



NTK

CUTTING TOOLS

GENERAL CATALOG 8000



App for iOS



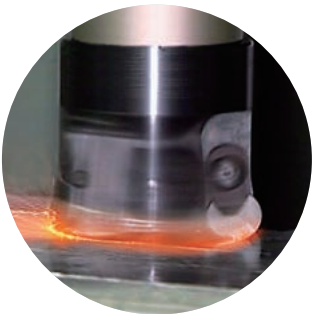
App for ANDROID



NTKCUTTINGTOOLS.com
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NTK TECHNOLOGY

- HRSA Materials



- Gray / Ductile Cast Iron

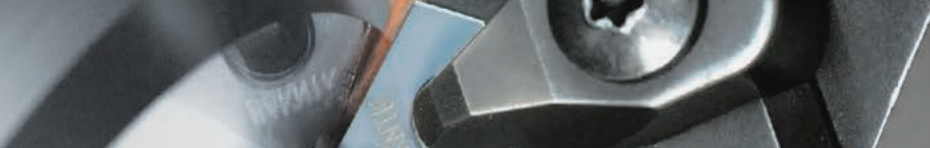


- Hardened Steels

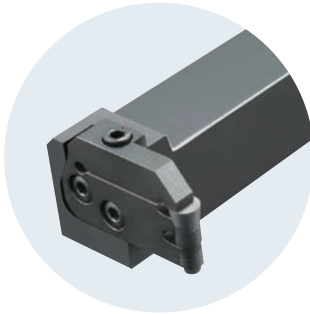


- Mill Rolls





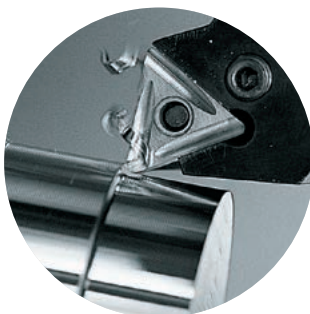
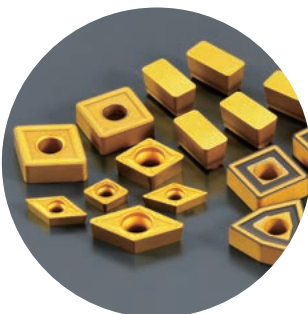
• Grooving



• Tooling For Swiss Type Lathes



• Steel Machining



• High Speed Machining of Aluminum



General Catalog



Advanced Cutting Tools



Swiss Tooling



NTK CUTTING TOOLS

Cutting tools play an integral part in any manufacturing process.

NTK offers a wide range of tooling products and inserts from Ceramics, CBNs, PCDs, Carbides to new materials like BIDEIMICS.

Guidelines for Catalog

- This catalog lists products as of September 2018.
 - Please note that specifications of the products listed in this catalog may be changed without notice due to continuous research & development and product improvements.
 - This catalog contains the major features and relevant information on all of our products. Please contact our sales representatives or dealers if more detailed information is needed.
 - Stock Status Symbols
 - : Standard stock available for Right-Hand, Left-Hand and neutral products
 - R : Stock available only in Right-Hand
 - L : Stock available only in Left-Hand
 - : 1-2 weeks delivery
 - Ⓜ : 1-2 weeks delivery only in Right-Hand
 - Ⓛ : 1-2 weeks delivery only in Left-Hand
 - : While stock lasts
 - No symbol : Not stocked
- } Non-returnable items
- Please note that this catalog was prepared based on products intended mainly for sale in North and South America.

■ Standard

1) Holder Type	Package quantity	Notes
Turning holder	1 pc/case	
Milling cutter	1 pc/case	
2) Spare parts	Package quantity	Notes
Screw	10 pcs/case	Clamp screw, Clamp bolt, Double screw, Button screw
Seat	10 pcs/case	Shim seat
Clamp	10 pcs/case	Clamp
Wrench and cutter parts (such as cartridges)	5 pcs/case	Wrench, bit, cutter product
Blade	1 pc/case	
Handle, Hose	1 pc/case	Handle with magnet, handle and bit
3) Insert Type	Package quantity	Notes
BIDEMICS (Brazed)	1 pc/case	JP2
End mill	1 pc/case	SX9 Ceramic end mill
CBN	1 pc/case	B23, B30, B36, B40, B52, B5K, B6K, B99
PCD, Diamond coating	1 pc/case	PD1, PD2, UC1
CTPW insert for cut-off	5 pcs/case	CTPW series
STICK DUO Solid carbide bar	1 pc/case	SHFS, SHFB, SBFS, SBFB, SBB, SBG, SBT, SSP
All others	10 pcs/case	

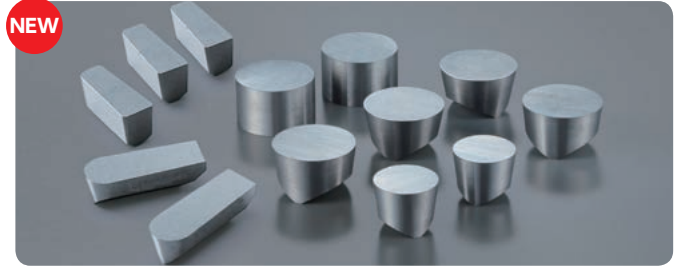
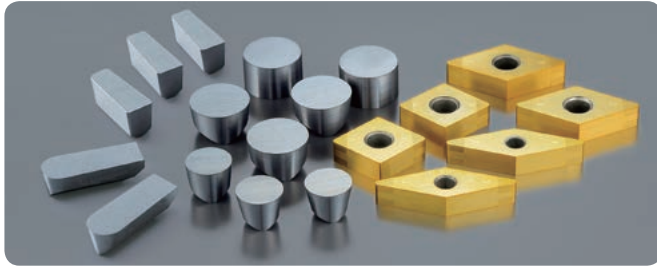
*Packaging may vary depending on the product size.

For more information, please contact your nearest distributor or our sales office.

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Insert Item List	Section E
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ID Tooling	Section G
Grooving / Side Turning	Section H
Rotating Tools	Section I
For Swiss-type Lathes	Section O to X
Information	Section Y
Index	Section Z

BIDEMICS for HRSA Materials

Patented

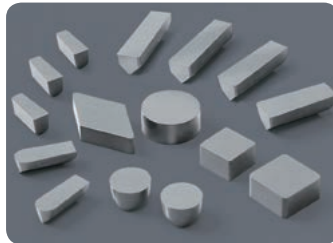


Features

- Revolutionary grades for HRSA machining
- Patented composite material
- 1600 SFM capability
- 2x more tool life over whisker ceramics

→D2

SiAlON for HRSA Materials

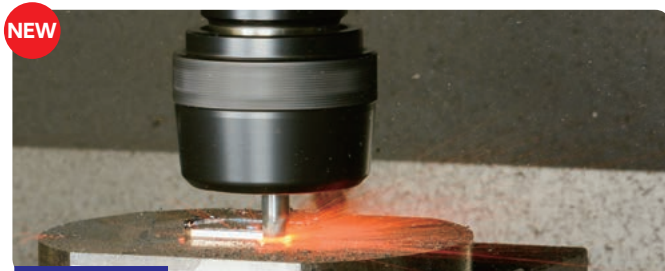


Features

- New SX3 grade with a blend of wear resistance and toughness to machine wide variety of HRSA materials
- Select from the family of grades to complete applications with or without scale, roughing to semi-finishing
- Ideal selection to replace whisker ceramics for higher productivity

→D22

Ceramic Endmill



for HRSA Materials



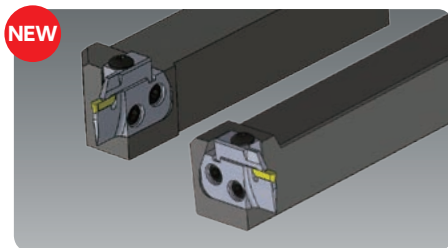
for Cast iron

Features

- Extremely high speed machining for HRSA materials with our durable SiAlON grade "SX9"
- More than 15 times higher productivity than a Carbide endmill
- 4, 6 and 8 flutes are available
- Unique patent pending design provides toughness to the edge
- Specific edge design developed for machining cast iron

→I8

Modular System



for VGW insert



for RCGX/RPGX insert



for Carbide face grooving

Features

- Rigid design for stable machining
- Straight and L-style toolholder construction
- New blade design for face grooving applications in ceramic

→F3 · H3

CBN Series



Features

- Excellent performance
- Competitively priced
- More than 700 items

→D28

UC1



	DLC	PCD	UC1
Crystal structure	Amorohous	Diamond	Diamond
Binder	None	Co, Ni	None
Diamond grain size	Amorohous	10 μm	<0.1 μm
Diamond surface roughness	0.2S	0.2S	2S
Hardness (GPa)	10	75	90

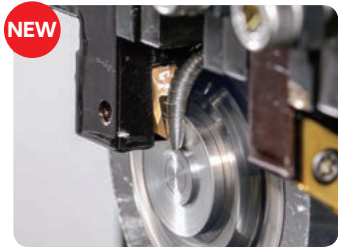
Features

- High hardness due to the purity of the fine diamond coating
- Available in insert geometries with multiple cutting edges
- Molded chipbreakers provide excellent chip control

→D30

New Products for Swiss Machines

3D Mold Chipbreakers



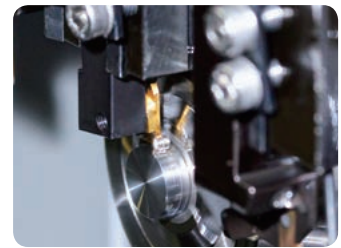
Front turning →O21



Cut-off →O27



Back turning →O28

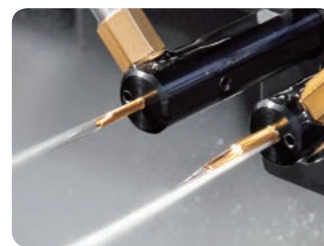
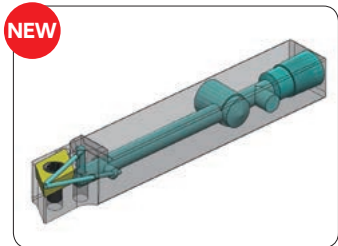


Grooving →O29

Features

- *Specially designed chipbreaker solves chip control issues*

Splash Series



Features

- *Additional tooling capability to accomodate newly developed coolant through gang station machines*

→O4

ST4 Coating



Features

- *Best grade for 304SS thanks to New ST coating*
- *Excellent adhesion and wear resistance*

→O20

Shaper



Hexalobular

→O22

S-Mill



Features

- *Sharp carbide endmill for Swiss machines.*

→O19

B



Application Introduction

- **Machining HRSA Materials with BIDEMICS and Ceramics B2**
 - **Guidelines for Machining HRSA Materials B4**
- **Machining Gray / Ductile Cast Iron with CeramicsB12**
- **Machining Mill Rolls with NTK Ceramics and CBNsB14**
- **Machining Poly-V Pulley Profiles...B22**
- **Machining Hardened Materials with CeramicsB24**
- **High Speed Milling of Aluminum ...B25**
- **Tooling for Swiss Type Lathes B26**

