferrous

● ●

● ●

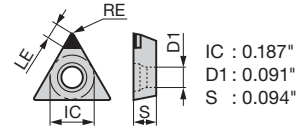
Application	Designation	Dimension (in)		No. of corners	Chipbreaker										
	Inch	Metric	RE	LE											
Finishing	TPGN 320.5 DIA	TPGN160302-DIA	0.008	0.130	1	DX120	●	●							
	TPGN 321 DIA	TPGN160304-DIA	0.016	0.126	1	DX140	●	●							

● : Line up



In.Toolholder

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



TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	TPGW 63Y DIA	TPGW080202-DIA	0.008	0.094	1	DX140	●									
	TPGW 631 DIA	TPGW080204-DIA	0.016	0.091	1	●										

● : Line up

TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	TPGW 73Y DIA	TPGW090202-DIA	0.008	0.094	1	DX120	●	●								
	TPGW 731 DIA	TPGW090204-DIA	0.016	0.087	1	●										

● : Line up

TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	TPGW 21.50.5 DIA	TPGW110202-DIA	0.008	0.094	1	DX120	●	●								
	TPGW 21.51 DIA	TPGW110204-DIA	0.016	0.087	1	●										

● : Line up



In.Toolholder

CER

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

CBN

Turning

Grooving

Turning

Milling

Turning

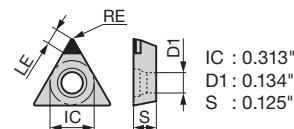
PCD

Turning

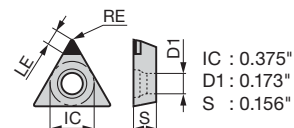
Grooving

Milling

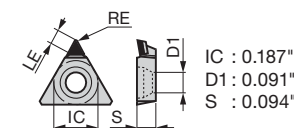
- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊕ : Heavy interrupted cutting

[illegible][illegible]

● : Line up

[illegible][illegible]

● : Line up

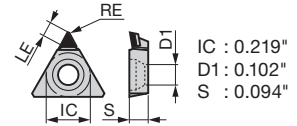
[illegible][illegible]

● : Line up



In.Toolholder

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



TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	1QP-TPMT 730.5F	1QP-TPMT090202F	0.008	0.071	1	○	●									
	1QP-TPMT 731F	1QP-TPMT090204F	0.016	0.067	1	○	●									

● : Line up

TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	1QP-TPMT 220.5F	1QP-TPMT110302F	0.008	0.091	1	○	●									
	1QP-TPMT 221F	1QP-TPMT110304F	0.016	0.087	1	○	●									

● : Line up

TP



**Triangular
Positive 11°
with hole**

Application	Designation		Dimension (in)		No. of corners	Chipbreaker										
			RE	LE												
	Inch	Metric														
Finishing	1QP-TPMH 320.5F	1QP-TPMH160302F	0.008	0.094	1		●									
	1QP-TPMH 321F	1QP-TPMH160304F	0.016	0.091	1		●									

● : Line up



In.Toolholder

CER

Turning

Grooving

Milling

Turning

Grooving

Milling

Turning

Hardened
Materials

CBN

Turning

Grooving

Turning

Milling

Turning

Sintered
metal

PCD

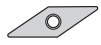
Turning

Grooving

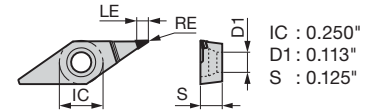
Milling

Non-Ferrous
Materials

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

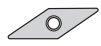
VB

**35° Rhombic
Positive 5°
with hole**

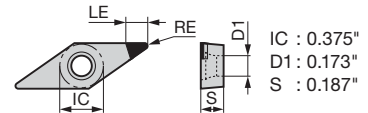


 35° Rhombic Positive 5° with hole			N		Non-ferrous		●●													
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX160													
			RE	LE																
Finishing	1QP-VBMT 220.5F	1QP-VBMT110302F	0.008	0.098	1	○	●													
	1QP-VBMT 221F	1QP-VBMT110304F	0.016	0.091	1	○	●													
	1QP-VBMT 222F	1QP-VBMT110308F	0.031	0.083	1	○	●													

● : Line up

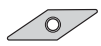
VB

**35° Rhombic
Positive 5°
with hole**

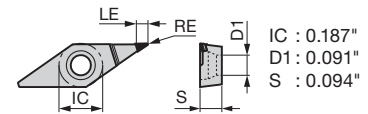


 35° Rhombic Positive 5° with hole			N		Non-ferrous		cc	cc											
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX110	DX160											
			RE	LE															
Finishing	Inch	Metric	RE	LE															
	1QP-VBGT 330 NS	1QP-VBGT160401-NS	0.004	0.110	1	○	●	●											
	1QP-VBMT 330.5F	1QP-VBMT160402F	0.008	0.098	1	○		●											
	1QP-VBGT 330.5 NS	1QP-VBGT160402-NS		0.134	1	○	●	●											
	1QP-VBGT 331 NS	1QP-VBGT160404-NS	0.016	0.118	1	○	●	●											
	1QP-VBMT 331F	1QP-VBMT160404F		0.091	1	○		●											
	1QP-VBGT 332 NS	1QP-VBGT160408-NS	0.031	0.118	1	○	●	●											
	1QP-VBMT 332F	1QP-VBMT160408F		0.083	1	○		●											

● : Line up

VC

**35° Rhombic
Positive 7°
with hole**



 35° Rhombic Positive 7° with hole			N Non-ferrous		●●	●●													
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	● DX110	● DX160											
			RE	LE															
Finishing	Inch	Metric																	
	1QP-VCGT 630.5 NS	1QP-VCGT080202-NS	0.008	0.134	1	○	●	●											
	1QP-VCMT 630.5F	1QP-VCMT080202F	0.008	0.098	1	○		●											
	1QP-VCMT 631F	1QP-VCMT080204F	0.016	0.091	1	○		●											
	1QP-VCMT 632F	1QP-VCMT080208F	0.031	0.083	1	○		●											

● : Line up



Ex. Toolholder



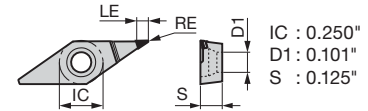
In. Toolholder

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

VC



**35° Rhombic
Positive 7°
with hole**



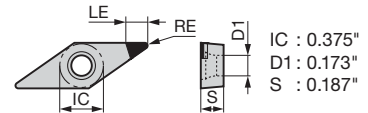
 35° Rhombic Positive 7° with hole			N		Non-ferrous		●●	●●	●●												
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX110	DX160	DX200												
			RE	LE																	
Finishing	Inch	Metric	0.008	0.134	1	○	●	●	●												
				0.098	1	○		●													
				0.134	1				●												
			0.016	0.118	1	○		●													
				0.091	1	○		●													

● : Line up

VC



**35° Rhombic
Positive 7°
with hole**



35° Rhombic Positive 7° with hole			N		Non-ferrous		●●	●●	●●	●●								
Application	Designation		Dimension (in)		No. of corners	Chipbreaker	DX110	DX120	DX140	DX160								
			RE	LE														
Finishing	Inch	Metric																
	1QP-VC GT 330 NS	1QP-VC GT160401-NS	0.004	0.110	1	○	●											
	1QP-VC GT 330.5 NS	1QP-VC GT160402-NS	0.008	0.134	1	○	●			●								
	1QP-VC MT 330.5F	1QP-VC MT160402F		0.098	1	○				●								
	VCMT 330.5 DIA	VCMT160402-DIA		0.189	1	○		●										
	VCMT 331 DIA	VCGW160402-DIA		0.189	1				●									
	1QP-VC GT 331 NS	1QP-VC GT160404-NS	0.016	0.118	1	○	●			●								
	1QP-VC MT 331F	1QP-VC MT160404F		0.091	1	○				●								
	VCMT 331 DIA	VCMT160404-DIA		0.173	1	○		●										
	VCGW 331 DIA	VCGW160404-DIA		0.173	1				●									
	1QP-VC GT 332 NS	1QP-VC GT160408-NS	0.031	0.118	1	○	●			●								
	1QP-VC MT 332F	1QP-VC MT160408F		0.083	1	○				●								
1QP-VC MT 333F	1QP-VC MT160412F	0.083		1	○				●									

● : Line up



Ex. Toolholder



In. Toolholder

CER

Turning

Grooving

Milling

Turning

Grooving

Milling

Hardened Materials

Turning

CBN

Turning

Grooving

Turning

Milling

Turning

Sintered metal

Turning

PCD

Turning

Grooving

Milling

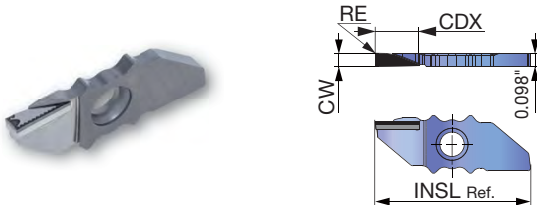
PCD Grooving

N Non-Ferrous Metal

DUOJUST

INSERTS

JXDX**R-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 (mm)	CW±0.002 (in)	RE (in)	PCD					CDX (in)	INSL (in)
					DX110						
JXDX12R20F	R	2	0.079	< 0.004	●					0.236	0.984
JXDX12R25F	R	2.5	0.098	< 0.004	●					0.256	0.984
JXDX16R25F	R	2.5	0.098	< 0.004	●					0.276	1.142