Machining HRSA Materials with BIDE MICS and Ceramics

Solutions for the Aerospace & Energy Industries

Application Introduction

BIDE MICS - Game Changer

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

JX1



■ Features

- Up to 1600 SFM 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

→D4

JP2



■ Features

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

■ Work Materials

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

→D5

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



→D23

SX3

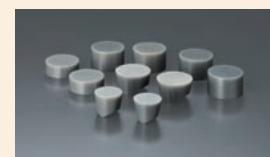
■ Features

- 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

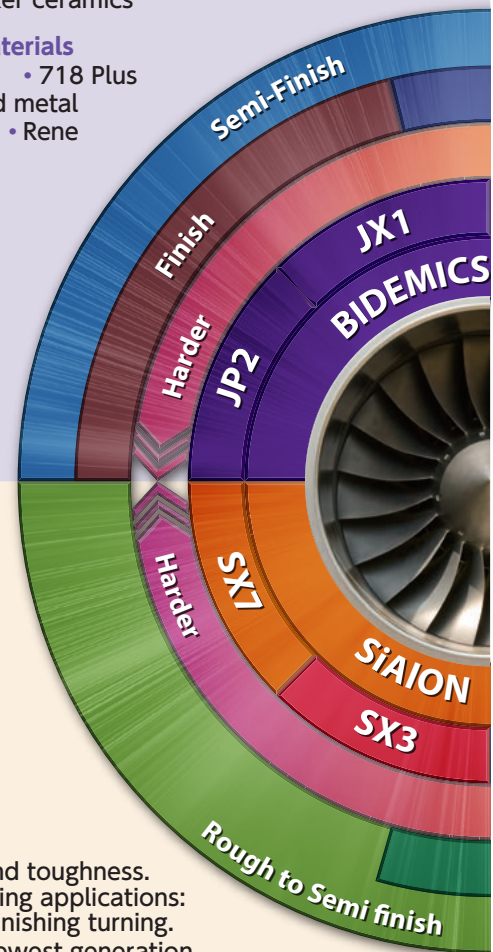
- Inco 718 • 718 Plus
- Powdered metal • Inco 625
- Rene

→D22



SiAlON - Workhorse

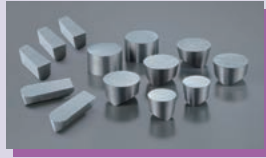
- Durable for scale to semi-finish machining



Application Guidance →B4
Milling Guidance →I5

Turning Guidance →B6
Grooving Guidance →H6

JX3



■ Features

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

■ Work Materials

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

→D4

WA1



■ Features

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

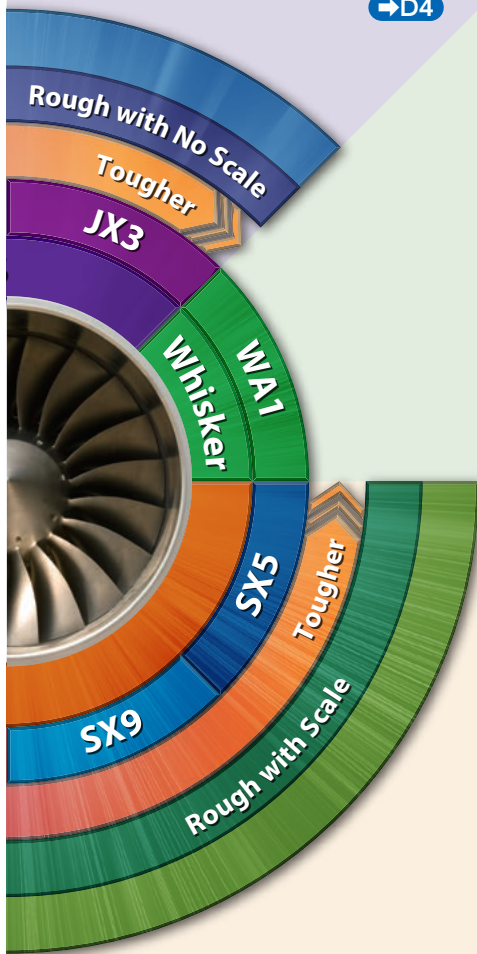
■ Work Materials

- Inco 718 • Inco 625

→D19

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

→D23

SX9

■ Features

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

→D23

■ Work Materials

- Inco 718 • Inco 706
- Inco 713 • Rene



Guidelines for Machining HRSA Materials

Insert Grade

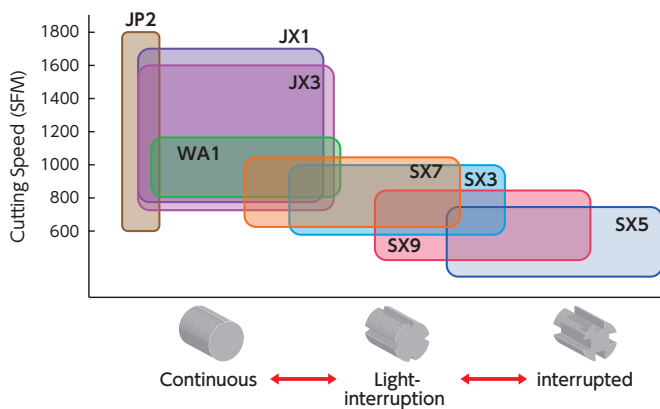
Application Introduction

[Guidelines for Machining HRSA Materials]

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	Special grade for finish turning				●			
	JX3	Added toughness in BIDEMICS		●	●	●	●		
Whisker	WA1	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	●	●	●			●	●

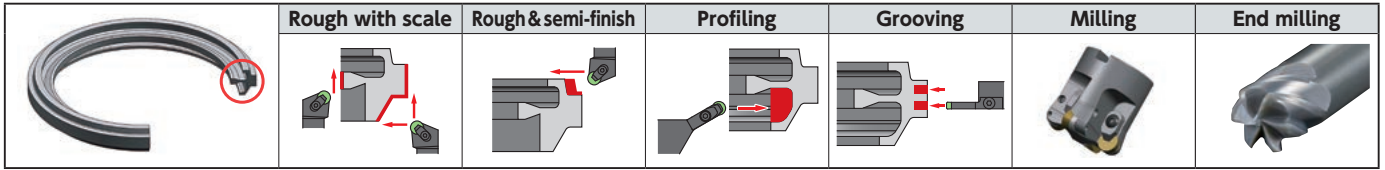
● 1st Choice ● 2nd Choice

Grade Map



	Grade	Rough with Scale	Rough	Semi-Finishing	Finishing
BIDEMICS	JP2			●	●
	JX1		●	●	●
	JX3		●	●	●
Whisker	WA1	●	●	●	●
SIALON	SX7		●	●	●
	SX3		●	●	●
	SX9	●	●	●	●
	SX5	●	●	●	●

Applications



Applications

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		.100
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	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	Overall	800 (600-1100) SFM					.008 (.004-.010) IPR					.060 (.040-.080)"					
Finishing 	JP2	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	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		.100
Milling 	SX3 SX7	Overall	2700 (2000-4000) SFM					.004 (.003-.005) IPT					.070 (.040-.100)"					DRY
	SX9	Overall	2500 (1500-3500) SFM					.005 (.004-.006) IPT					.080 (.040-.100)"					
End milling 	SX9	Overall	2000 (980-3300) SFM					.0008-.0013 IPT										DRY

Application Introduction

[Guidelines for Machining HRSA Materials]

Guidelines for Machining HRSA Materials

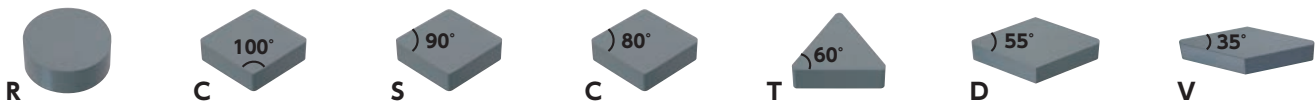
Guidelines For Success

Keys to successful machining of HRSA Materials

- NTK's BIDE MICS and ceramics deliver extremely high productivity to heat resistant alloy machining
- BIDE MICS offer excellent flank wear resistance and SiALON ceramics provide exceptional notch wear resistance
- BIDE MICS enable ultra high-speed machining with outstanding surface finishes
- Stable machining can be performed by optimizing cutting conditions and tooling

Use strong insert shapes

Maximize geometry for strength productivity



Use largest nose radius

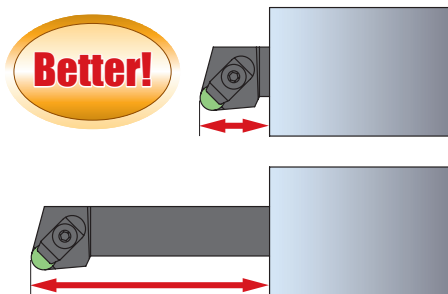
Maximize insert nose radius for strength and longer tool life

Take into account that the larger the nose radius the greater the tool pressure

Typical application machining heat resistant alloys use a RNG45 insert for roughing and CNGA43 style for finishing

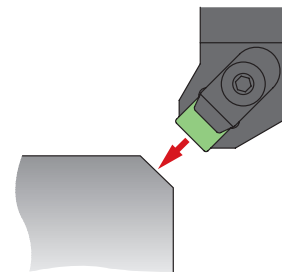
Minimize overhang

Too much overhang may cause chatter or insert breakage



Pre-chamfering

Pre-chamfering the part reduces the potential for insert chipping or breaking upon the entry or exit point of work material



No dwelling

Inserts wear out when rubbing the part instead of cutting

Coolant

When turning with BIDE MICS, SiALON and Whisker a flood coolant condition should be used