● : Line up



More info

STANDARD CUTTING CONDITIONS

For aluminum and non-ferrous metal PCD insert

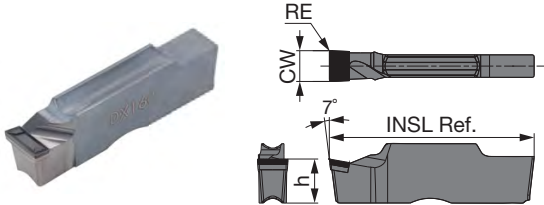
ISO	Workpiece materials	Grades	Operation	Cutting speed Vc (sfm)	Feed f (ipr)	Depth of cut ap (in)
N	Aluminum alloys A5056, A6061, etc.	DX110	Grooving	328 - 984	0.001 - 0.006	-
		DX110	Turning	328 - 984	0.001 - 0.006	< 0.236

TUNGCUT



STX

External/internal/face grooving and turning



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

★ : First choice

Designation	Seat size	HAND	CW±0.05 (mm)	CW±0.002 (in)	RE (in)	PCD						INSL (in)	h (in)	
						DX160								
STX200R-010	2	R	2	0.079	0.004	●							0.787	0.197
STX200L-010	2	L	2	0.079	0.004	●							0.787	0.197
STX200R-020	2	R	2	0.079	0.008	●							0.787	0.197
STX200L-020	2	L	2	0.079	0.008	●							0.787	0.197
STX300R-020	3	R	3	0.118	0.008	●							0.787	0.197
STX300L-020	3	L	3	0.118	0.008	●							0.787	0.197
STX400R-020	4	R	4	0.157	0.008	●							0.787	0.197
STX400L-020	4	L	4	0.157	0.008	●							0.787	0.197
STX400R-040	4	R	4	0.157	0.016	●							0.787	0.197
STX400L-040	4	L	4	0.157	0.016	●							0.787	0.197
STX500R-020	5	R	5	0.197	0.008	●							0.984	0.217
STX500L-020	5	L	5	0.197	0.008	●							0.984	0.217
STX500R-040	5	R	5	0.197	0.016	●							0.984	0.217
STX500L-040	5	L	5	0.197	0.016	●							0.984	0.217



More info

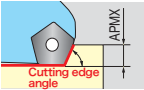
●: New product

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Operation	Cutting speed Vc (sfm)	Feed f (ipr)	Depth of cut ap (in)
N	Aluminum alloys Si ≤ 12%	DX160	Grooving	656 - 6562	0.002 - 0.006	-
		DX160	Turning	656 - 6562	0.003 - 0.012	< 0.039
	Aluminum alloys Si ≥ 12%	DX160	Grooving	656 - 4921	0.002 - 0.006	-
		DX160	Turning	656 - 4921	0.003 - 0.012	< 0.039
	Copper and copper alloys	DX160	Grooving	656 - 4921	0.002 - 0.006	-
		DX160	Turning	656 - 4921	0.003 - 0.012	< 0.039
	Carbon / Graphite	DX160	Grooving	656 - 1640	0.002 - 0.006	-
		DX160	Turning	656 - 1640	0.003 - 0.012	< 0.039
	Ceramic	DX160	Grooving	328 - 656	0.001 - 0.004	-
		DX160	Turning	328 - 656	0.001 - 0.004	< 0.039
	Tungsten carbide (HRA80 - 95)	DX160	Grooving	16 - 98	0.001 - 0.004	-
		DX160	Turning	16 - 98	0.001 - 0.004	0.001 - 0.008

PCD Milling

N Non-Ferrous Metal

	TUNGSMILL T/EPYD	TFE
		
Cutting edge angle	90°	85.5°
Depth of cut (APMX)	0.177" / 0.295" (4.5 mm / 7.5 mm)	0.315" / 0.318" / 0.059" (8 mm / 3.5 mm / 1.5 mm)
Tool diameter	ø2.5" - ø6" (ø40 mm - ø160 mm)	ø2.000" - ø4.000" (ø50 mm - ø125 mm)
Workpiece material	N	P M K N
No. of corners (insert)	1	4 / 1 / 2
 Face milling	★  ★  ★  ☆ 	★  ★  ★  ☆ 
 Shoulder milling	★ 	
Reference pages	PCD-28	PCD-33

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.

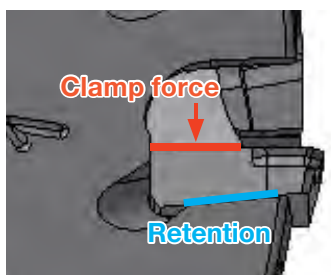
■ Safety measures for high speed milling