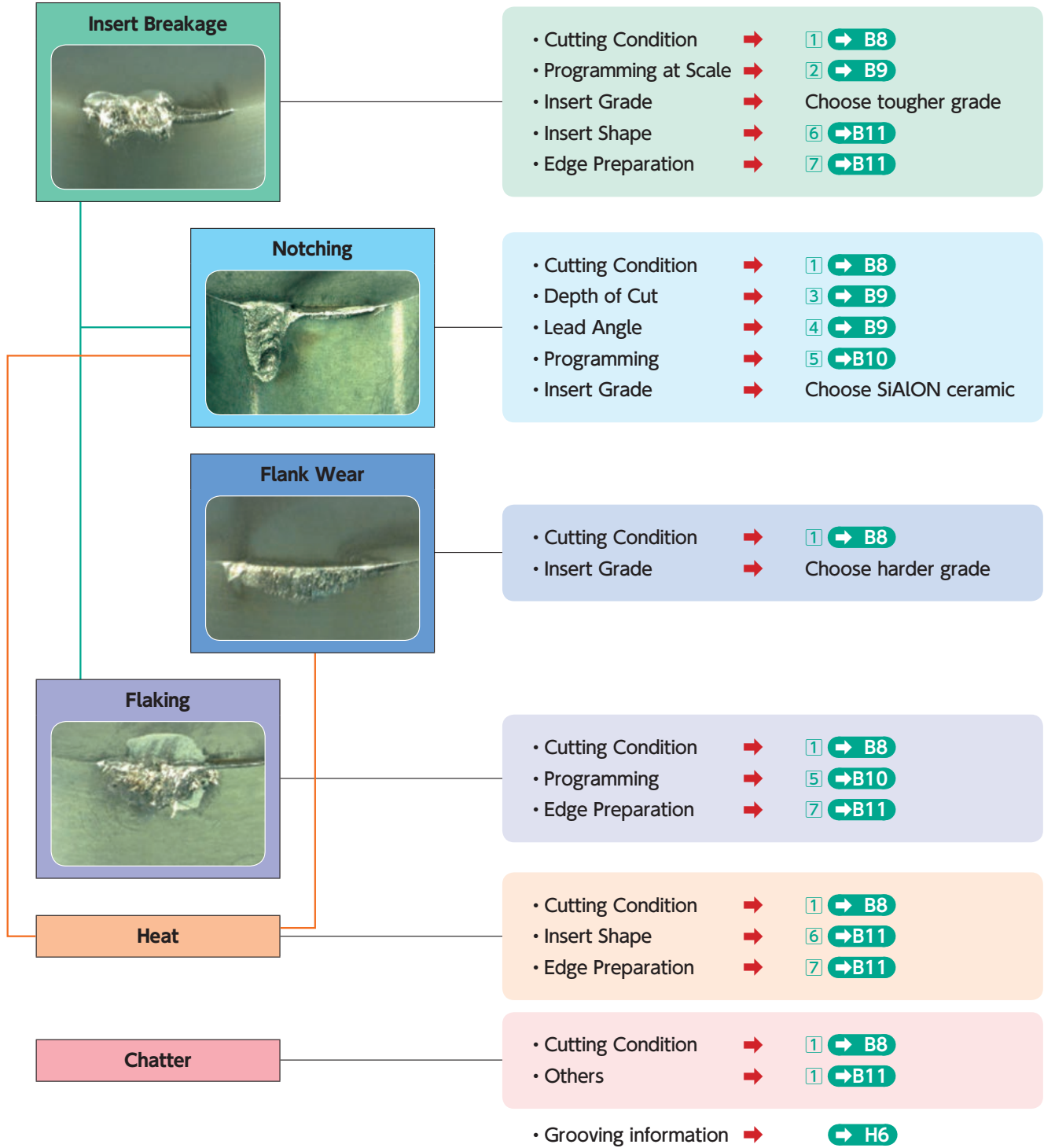
In some cases where a high interruption is encountered it may be best to shut off the coolant

No coolant should be used while milling with SX3, SX7 and SX9

Edge preparations



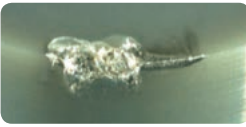
Typical HRSA machining requires the insert cutting edge to be sharp. Using a slight T-land or honed edge is also effective to reduce notching, flaking and built up edge

Troubleshooting



Troubleshooting (continued)

1 Cutting Conditions & Parameters Adjustment

		Cutting speed (SFM)		Feed rate (IPR)		Grade attribute		
		SIALON	BIDEMICS	SIALON	BIDEMICS	BIDEMICS	SIALON	Whisker
	Notching		➔ [a]	➔ [b]		●	●	
	Flank wear	➔ [c]		➔ [d]		●	● SX3 SX7	●
	Breakage			➔	➔	●	●	
Heat		➔	➔	➔	➔	—	—	—
Chatter		➔	➔	➔	➔	—	—	—

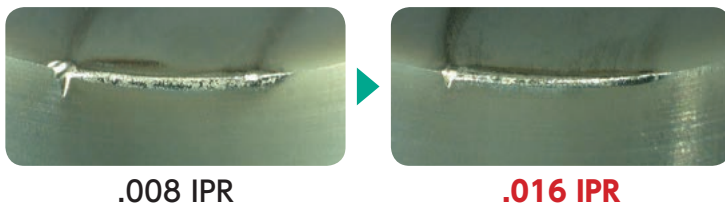
● 1st Choice ● 2nd Choice

Test Results

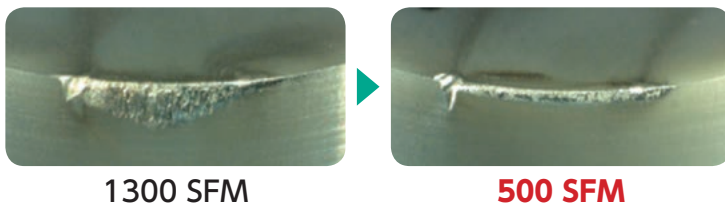
[a] **WA1** : Increase cutting speed



[b] **SX7 • SX3 • SX9 • SX5** : Increase feed rate



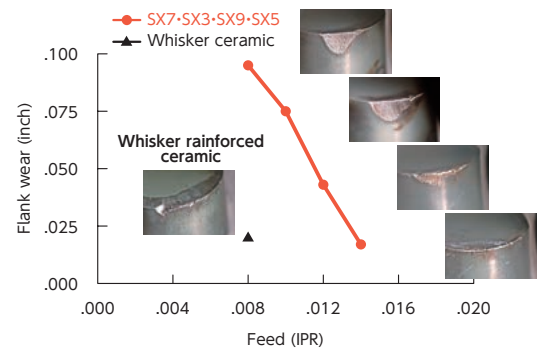
[c] **SX7 • SX3 • SX9 • SX5** : Decrease cutting speed



Note : Speed and feed rates shown are recorded test data and should not be thought of as recommended cutting conditions.

[d] **SX7 • SX3 • SX9 • SX5** : Increase feed rate

Feed rate increased decreases wear amount of SIALON



Cutting condition
Work material : Inco718 Cutting Speed : 800 SFM
Insert shape : RNG45 Depth of Cut : .080"
WET

In some cases, in order to increase the wear resistance of **SX7 & SX3 & SX9 & SX5**, the feed must be increased. By increasing the feed and utilizing the toughness of **SX7 & SX3 & SX9 & SX5**, the inserts are off the part sooner causing less wear. Increasing the feed also decreases cycle time and improves productivity and profitability.

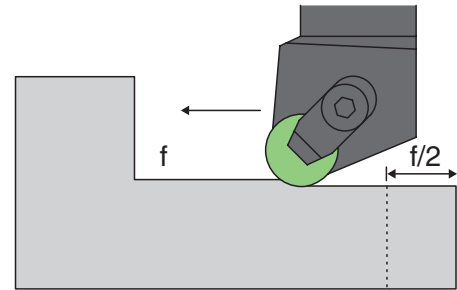
Note : Be careful to reduce the feed rate by 25%, when going into a corner.

Troubleshooting (continued)

2 Scale machining

When the insert breakage happens at the beginning of cutting scale, it might be caused by too high cutting speeds & feeds

Knowing the hardness of the work material before the cutting begins may make all the difference between success or failure. Many times on the shop floor the operator does not know the part hardness. If this information is not known, then more time is needed in the testing procedure trying to find the optimum speed and feed range. As the material hardness increases, speed should decrease. Also, parts that have a forged scale work surface require a 25% speed and feed reduction until the scale is gone. This type of programming change will reduce the potential of notching as a failure mode.



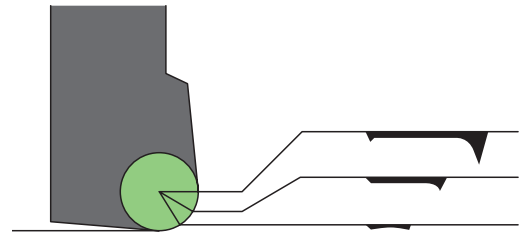
3 Depth of Cut

Depth of Cut Notching

This mode of insert failure is typical when machining heat resistant alloys. It must be controlled to prevent a catastrophic failure of the insert's cutting edge. The following information should help to minimize this problem.

Depth of Cut

Prime consideration should be given to the effect of depth of cut upon insert tool life. There is a direct relationship between the insert radius size and the maximum depth of cut which should be taken. See the chart below for recommendations.



Recommended Depth of Cut Range (Inch)

Round insert	Maximum DOC	*Insert radius	Maximum DOC
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

*OPTIMUM DOC. IS 5-15% OF THE INSERT DIAMETER *BASED ON 0° LEAD ANGLE

4 Lead Angle

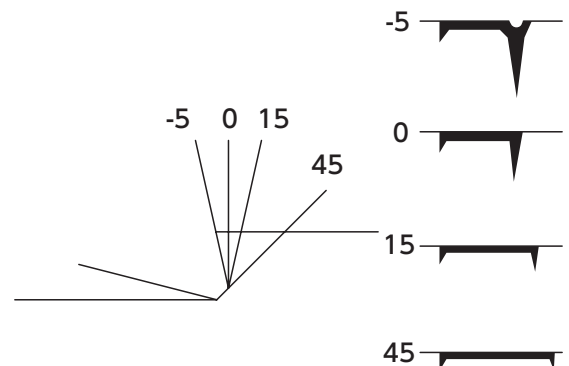
Lead Angles

When cutting heat resistant alloys consideration should be given to using the largest lead angle possible. When using large lead angles, the cutting forces are spread over a larger surface area of the insert. This will also improve tool life and surface finish while reducing notching. As the lead angle increases the chip will flow more easily.

Feeds

Utilize the superior strength characteristic of SX7, SX3, SX9, SX5 SiAlON ceramics. If excessive wear is encountered while machining heat resistant alloys, increase the feed rate thus minimizing the cutting time.

● Typical insert wear pattern showing the effect of various lead angle changes and the resulting increase of depth of cut notching

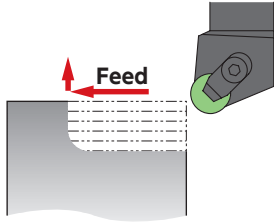


Troubleshooting (continued)

5 Programming

• Rough

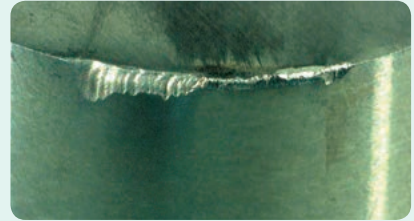
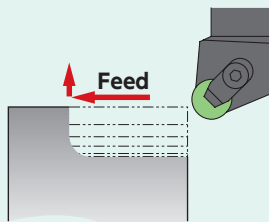
Same Depth of Cut



Note) Notch wear on the insert cutting edge as shown in 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.

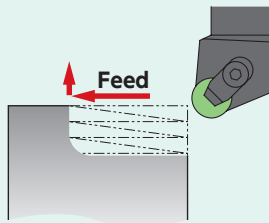
change to

Varying Depth of Cut



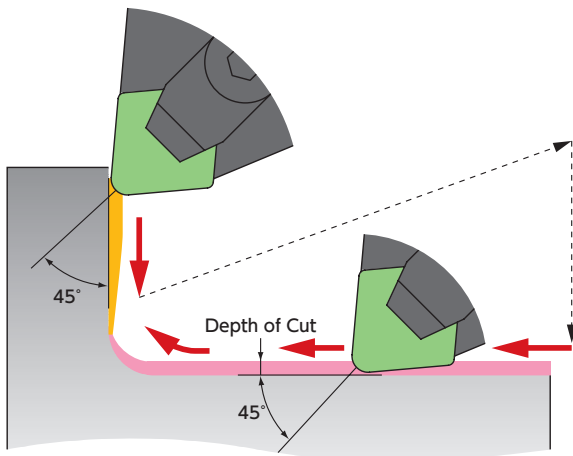
Note) Another programming change that may help to reduce notching is by varying the depth of cut. Again, the same principle applies, notching takes place at various points on the cutting edge rather than concentrated at one point.

Ramping



Note) Programming "Ramping" cuts in the same cutting direction is one of the best procedures to use 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.

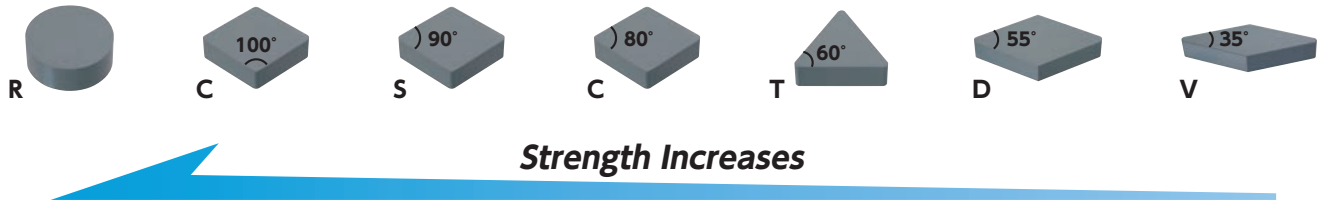
Depth of Cut



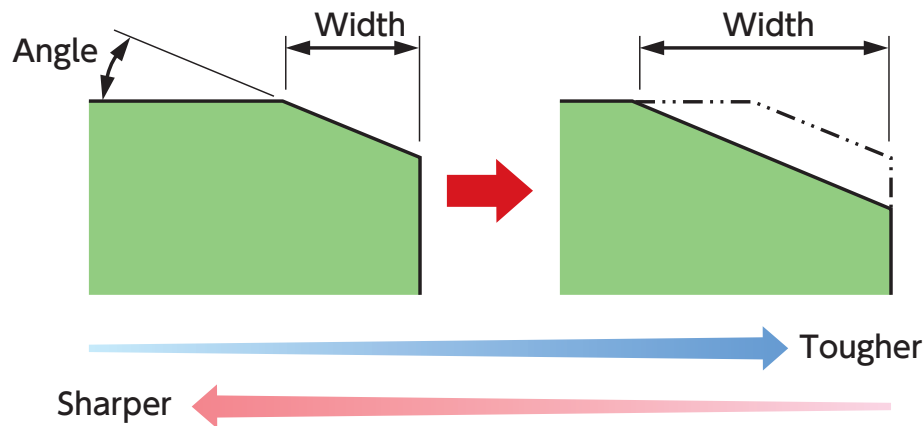
Better

Troubleshooting (continued)

6 Insert shape



7 Edge preparation



- Slightly larger T-land on the edge preparation may eliminate flaking.

8 Eliminate chatter

Chatter problem is often caused by too much cutting pressure when machining heat resistant alloys especially in profiling or grooving. A non-rigid machine may cause excessive insert wear or insert breakage.

- Increase speeds and decrease feeds
- Use harder grade with higher speed
- Use smaller I.C round insert, or smaller nose radius
- Reduce insert nose radius
- Use positive insert
- Reduce lead angle
- Reduce edge preparation or use sharp edge
- Minimize overhang
- Try a heavy metal boring bar

Machining Gray / Ductile Cast Iron with Ceramics

High Speed Machining of Cast Irons

SX6

Silicon Nitride Ceramic

→D20

■ 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

→D14·D15

■ Features

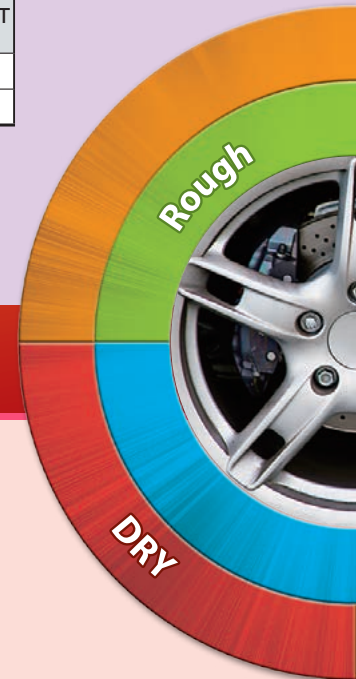
- 1st choice for finishing gray cast iron with no coolant
- Excellent wear resistance makes high speed finishing possible

■ 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 Nitride Ceramic

→D21



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

Whisker Reinforced Ceramic

→D16·D17

→D19

■ 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 • WA1)
- Ductile cast iron – Finish – Turning (HC6)

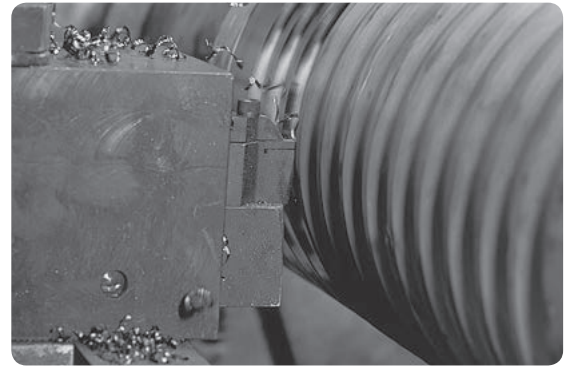
■ Recommended Cutting Conditions

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	1200–2100	.004–.016	-.120	●	●
Ductile cast iron	Turning	HC6	600–1500	.004–.012	-.040	○	●

Machining Mill Rolls with NTK Ceramics and CBNs

Features

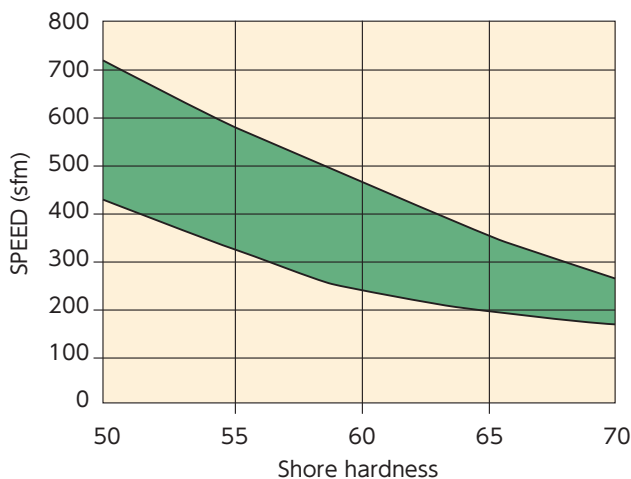
- In addition to our general purpose ceramic HC2 grade, NTK offers HC5, and HC7 for higher productivity
- WA1's wear resistance is an advantage when roughing carbide and hardened rolls
- ZC7 covers a wide range of applications such as carburized or induction hardened steels.
- ZC4 performs the best in hardened material applications from 74-97 Shore hardness



Recommended Cutting Conditions

Roll Material	Grade		Cutting speed (SFM)	Shore Hardness Scale			Feed (IPR)	Depth of cut (inch)	DRY	WET
				55-65	65-72	72-				
Steel ex. D2	Ceramic	HC7	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	Ceramic	HC5	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	Ceramic	HC2	350-450	100%	80%	60%	.004-.012	.025-.075	●	
Chilled Cast Iron	Ceramic	HC7	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	Ceramic	HC5	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	Ceramic	HC2	350-450	100%	80%	60%	.004-.012	.025-.075	●	
Ductile Cast iron	Ceramic	HC7	300-600	100%	80%	60%	.004-.012	.025-.075	●	
	Ceramic	HC5	300-600	100%	80%	60%	.004-.012	.025-.075	●	
	Ceramic	HC2	250-450				.004-.012	.025-.075	●	
Carbide	CBN	B30,B99	100-200				.004-.012	.010	●	
	Whisker	WA1	150-500				.004-.012	.010-.080	●	
CPM Rolls ex. Powdered Metal	Ceramic	ZC4	400-500				.004-.012	.025-.075	●	
	Ceramic	HC5	400-500				.004-.012	.025-.075	●	
	Ceramic	HC7	400-500				.004-.012	.025-.075	●	
Continuous cuts 42-86 Shore hardness	Ceramic	ZC7	130-700	Finish			.003-.008	.005-.030	●	●
Continuous cuts 74-97 Shore hardness	Ceramic	ZC4	130-700	Finish			.003-.008	.005-.030	●	●

Recommended Speed Chart

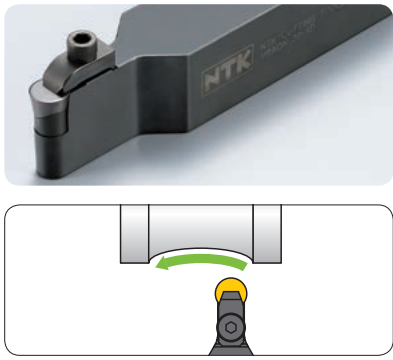


Recommended Feed Chart

Nose radius	Depth of cut (inch)	Feed (IPR)	
		30 micro	60 micro
1/64	-.007	.002-.003	.003-.004
1/32	-.015	.003-.004	.004-.005
3/64	-.020	.004-.005	.005-.0065
1/16	-.030	.004-.0055	.006-.0075
1/4	-.080	.007-.010	.010-.014

U.S. rebar size chart			
Imperial bar size	Metric size	Nominal diameter	
		(inch)	(mm)
#2	#6	0.250 = 1/4	6.35
#3	#10	0.375 = 3/8	9.525
#4	#13	0.500 = 1/2	12.7
#5	#16	0.625 = 5/8	15.875
#6	#19	0.750 = 3/4	19.05
#8	#25	1.000 = 1	25.4