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

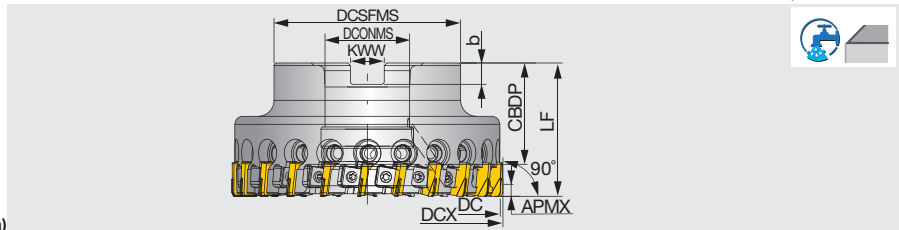


More info

TPYD06

Face milling cutter for non-ferrous applications, bore type, with PCD inserts

GAMP = +9°, GAMF = +4°



Inch	APMX	DC	DCX	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	RPMX(min ⁻¹)	Insert
TPYD06U2.50B0.75R10	0.177	2.500	2.579	10	1.772	1.575	0.75	0.75	0.315	0.197	1.34	With	19000	YDEN0603...
TPYD06U3.00B1.00R16	0.177	3.000	3.079	16	2.362	1.969	1	1.024	0.374	0.236	2.56	With	17000	YDEN0603...
TPYD06U4.00B1.25R22	0.177	4.000	4.079	22	2.756	1.969	1.25	0.827	0.5	0.315	4.3	With	15000	YDEN0603...
TPYD06U5.00B1.50R26	0.177	5.000	5.079	26	3.543	2.362	1.5	1.299	0.626	0.394	8.03	With	14000	YDEN0603...
TPYD06U6.00B1.50R34	0.177	6.000	6.079	34	3.543	2.362	1.5	1.299	0.626	0.394	10.76	With	12000	YDEN0603...
Metric	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



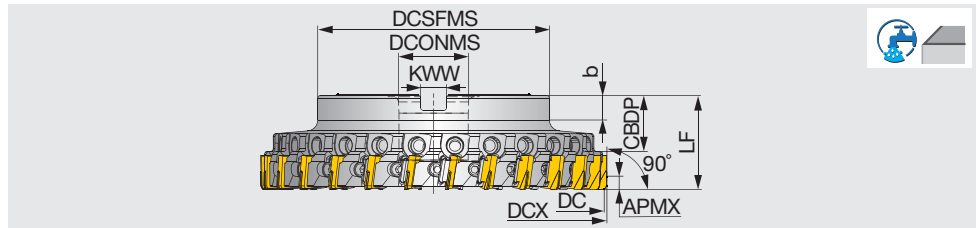
Designation	Insert locking wedge	Wedge fixing screw	Adjusting cam	Torx bit	Cam tightening screw	Wrench	Grip	Shell locking bolt	Shell locking bolt (Optional parts)
TPYD06U2.50B0.75R10	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	-	(C0.375X1.125H)
TPYD06U3.00B1.00R16	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	-	(C0.500X1.375H)
TPYD06U4.00B1.25R22	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	-	-
TPYD06U5.00..., 6.00...	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	-	(TMBA-0.750H)
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](#)

TPYD06

Face milling cutter for non-ferrous applications, bore type, with PCD inserts

GAMP = +9°, GAMF = +4°



Metric	APMX	DC	DCX	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT(kg)	Air hole	RPMX(min ⁻¹)	Insert
TPYD06J100B25.4R12	4.5	100	102	12	70	35	25.4	24.5	9.5	6	1.29	With	15000	YDEN0603...
TPYD06M100B27.0R12	4.5	100	102	12	76	35	27	24.5	12.4	7	1.27	With	15000	YDEN0603...
TPYD06J100B25.4R22	4.5	100	102	22	70	35	25.4	24.5	9.5	6	1.29	With	15000	YDEN0603...
TPYD06M100B27.0R22	4.5	100	102	22	76	35	27	24.5	12.4	7	1.27	With	15000	YDEN0603...
TPYD06J125B25.4R14	4.5	125	127	14	70	35	25.4	24.5	9.5	6	1.71	With	13000	YDEN0603...
TPYD06M125B27.0R14	4.5	125	127	14	76	35	27	24.5	12.4	7	1.69	With	13000	YDEN0603...
TPYD06J125B25.4R26	4.5	125	127	26	70	35	25.4	24.5	9.5	6	1.71	With	13000	YDEN0603...
TPYD06M125B27.0R26	4.5	125	127	26	76	35	27	24.5	12.4	7	1.68	With	13000	YDEN0603...

Wrench, Grip, and Shell locking bolt are not included in the box.

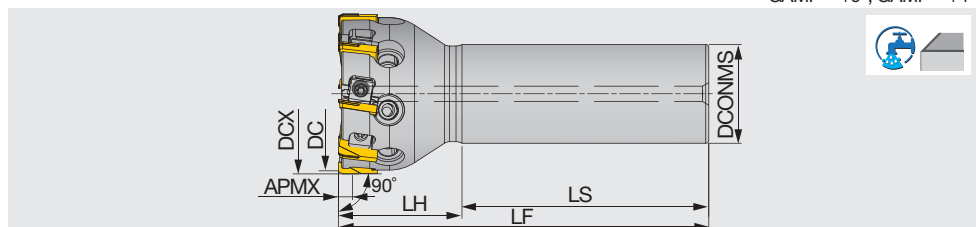
SPARE PARTS

Designation	Insert locking wedge	Wedge fixing screw	Adjusting wedge screw (Optional)	Grip (Optional)	Shell locking bolt (Optional)	Wedge tightening wrench (Optional)
TPYD06M100B**R...	WF385N	SSHM5-4PF-S	(AJC08-BLDS635)	(TBJ)	(HM12-26OH)	(P-2.5F)
TPYD06M125B**R...	WF385N	SSHM5-4PF-S	(AJC08-BLDS635)	(TBJ)	(HM12-26OH)	(P-2.5F)