VRAON for RCGX inserts



Key Points for Machining Mill Rolls

- **Hardness of the roll is an important factor. As the roll gets harder the SFM should be reduced.**
- **RCGX style inserts are the preferred insert for rigidity and cost savings.**
- **If making multiple passes with one edge, vary your DOC to move the wear on the insert edge and reduce notch wear.**
- **If you encounter chatter, increase your feed rate. Variable RPM controllers are helpful to reduce harmonics.**
- **Heavy chatter is often a sign of tooling being above centerline.**
- **Chilled and ductile iron rolls are typically softer and short chipping materials. Even after running in the mill, these rolls rarely exceed a 67 Shore hardness.**
- **Tool steel and CPM rolls run quite similar and are normally over 100 Shore hardness. These rolls have a higher Chrome and Cobalt content and are considered a longer chipping material. The combination of the material type and hardness require a slower speed to run successfully.**
- **RCGX 103 & 104 feed rate runs best at .006 IPR (0.15 mm/rev).**

Types, Applications and Features of Rolls

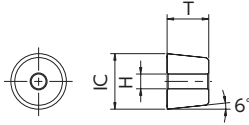
Mill Rolls	Applications	Features
Forged rolls <ul style="list-style-type: none"> ● Cr-Mo-based ● High-speed-steel-based ● Carbide-based 	Bloom-milling at heavy rolling load. Work rolls for rough cold rolling, and rolls for reinforcement.	Strong and relatively high in heat resistance.
Cast iron rolls <ul style="list-style-type: none"> ● Carbide based 	Semi-rolling or finishing that requires a very heavy load.	More wear-resistant and high-heat-resistant than steel in between ordinary steel and cast-iron-based steel.
Cast Steel rolls <ul style="list-style-type: none"> ● Adamite roll for deep profile ● Chilled roll for boards and wire steel process ● Grain roll for steel finishing process boards (Resistant to thermal crack) ● Ductile roll for boards, profile steel, and bar wire steel process (Rolls for roughing and finishing use) ● Special cast iron roll 	Wide range of applications from bloom-milling and semi-rolling to finishing.	Suitable for the applications that require heat resistance and strength. Suitable for the applications that require wear resistance.
Carbide rolls	<ul style="list-style-type: none"> ● Pinch mills ● Wire rod ● Wire flatterer or forming ● ERW tube mills ● Turks heads ● Hot & Cold rolls ● Work reducing rolls 	Preferred in abrasive operations. High wear capabilities.

Tooling for Mill Rolls

CDH.. Inserts

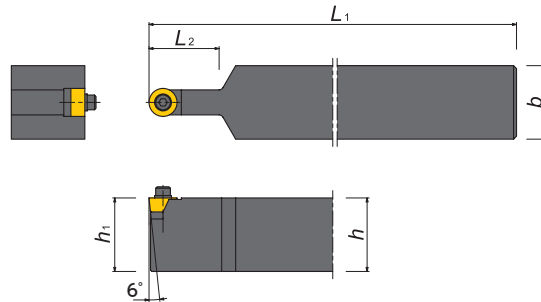
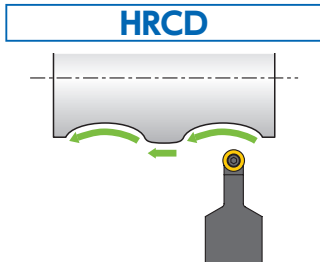
CDH

● : 1st Choice ● : 2nd choice



Steel	P			
Stainless Steel	M			
Cast Iron	K	●	●	●
Non-Ferrous Material	N			
Heat Resistant Alloy	S			
Hardened Material	H	●	●	●

Item Number	ISO Item Number	IC	T	H	Ceramics		
					Alumina - TiC		
					HC2	HC5	HC7
CDH 22 P2810	CDH 1207 P07010	1/2	1/4	.125	●	●	●
CDH 33 P6015	CDH 1909 P15015	3/4	3/8	.250	○		
CDH 33 Q6010	CDH 1909 Q15010	3/4	3/8	.250	●		
CDH 33 Q6010B	CDH 1909 Q15010B	3/4	3/8	.250		●	●
CDH 42 P8015	CDH 2512 P20015	1	1/2	.266			●
CDH 42 P12010	CDH 2512 P30010G	1	1/2	.266	●	●	
CDH 43 P6010	CDH 2519 P15015	1	3/4	.266	●		
CDH 515 P7110B	CDH 3209 P18010B	1-1/4	3/8	.391	●		
CDH 515 P7110	CDH 3209 P18010	1-1/4	3/8	.391	●		
CDH 515 P8015	CDH 3209 P20015	1-1/4	3/8	.391			●
CDH 515 Q7110	CDH 3209 Q18010	1-1/4	3/8	.391	●	●	●
CDH 53 P8015	CDH 3219 P20015	1-1/4	3/4	.391			●
CDH 53 Q9515	CDH 3219 Q24015	1-1/4	3/4	.391	●	●	



● Inch Holders

Item Number	Stock	Dimensions (inch)					Insert	Clamp Screw	Washer	Shim	Wrench
		h	b	L ₁	h ₁	L ₂					
HRCD-22-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 22	CS0316	W120	HACDH22	LW-2.5
HRCD-33-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 33	CS0625	W110	HACDH33	LW-5
HRCD-42-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 42	1/4-20UNC×1-1/4	W106	HACDH42	LWU-4
HRCD-43-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 43	1/4-20UNC×1-1/2		HACDH43	
HRCD-53-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 53 / CDH 515	3/8-16UNC×1-1/2	W107	HACDH53 [CDH53] HACDH515 [CDH515] (OP)	LWU-5

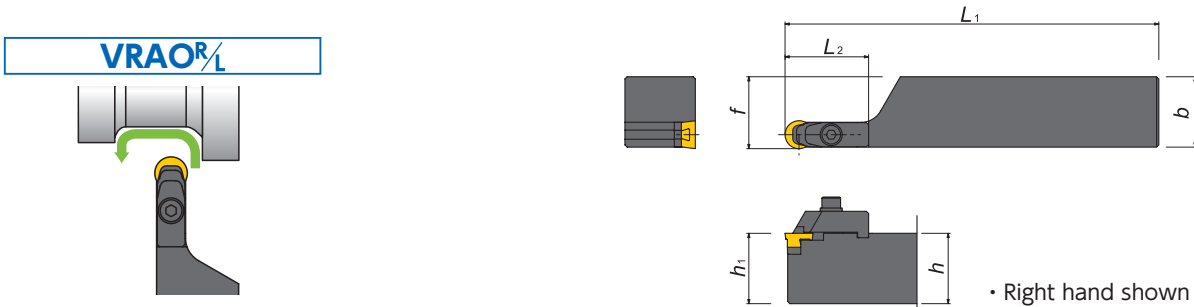
● Metric Holders

Item Number	Stock	Dimensions (mm)					Insert	Clamp Screw	Washer	Shim	Wrench
		h	b	L ₁	h ₁	L ₂					
HRCD-22	○	50	50	300	50	30	CDH 22	CS0316	W120	HACDH22	LW-2.5
HRCD-33	○	50	50	300	50	30	CDH 33	CS0625	W110	HACDH33	LW-5

RCGX

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	T	θ	Ceramics						
					Alumina - TiC				Whisker	CBN	
					HC2	HC5	HC7	ZC4	WA1	B30	
RCGX 101 P2010		3/16	.240	90	●						
RCGX 102 P4815		1/4	.309	120	●	●	●				●
RCGX 102 T0225		1/4	.309	120							
RCGX 102 T0820		1/4	.309	120	●						
RCGX 103 P4815		3/8	.309	120	●	●	●				●
RCGX 103 P8015		3/8	.309	120		●	●				
RCGX 103 T0820		3/8	.309	120	●						
RCGX 103 T0825		3/8	.309	120				●			
RCGX 103 T1625		3/8	.309	120				●			
RCGX 104 P4815		1/2	.312	120	●	●	●				●
RCGX 104 P6015		1/2	.312	120		●	●				
RCGX 104 P8015		1/2	.312	120		●	●				
RCGX 104 T0820		1/2	.312	120	●						
RCGX 104 T1625		1/2	.312	120				●			
RCGX 45 E02	RCGX 120700 E004	1/2	5/16	120					●		
RCGX 45 T0220	RCGX 120700 T00520	1/2	5/16	120					●		
RCGX 45 T0320	RCGX 120700 T00820	1/2	5/16	120					●		
RCGX 45 T0420	RCGX 120700 T01020	1/2	5/16	120					●		
RCGX 45 Z0620	RCGX 120700 Z01520	1/2	5/16	120					●		
RCGX 45 Z0820	RCGX 120700 Z02020	1/2	5/16	120					●		
RCGX 105 P4815		5/8	.388	120	●	●	●				●
RCGX 105 P8015		5/8	.388	120		●	●				
RCGX 105 S8020		5/8	.388	120	●		●	●			
RCGX 106 P4815		3/4	.388	120	●	●	●				●
RCGX 106 P8015		3/4	.388	120	●	●	●				
RCGX 108 P8015		1	.461	140	●						



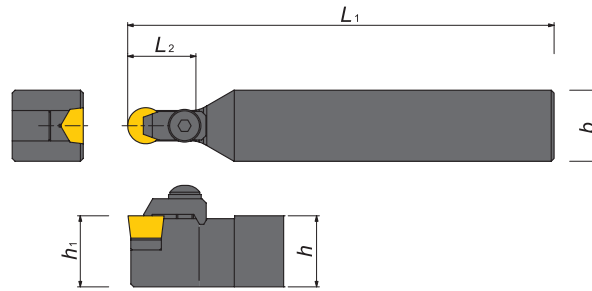
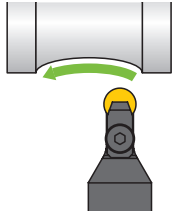
● Inch Holders

Item Number	Stock		Dimensions (inch)					Insert	Clamp	Shim	Clamp Screw	Shim Screw
	R	L	h	b	L ₁	h ₁	L ₂					
VRAO ^{R/L} 16-2D	●	●	1.00	1.00	6.00	1.00	1.00	RCGX 102 RCGX 25 RCGX 25 RPGX 23 RPGX 25	CL2RVRL (Clamp with a differential screw)	SM2RV(RCGX102. / R.GX.25) SM2RVS(R.GX23) (OP)	—	SC02C-08
VRAO ^{R/L} 20-2D	●	●	1.25	1.25	6.00	1.25	1.00					
VRAO ^{R/L} 16-3D	●	●	1.00	1.00	6.00	1.00	1.25					SC05C-08
VRAO ^{R/L} 20-3D	●	●	1.25	1.25	6.00	1.25	1.25	RCGX 103 RCGX 35 RPGX 35	CL3RV	SM3RV	SC10F-10	SC05C-10
VRAO ^{R/L} 24-3E	●	●	1.50	1.50	7.00	1.50	1.25					
VRAO ^{R/L} 16-4D	●	●	1.00	1.00	6.00	1.00	1.50					SC06C-08
VRAO ^{R/L} 20-4D	●	●	1.25	1.25	6.00	1.25	1.50	RCGX 104 RCGX 45 RPGX 45	CL4RV	SM4RV	SC40F-12	SC06C-10
VRAO ^{R/L} 24-4E	●	●	1.50	1.50	7.00	1.50	1.50					