EPYD06

Face milling cutter for non-ferrous applications, shank type, with PCD inserts

GAMP = +9°, GAMF = +4°



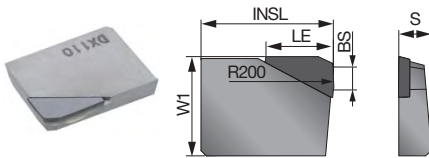
Inch	APMX	DC	DCX	CICT	DCONMS	LF	LH	LS	WT(kg)	Air hole	RPMX(min ⁻¹)	Insert
EPYD06U2.00C1.25R08	0.177	2.000	2.079	8	1.250	4.500	1.575	2.925	1.920	With	22,000	YDEN0603...
Metric	APMX	DC	DCX	CICT	DCONMS	LF	LH	LS	WT(kg)	Air hole	RPMX(min ⁻¹)	Insert
EPYD06M050C32.0R06	4.5	50	52	6	32	120	40	80	0.91	With	20,000	YDEN0603...
EPYD06M050C32.0R08	4.5	50	52	8	32	120	40	80	0.9	With	20,000	YDEN0603...

SPARE PARTS

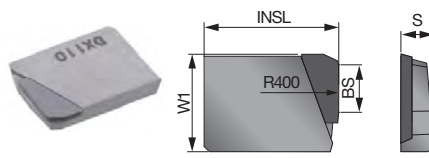
Designation	Insert locking wedge	Wedge fixing screw	Adjusting cam	Torx bit	Cam tightening screw	Wrench	Grip
EPYD06...	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W

INSERT

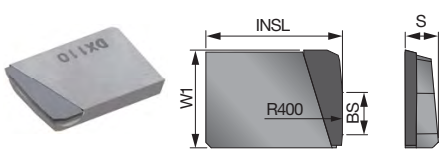
YDEN0603PD(F/S)R-D



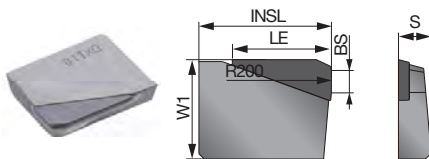
YDEN0603PDFR-WD



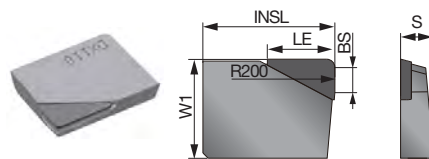
YDEN0603PDFR-BD



YDEN0603PDCR-LD



YDEN0603(04/08)PDFR-D



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

★ : First choice

Designation	APMX	Edge prep.	PCD										W1	INSL	S	BS	LE
			DX110														
YDEN0603PDFR-D	0.177	Without	●										0.374	0.500	0.122	0.087	0.256
YDEN0603PDSR-D	0.177	With	●										0.374	0.500	0.122	0.087	0.256
YDEN060304PDFR-D	0.177	Without	●										0.374	0.500	0.122	0.110	0.256
YDEN060308PDFR-D	0.177	Without	●										0.374	0.500	0.122	0.094	0.256
YDEN0603PDCR-LD	0.295	With*	●										0.374	0.500	0.122	0.087	0.374
YDEN0603PDFR-WD	-	Without	●										0.362	0.504	0.122	0.177	-
YDEN0603PDFR-BD	-	Without	●										0.362	0.508	0.122	0.157	-

* Edge preparation is applied only on the peripheral and chamfered sections. The remaining section of the cutting edge is left sharp.

● : Line up

Package quantity = 1 pc. per box

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grades	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
N	Cast aluminum alloy / Die-cast (Si < 13%)	DX110	1640 - 13123	0.002 - 0.008
	Cast aluminum alloy / Die-cast (Si ≥ 13%)	DX110	656 - 2625	0.002 - 0.008
	Aluminum alloy (1000 - 7000 series)	DX110	1640 - 13123	0.002 - 0.008
	Copper alloy	DX110	656 - 1640	0.002 - 0.008

- The values in the above list are of standard recommendations and may require adjustments in consideration with cutting depths and/or workpiece/machine rigidity.
- Use wiper inserts (-WD) for better surface requirements and deburring inserts (-BD) to remove burrs.
- Always use wet cutting (emulsion coolant) for machining aluminum or copper alloys.
- To make the best of the cutter's deburring ability, make sure to place a deburring insert immediately behind every standard insert on the cutter.