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ● : Mirror finish ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through (R/L) : 1-2 week delivery (Right / Left-hand only) (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Tooling for Mill Rolls

VRAON



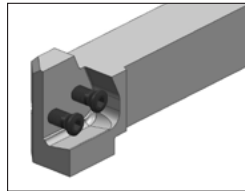
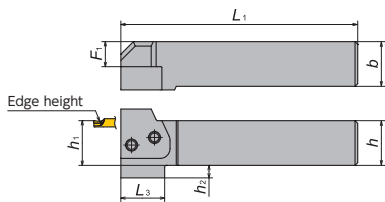
Inch Holders

Item Number	Stock	Dimensions (inch)				Insert	Clamp	Shim	Clamp Screw	Shim Screw
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>L</i> ₂					
VRAON 16-2D	●	1.00	1.00	6.00	1.00	RCGX 102 RCGX 23 RCGX 25	CL2RVRL	SM2RV (RCGX102 / R.GX25) SM2RV5 (R.GX23) (OP)	comes with clamp	SC02C-08
VRAON 20-2D	●	1.25	1.25	6.00	1.00	RCGX 103 RCGX 35 RPGX 23 RPGX 25	CL3RV	SM3RV	SC10F-10	SC05C-08 SC05C-10
VRAON 16-3D	●	1.00	1.00	6.00	1.25	RCGX 104 RCGX 45 RPGX 45	CL4RV	SM4RV	SC40F-12	SC06C-08
VRAON 20-3D	●	1.25	1.25	6.00	1.25					SC06C-10
VRAON 24-3E	●	1.50	1.50	7.00	1.25	RCGX 105	CL5RV	SM5RV	SC50F-16	SC08C-10
VRAON 16-4D	●	1.00	1.00	6.00	1.50					SC10C-10
VRAON 20-4D	●	1.25	1.25	6.00	1.50	RCGX 106	CL6RV	SM6RV	SC50F-16	SC10C-10
VRAON 24-4E	●	1.50	1.50	7.00	1.50					SC40C-10
VRAON 16-5D	●	1.25	1.25	6.00	1.50	RCGX 108	CL8RV	SM8RV	SC60F-16	SC40C-10
VRAON 24-5E	●	1.50	1.50	7.00	1.50					SC40C-10
VRAON 20-6F	●	1.25	1.25	8.00	1.75	RCGX 108	CL8RV	SM8RV	SC60F-16	SC40C-10
VRAON 24-6F	●	1.50	1.50	8.00	1.75					SC40C-10
VRAON 20-8F	●	1.25	1.25	8.00	2.00					
VRAON 24-8F	●	1.50	1.50	8.00	2.00					

Modular Holder Body

GTWP-H

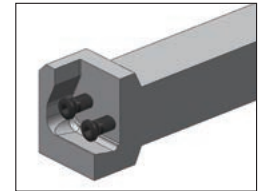
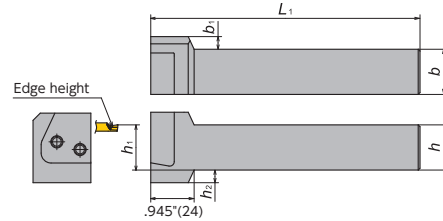
Straight style toolholder



Right-Hand style shown

GKWP-H

L-style toolholder



Right-Hand style shown
* Use opposite hand blade

Toolholder Body

Holder Number	Stock		Dimensions											Blade	Spare Parts						
	R	L	<i>h</i>		<i>b</i>		<i>h</i> ₁		<i>L</i> ₁		<i>F</i> ₁		<i>h</i> ₂		<i>L</i> ₃		Clamp Screw	Wrench			
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
GTWP _{1/2} 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.311	134.9	0.567	14.4	0.260	6.6	0.965	24.5	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/2} 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.311	160.3	0.817	20.75	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/2} 24-IN-H	●	●	1.500	—	1.500	—	1.500	—	6.311	160.3	1.067	27.1	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/2} 32-IN-H	●	●	2.000	—	2.000	—	2.000	—	6.311	160.3	1.567	39.8	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/2} 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.232	107.5	0.354	9	0.315	8	1.122	28.5	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/2} 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.217	132.5	0.551	14	0.276	7	0.965	24.5	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/2} 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.004	152.5	0.827	21	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4

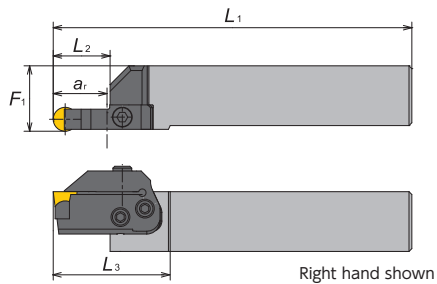
Toolholder Body

Holder Number	Stock		Dimensions											Blade	Spare Parts						
	R	L	<i>h</i>		<i>b</i>		<i>h</i> ₁		<i>L</i> ₁		<i>b</i> ₁		<i>h</i> ₂		Clamp Screw	Wrench					
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
GKWP _{1/2} 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.961	151.4	0.260	6.6	0.260	6.6	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/2} 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.961	176.8	—	—	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/2} 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.882	124	0.472	12	0.315	8	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/2} 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.866	149	0.276	7	0.276	7	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/2} 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.654	169	—	—	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4

Blade

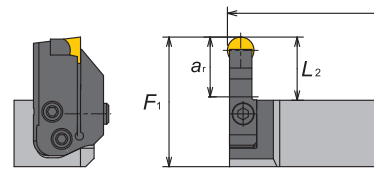
GBR

For GTWP

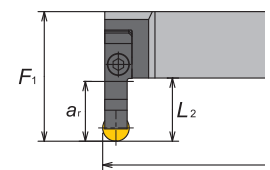


For GKWP

RH



LH



Right hand

Hand	Blade number	Stock	Insert	Dimensions (Inch)		Holder	Dimensions (Inch)				
				ar	L ₂		GTWPR-H			GKWPL-H	
							L ₁	L ₃	F ₁	L ₁	F ₁
R	GBRR-R23-19	●	RCGX23 RPGX23	.750	.889	GTWPR16-IN-H	6.200	1.854	1.118	6.000	1.889
						GKWPL16-IN-H	7.200	—	1.368	7.000	2.139
						GTWPR2020-H	5.121	2.011	.906	4.921	1.676
						GKWPL2020-H	6.106	1.854	1.102	5.906	1.873
						GTWPR2525-H	6.893	—	1.378	6.693	2.149
						GKWPL2525-H	6.893	—	1.378	6.693	2.149
	GBRR-R35-25	●	RCGX35 RPGX35 RCGX103	1.000	1.089	GTWPR16-IN-H	6.400	2.054	1.118	6.000	2.089
						GKWPL16-IN-H	7.400	—	1.368	7.000	2.339
						GTWPR2020-H	5.321	2.211	.906	4.921	1.876
						GKWPL2020-H	6.306	2.054	1.102	5.906	2.073
						GTWPR2525-H	7.093	—	1.378	6.693	2.349
						GKWPL2525-H	7.093	—	1.378	6.693	2.349
	GBRR-R45-25	●	RCGX45 RPGX45 RCGX104	1.125	1.189	GTWPR16-IN-H	6.500	2.154	1.118	6.000	2.189
						GKWPL16-IN-H	7.500	—	1.368	7.000	2.439
						GTWPR2020-H	5.421	2.311	.906	4.921	1.976
GKWPL2020-H						6.406	2.154	1.102	5.906	2.173	
GTWPR2525-H						7.193	—	1.378	6.693	2.449	
GKWPL2525-H						7.193	—	1.378	6.693	2.449	

Left hand

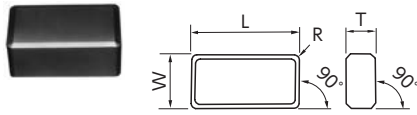
Hand	Blade number	Stock	Insert	Dimensions (Inch)		Holder	Dimensions (Inch)				
				ar	L ₂		GTWPL-H			GKWPL-H	
							L ₁	L ₃	F ₁	L ₁	F ₁
L	GBRL-R23-19	●	RCGX23 RPGX23	.750	.889	GTWPL16-IN-H	6.200	1.854	1.118	6.000	1.889
						GKWPR16-IN-H	7.200	—	1.368	7.000	2.139
						GTWPL2020-H	5.121	2.011	.906	4.921	1.676
						GKWPR2020-H	6.106	1.854	1.102	5.906	1.873
						GTWPL2525-H	6.893	—	1.378	6.693	2.149
						GKWPR2525-H	6.893	—	1.378	6.693	2.149
	GBRL-R35-25	●	RCGX35 RPGX35 RCGX103	1.000	1.089	GTWPL16-IN-H	6.400	2.054	1.118	6.000	2.089
						GKWPR16-IN-H	7.400	—	1.368	7.000	2.339
						GTWPL2020-H	5.321	2.211	.906	4.921	1.876
						GKWPR2020-H	6.306	2.054	1.102	5.906	2.073
						GTWPL2525-H	7.093	—	1.378	6.693	2.349
						GKWPR2525-H	7.093	—	1.378	6.693	2.349
	GBRL-R45-28	●	RCGX45 RPGX45 RCGX104	1.125	1.189	GTWPL16-IN-H	6.500	2.154	1.118	6.000	2.189
						GKWPR16-IN-H	7.500	—	1.368	7.000	2.439
						GTWPL2020-H	5.421	2.311	.906	4.921	1.976
GKWPR2020-H						6.406	2.154	1.102	5.906	2.173	
GTWPL2525-H						7.193	—	1.378	6.693	2.449	
GKWPR2525-H						7.193	—	1.378	6.693	2.449	

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R)L : 1-2 week delivery (Right / Left-hand only)
 (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

Tooling for Mill Rolls

LNJ / LNM

● : 1st Choice ● : 2nd choice

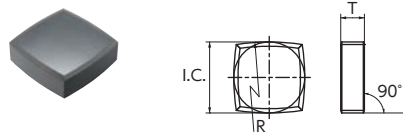


Steel	P							
Stainless Steel	M							
Cast Iron	K	●	●	●	●	●	●	●
Non-Ferrous Material	N							
Heat Resistant Alloy	S	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●

Item Number	ISO Item Number	R	W	L	T	Ceramics				
						Whisker	Alumina - TiC			SiAlon
						WA1	HC2	HC5	HC7	SX9
LNJ 6688 P6015	LNJ 6688 P15015	.125	3/4	1-1/2	1/2		●			●
LNJ 6688 Q8015	LNJ 6688 Q20015	.125	3/4	1-1/2	1/2			●	●	
LNM 6688 S6015	LNM 6688 SN2	.125	3/4	1-1/2	1/2	○				
LNM 6688 SNX2	LNM 6688 SNX2	.125	3/4	1-1/2	1/2		○			
LNM 6688 SNX6	LNM 6688 SNX6	.125	3/4	1-1/2	1/2				○	

ZT 1130

● : 1st Choice ● : 2nd choice

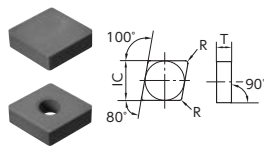


Steel	P							
Stainless Steel	M							
Cast Iron	K	●	●	●	●	●	●	●
Non-Ferrous Material	N							
Heat Resistant Alloy	S							
Hardened Material	H	●	●	●	●	●	●	●

Item Number	ISO Item Number	IC	T	R	Ceramics		
					Alumina - TiC		
					HC2	HC5	HC7
ZT 1130 PNX5		1-1/2	1/2	4-1/2	●	●	●

CNG / CNGA

● : 1st Choice ● : 2nd choice

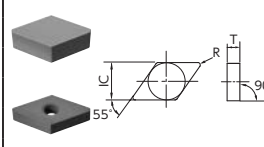


Steel	P							
Stainless Steel	M							
Cast Iron	K	●	●	●	●	●	●	●
Non-Ferrous Material	N							
Heat Resistant Alloy	S	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●

Item Number	ISO Item Number	IC	T	R	Ceramics					
					Whisker	Alumina - TiC				
					WA1	HC2	HC5	HC7	ZC7	ZC4
CNG 452 T0220	CNGN 120708 T00520	1/2	5/16	.031	●					
CNG 452 T0825	CNGN 120708 T02025	1/2	5/16	.031		●				
CNG 453 T0220	CNGN 120712 T00520	1/2	5/16	.047	●					
CNG 453 T0825	CNGN 120712 T02025	1/2	5/16	.047		●				
CNG 454 T0220	CNGN 120716 T00520	1/2	5/16	.063	●					
CNG 454 T0825	CNGN 120716 T02025	1/2	5/16	.063		●				
CNG 543 T0825	CNGN 160612 T02025	5/8	1/4	.047		●				
CNG 552 T0825	CNGN 160708 T02025	5/8	5/16	.031		●				
CNG 554 T0220	CNGN 160716 T00520	5/8	5/16	.063	○					
CNG 643 T0825	CNGN 190612 T02025	3/4	1/4	.047		●				
CNG 644 T0825	CNGN 190616 T02025	3/4	1/4	.063		●				
CNG 646 T0220	CNGN 190624 T00520	3/4	1/4	.094	●					
CNG 648 T0825	CNGN 190632 T02025	3/4	1/4	.125		●				
CNGA 542 T0825	CNGA 160608 T02025	5/8	1/4	.031		●				
CNGA 543 T0220	CNGA 160612 T00520	5/8	1/4	.047	●					
CNGA 543 T0420	CNGA 160612 T01020	5/8	1/4	.047						
CNGA 543 T0820	CNGA 160612 T02020	5/8	1/4	.047						
CNGA 543 T0825	CNGA 160612 T02025	5/8	1/4	.047		●	●			
CNGA 543 Z0825	CNGA 160612 Z02025	5/8	1/4	.047	●					●
CNGA 544 T0220	CNGA 160616 T00520	5/8	1/4	.063	●					
CNGA 544 T0825	CNGA 160616 T02025	5/8	1/4	.063		●				
CNGA 544 Z0825	CNGA 160616 Z02025	5/8	1/4	.063						●
CNGA 643 T0220	CNGA 190612 T00520	3/4	1/4	.047	●					
CNGA 643 T0420	CNGA 190612 T01020	3/4	1/4	.047	●					
CNGA 643 T0525	CNGA 190612 T01225	3/4	1/4	.047	●					
CNGA 643 Z0620	CNGA 190612 Z01520	3/4	1/4	.047	●					
CNGA 643 T0820	CNGA 190612 T02020	3/4	1/4	.047	●					
CNGA 643 T0825	CNGA 190612 T02025	3/4	1/4	.047	●		●			●
CNGA 644 T0220	CNGA 190616 T00520	3/4	1/4	.063	●					
CNGA 644 T0825	CNGA 190616 T02025	3/4	1/4	.063		●				

DNG / DNGA

● : 1st Choice ● : 2nd choice



Steel	P							
Stainless Steel	M							
Cast Iron	K	●	●	●	●	●	●	●
Non-Ferrous Material	N							
Heat Resistant Alloy	S	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●

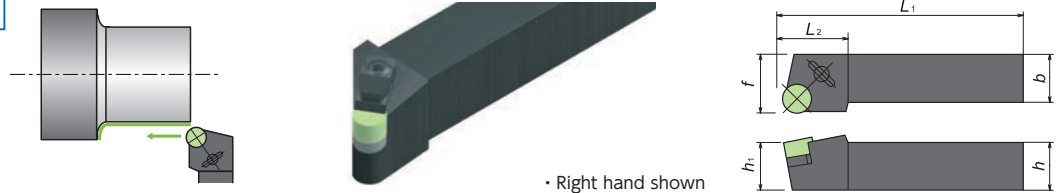
Item Number	ISO Item Number	IC	T	R	Ceramics					
					Whisker	Alumina - TiC				
					WA1	HC2	HC5	HC7	ZC7	ZC4
DNG 453 T0825	DNGN 150712 T02025	1/2	5/16	.047	○	●				
DNG 454 T0825	DNGN 150716 T02025	1/2	5/16	.063		●				
DNG 543 T0825	DNGN 190612 T02025	5/8	1/4	.047		●				
DNGA 442 T0825	DNGA 150608 T02025	1/2	1/4	.031		●				
DNGA 542 T0820	DNGA 190608 T02020	5/8	1/4	.031		●				
DNGA 543 T0820	DNGA 190612 T02020	5/8	1/4	.047		●				
DNGA 544 T0825	DNGA 190616 T02025	5/8	1/4	.063		●				

RNG

● : 1st Choice ● : 2nd choice


Item Number	ISO Item Number	IC	T	R	Ceramics						Solid CBN	
					Whisker		Alumina - TiC					
					WA1	HC2	HC5	HC7	ZC7	ZC4		B99
RNG 43 T0425	RNGN 120400 T01025	1/2	3/16			○				○		
RNG 43 T0525	RNGN 120400 T01225	1/2	3/16			●				●		
RNG 43 Z0520	RNGN 120400 Z01220	1/2	3/16								●	
RNG 43 T0820	RNGN 120400 T02020	1/2	3/16									
RNG 43 S0825	RNGN 120400 S02025	1/2	3/16							●		
RNG 43 T0825	RNGN 120400 T02025	1/2	3/16									
RNG 43 Z0825	RNGN 120400 Z02025	1/2	3/16								●	
RNG 43 T2820	RNGN 120400 T07020	1/2	3/16			●						
RNG 45 T0525	RNGN 120700 T01225	1/2	5/16		●							
RNG 45 Z0620	RNGN 120700 Z01520	1/2	5/16									
RNG 45 S0825	RNGN 120700 S02025	1/2	5/16									
RNG 45 T0825	RNGN 120700 T02025	1/2	5/16			●				○		
RNG 45 Z0825	RNGN 120700 Z02025	1/2	5/16								●	
RNG 45 P2810	RNGN 120700 P07010	1/2	5/16									
RNG 64 T0825	RNGN 190600 T02025	3/4	1/4									
RNG 64 P6010	RNGN 190600 P15010	3/4	1/4									
RNG 65 T0420	RNGN 190700 T01020	3/4	5/16		●							

CRGN



• Right hand shown

● Inch Holders

Item Number	Stock		Dimensions (inch)						Insert*
	R	L	h	b	L ₁	h ₁	f	L ₂	
CRGN [®] 164 CD	●	●	1.00	1.00	6.00	1.00	1.25	1.34	
CRGN [®] 204 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.34	
CRGN [®] 165 CD	●	●	1.00	1.00	6.00	1.00	1.25	1.34	
CRGN [®] 205 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.34	
CRGN [®] 206 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.65	

● Spare Parts

	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	RNG 45	2413	9414	IRSN 43	1160	LW-4
Standard	RNG 43			IRSN 45 (OP)		
Standard	RNG 55	2417	IRSN 53	1180		
Standard	RNG 65		3919	1182		

VNGA

● : 1st Choice ● : 2nd choice

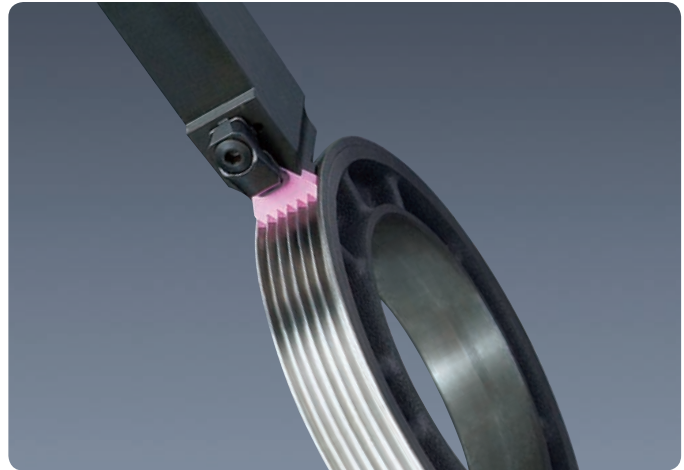
Item Number	ISO Item Number	IC	T	R	Ceramics						
					Whisker		Alumina - TiC				
					WA1	HC2	HC5	HC7	ZC7	ZC4	
VNGA 431 T0425	VNGA 220404 T01025	1/2	3/16	.016		●					
VNGA 432 T0425	VNGA 220408 T01025	1/2	3/16	.031		●					
VNGA 433 T0425	VNGA 220412 T01025	1/2	3/16	.047							
VNGA 436 T0420	VNGA 220424 T01020	1/2	3/16	.094	●						

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ● : Mirror finish
 ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through
 (R)L : 1-2 week delivery (Right / Left-hand only) (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

Machining Poly-V Pulley Profiles

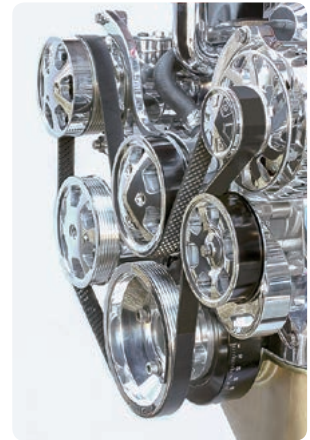
Grooving With Ceramics

Application Introduction



Features

- High speed machining for Poly-V pulleys
- Up to 6-V grooving with single pass
- Precision inserts for plunging profiles