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



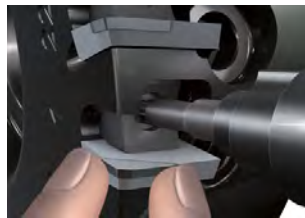
Remove all the inserts from the pockets. Use compressed air to thoroughly clean the pockets of dust and chips.

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.

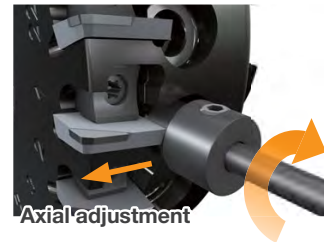


Direction to place the insert



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 μm ~ 40 μm 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.

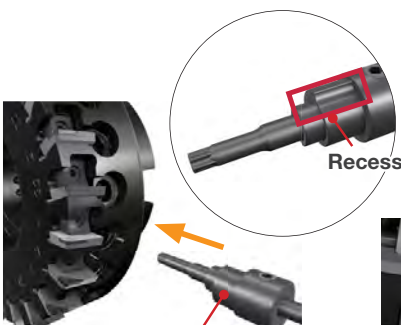


skip

... and on

4 Place the Adjusting cam

The recessed part of the cam should be placed on the insert bottom.



Adjusting cam



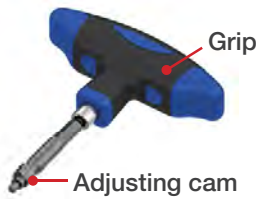
7 Final adjustments

For the final axial adjustment, instead of setting the insert height close to the target position, set so that it reaches approximately 8 μm above the target. Slightly rotate the cam CCW to remove the key off the body. The insert will go down by 8 μm to the target height when the cam is removed. It is recommended that the inserts be set to less than 5 μm 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



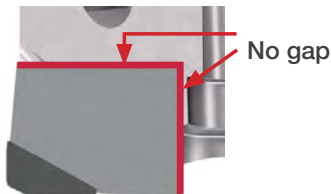
Remove all the inserts from the pockets. Use compressed air to thoroughly clean the pockets of dust and chips.

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.

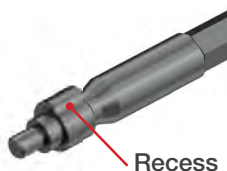


Direction to place the insert



4 Place the Adjusting cam

The recessed part of the cam should be placed on the insert bottom.

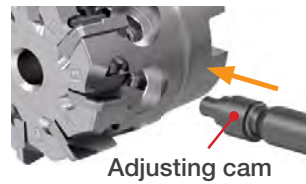


5 Initially adjusting the axial height

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

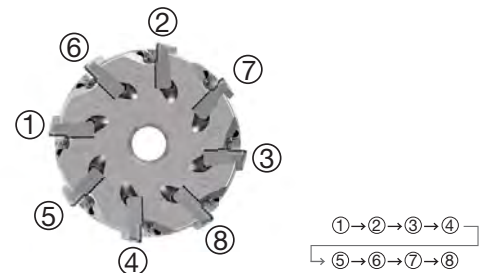


Axial adjustment

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

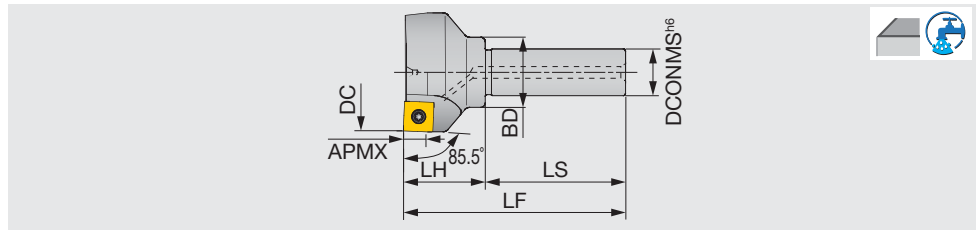
For the final axial adjustment, instead of setting the insert height close to the target position, set so that it reaches approximately 5 μ m above the target. Slightly rotate the cam CCW to remove the key off the body. The insert will go down by 5 μ m to the target height when the cam is removed. It is recommended that the inserts be set to less than 5 μ m axially in relation to one another.

EFE / TFE

EFE12R

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

GAMP = +13°, GAMF = +7°

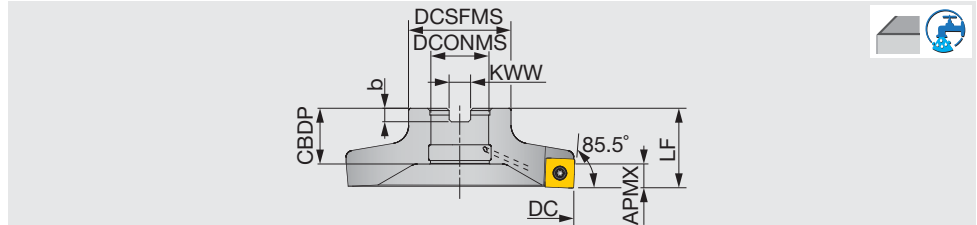


Inch	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT (lb)	Air hole	Insert
EFE12200RU	0.315	2.000	3	0.750	1.180	2.362	1.375	3.406	0.77	With	SEG*12X4...
Metric	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EFE12050R	8	50	3	20	30	60	35	95	0.37	With	SEG*12X4...

TFE12R

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

GAMP = +13°, GAMF = +7°

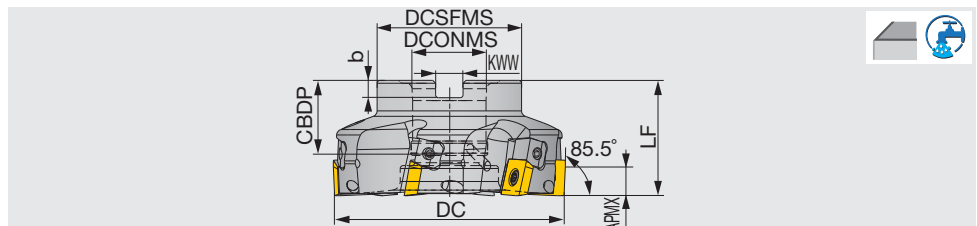


Inch	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT (lb)	Air hole	Insert
TFE12300RU	0.315	3.000	4	1.970	1.380	1.000	0.964	0.375	0.236	0.880	With	SEG*12X4...
TFE12400RU	0.315	4.000	6	1.970	1.380	1.000	0.964	0.375	0.236	1.340	With	SEG*12X4...
Metric	APMX	DC	CICT	DCSFMS	LF	DCONMS	CDBP	KWW	b	WT(kg)	Air hole	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 aluminum machining, with screw clamp system

GAMP = +13°, GAMF = +7°



Metric	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
TFE12300RU, TFE12400RU	CSPB-4S	-	M-1000	-	TMBA-0.500H	-	-	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: 2.58 lbs·ft, 3.5 N·m

Reference pages: Inserts → **PCD-35**, Standard cutting conditions → **PCD-36**

tungaloy.com/us
ntkcuttingtools.com/us

PCD-33

CER

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

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

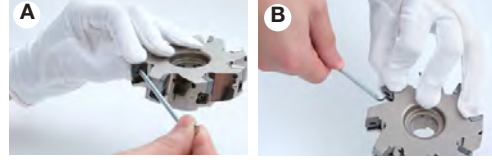


CCW rotation
- Insert screw loosens
- Wedge slides out
- Insert lowers

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

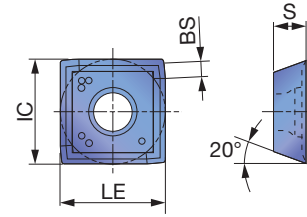
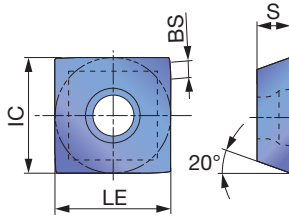


After final tightening of all insert screws, measure to ensure all inserts are at the desired axial heights. If necessary, further tighten any wedge screws in the CW direction for the final few microns. For inserts exceeding the required runout, re-start the adjustment procedure from Step ①.

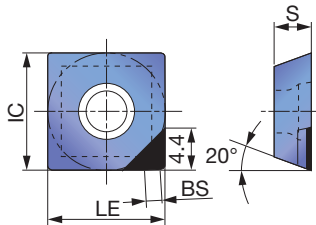
Note:

Do not re-tighten the insert screw after insert adjustment is completed. Additional tightening may weaken wedge clamping torque.

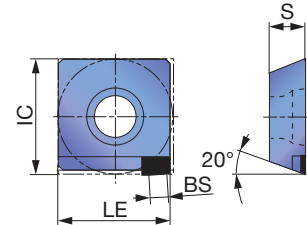
SEGT12X4-AJ



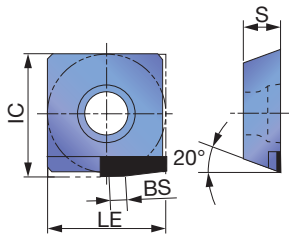
SEGW12X4ZEFR-D



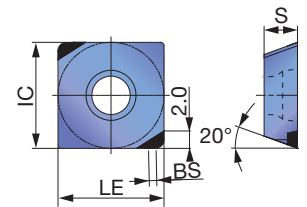
SEGW12X4ZEFR-WD



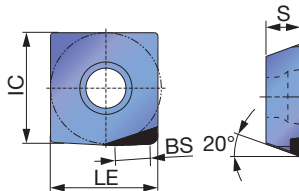
SEGW12X4ZEFR-BD



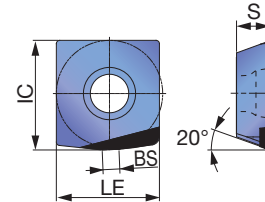
2QP-SECW12X412ZETR



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	0.315					●							0.500	0.500	0.157	0.071
SEGW12X4ZEPR	0.315	●	●		●								0.500	0.500	0.157	0.055
SEGT12X4ZEFR-AJ	0.315			●		●							0.500	0.500	0.157	0.071
SEGW12X4ZEFR-D	0.138						●						0.500	0.500	0.157	0.071
SEGW12X4ZEFR-WD	-						●						0.504	0.488	0.157	0.079
SEGW12X4ZEFR-BD	-						●						0.516	0.488	0.157	0.071
2QP-SECW12X412ZETR	0.059							●					0.500	0.500	0.157	0.035
1QP-SECW12X4ZETR-W	-							●					0.508	0.484	0.157	0.157
1QP-SECW12X4ZETR-B	-							●					0.516	0.484	0.157	0.079

● : 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 Vc (sfm)	Feed per tooth fz (ipt)
P	Carbon steels and alloy steels	< 300HB	AH120	SEGW12X4ZEPR	328 - 591	0.001 - 0.006
		< 300HB	NS740	SEGW12X4ZEPR	328 - 591	0.001 - 0.006
M	Stainless steels	< 250HB	AH140	SEGW12X4ZEPR	262 - 591	0.001 - 0.006
K	Grey and ductile cast irons	150 - 250 HB	AH120	SEGW12X4ZEPR	328 - 656	0.001 - 0.006
	Grey cast iron	150 - 250 HB	BX480	2QP-SECW12X412ZETR	2625 - 4921	0.002 - 0.012
	Ductile cast irons	150 - 250 HB	BX480	2QP-SECW12X412ZETR	1640 - 2625	0.002 - 0.008
N	Cast aluminum alloy / Die-cast Si < 13%	-	KS05F	SEGT12X4ZEFR-AJ	656 - 4921	0.002 - 0.008
		-	DX140	SEGW12X4ZEFR-D	656 - 4921	0.002 - 0.008
	Cast aluminum alloy / Die-cast Si ≥ 13%	-	KS05F	SEGT12X4ZEFR-AJ	262 - 656	0.002 - 0.008
		-	DX140	SEGW12X4ZEFR-D	656 - 1640	0.002 - 0.008
	Aluminum alloy Tensile strength < 350 N/mm ²	-	KS05F	SEGT12X4ZEFR-AJ	656 - 4921	0.002 - 0.008
		-	DX140	SEGW12X4ZEFR-D	656 - 4921	0.002 - 0.008
	Aluminum alloy Tensile strength > 350 N/mm ²	-	KS05F	SEGW12X4ZEFR	656 - 4921	0.002 - 0.008
		-	DX140	SEGW12X4ZEFR-D	656 - 4921	0.002 - 0.008
	Copper alloy	-	KS05F	SEGT12X4ZEFR-AJ	656 - 1640	0.002 - 0.008
		-	DX140	SEGW12X4ZEFR-D	656 - 1640	0.002 - 0.008

Notes:

- In milling aluminum 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 aluminum 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.

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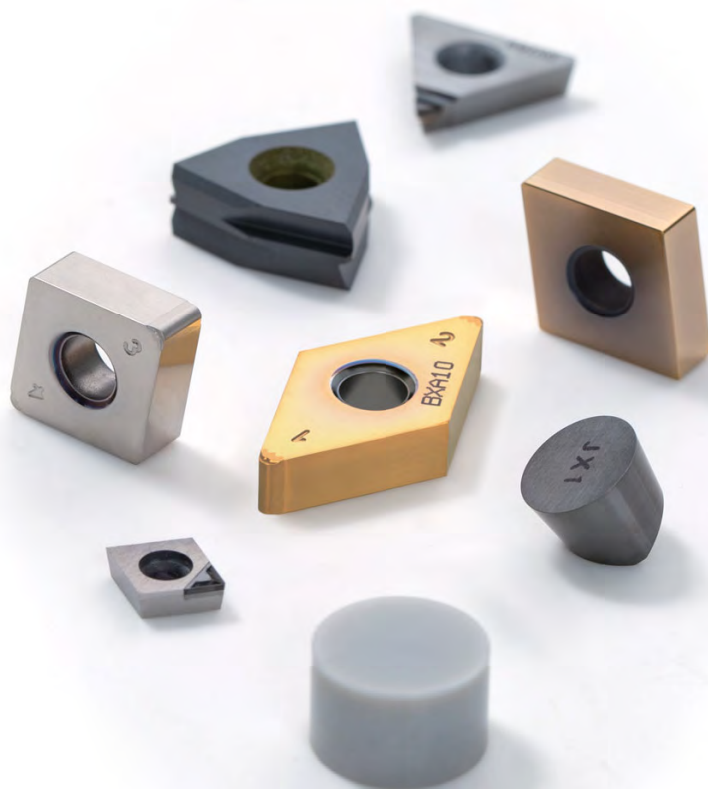
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