Recommended Cutting Conditions

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

3V

21 HP needed

4V

28 HP needed

5V

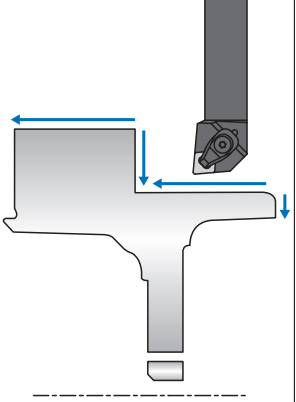
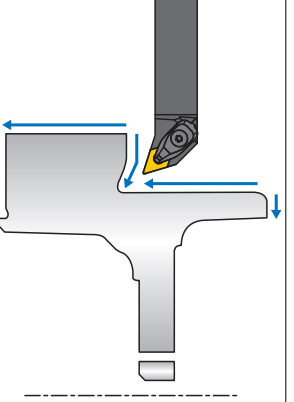
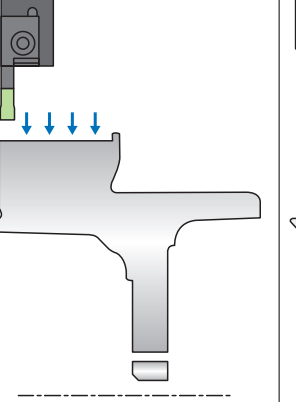
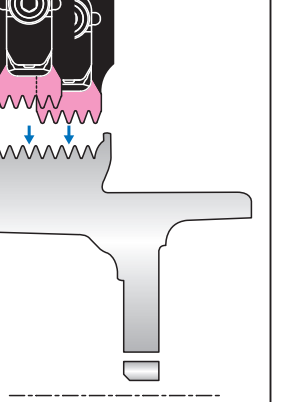
35 HP needed

6V

42 HP needed

→H30

High-Speed Pulley Machining Example using NTK Ceramic Tools

	Process #1	Process #2	Process #3	Process #4
	OD and Profile Roughing	OD and Profile Finishing	Plunge Grooving	Poly-V Grooving
Tooling				
Insert	CNGX 453 T0820 SX6	DNGA 432 T0525 HC6 DNGA 432 T0420 SP9	VDB 250 B031 T0220 WAI	PTM 53 K50504 ENB HW2*
SFM	2000-2800	1500-2000 (HC6) 1800-2400 (SP9)	1000-1400	1200-1500 (1400 SFM recommended)
IPR	.018-.024	.012-.018 (HC6) .018-.024 (SP9)	.008-.010	.002-.006
DOC (inch)	.080-.120	Process dependent (.020)	—	—
Coolant	DRY • (WET)	DRY • (WET)	DRY • (WET)	DRY
Life / corner	- 300 pcs	- 300 pcs	- 300 pcs	- 300 pcs

*Please check machine's HP when select insert.

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



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

Machining Hardened Materials with Ceramics

Dramatically Reduce Costs

Features

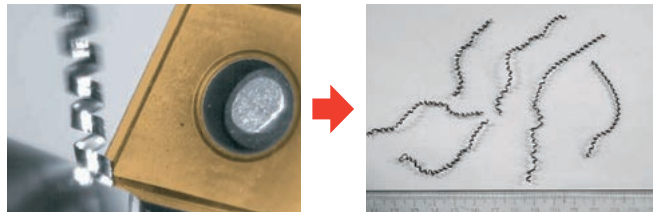
- ZC7 and ZC4 have excellent wear resistance to machine hardened materials
- ZC7 covers a wide range of applications such as carburized or induction hardened steels
- ZC4 performs the best in hardened material applications from HRc 55-70
- Wiper inserts and AG-chipbreaker improve machining efficiency



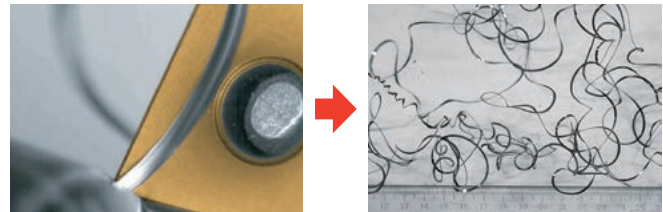
AG-Chipbreaker

- Good chip control
- Improve surface finish
- Reduce machine downtime

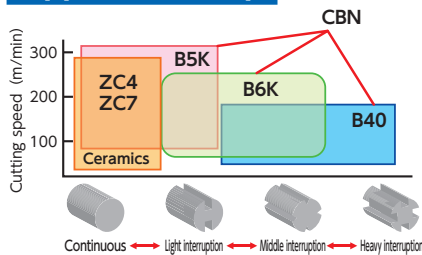
With AG-chipbreaker



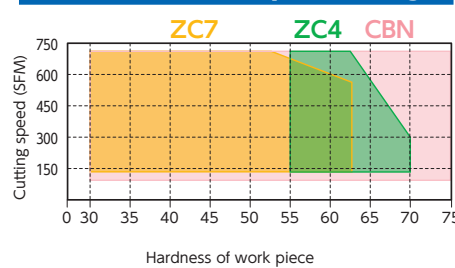
Without AG-chipbreaker



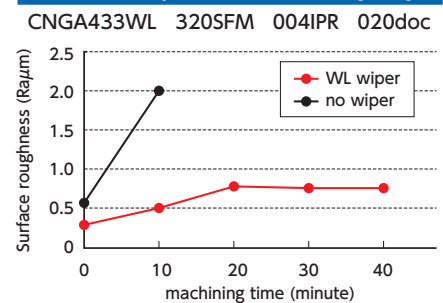
Application Map



Recommended Speed Range



Effect of Wiper Flat on Cutting Edge



Recommended Cutting Conditions

Work material	Hardness (HRc)	Grade	Purpose	Cutting speed (SFM)	Feed (IPR)	DRY	WET
Hardened material	30-62	ZC7	Finish (Continuous)	130-700	.003-.008	●	●
	55-70	ZC4				●	●

→D18

Recommended Depth of Cut and Feed Rate

Recommended depth of cut and feed rate by corner R dimension

corner R	feed rate (IPR)	depth of cut (inch)
R .016	.001-.003	~ .007
R .032	.003-.004	~ .015
R .047	.004-.005	~ .020
R .063	.005-.006	~ .030
R 1/4 (Round Insert)	.006-.010	~ .080

※for 30RMS finish

Troubleshooting for Hard Turning with Ceramic Inserts

	Case	Possible cause	Action required
Insert	VB wear	<ul style="list-style-type: none"> ● Cutting speed is too high ● Feed rate is too low ● Improper nose radius 	<ul style="list-style-type: none"> ● Decrease cutting speed ● Increase feed rate ● Enlarge nose radius
	Wear on face	<ul style="list-style-type: none"> ● Improper cutting condition ● Improper honed edge 	<ul style="list-style-type: none"> ● Decrease cutting speed ● Reduce angle of honed edge
	Flaking	<ul style="list-style-type: none"> ● Improper cutting condition ● Improper honed edge 	<ul style="list-style-type: none"> ● Reduce honed edge ● Use insert without round honing ● Decrease feed rate ● Increase cutting speed
	Fracture	<ul style="list-style-type: none"> ● Improper cutting condition ● Improper honed edge ● Use of coolant 	<ul style="list-style-type: none"> ● Decrease feed rate ● Enlarge honed edge ● Put round honing on edge ● Stop coolant
Workpiece	Chattering	<ul style="list-style-type: none"> ● Too high tool pressure ● Shortage of workpiece and/or tool rigidity ● Cutting speed is too low 	<ul style="list-style-type: none"> ● Decrease feed rate ● Enlarge relief angle ● Shorten the length of tool overhang ● Increase cutting speed ● Reduce honed edge
	Surfacefinish	<ul style="list-style-type: none"> ● Feed rate is too high ● Nose radius is too small ● Wear of insert 	<ul style="list-style-type: none"> ● Decrease feed rate ● Enlarge nose radius ● Use insert with wiper flat ● Decrease cutting speed

High Speed Milling of Aluminum



Application Introduction

Features

- **More teeth = More productivity**
- **Light weight aluminum body**
- **Adjustable edge height**
- **Produces outstanding surface finishes**
- **Internal coolant supply**
- **Inserts can be reground up to 4 times**
- **Guaranteed setup service is available**

Item number	Cutter diameter		✳	Weight includes inserts/parts		Max RPM	Stock
	Inch	mm		lbs	kg		
JHF050C2200R07	1.969	φ50	7	0.5	0.23	20,000	●
JHF063C2200R10	2.480	φ63	10	0.8	0.38	20,000	●
JHF080A2540R12	3.150	φ80	12	1.1	0.48	18,000	●
JHF100A2540R16	3.937	φ100	16	1.6	0.74	18,000	●
JHF125A2540R22	4.921	φ125	22	2.4	1.10	15,000	●

→I28

Recommended Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)											Feed (IPT)						Depth of Cut (inch)			
				1000	3000	5000	7000	9000	11000	13000	15000	17000	19000	.002	.004	.006	.008	.010	.012					
N	PD1	○	●																					
Aluminum Alloy (Si ≤ 13)	PD1	○	●																					
Aluminum Alloy (Si ≥ 13)	PD1	○	●																					

PD2 with 3D Chipbreaker



Features

- **PCD with 3D chipbreaker**
- **Good chip control and better surface finish**

Tooling for Swiss Type Lathes

Application Introduction



Keep edge cool, smooth chip evacuation

Splash Series

→O4

WATCH ON YouTube



Coolant through boring sleeves

STICK DUO SPLASH

→O5

WATCH ON YouTube

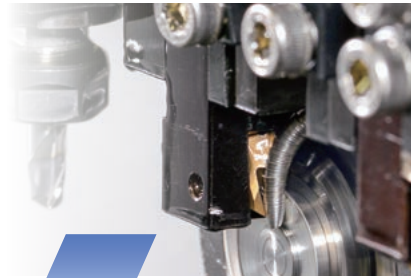


Multi-lead thread machining capability

Thread Whirling

→O26

WATCH ON YouTube



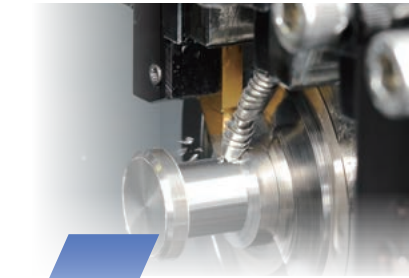
Front turning for large DOC

TFX Series

→O21

WATCH ON YouTube

NEW



New molded chipbreaker for TBP/TBPA

TBP / TBPA-BM

→O28

WATCH ON YouTube

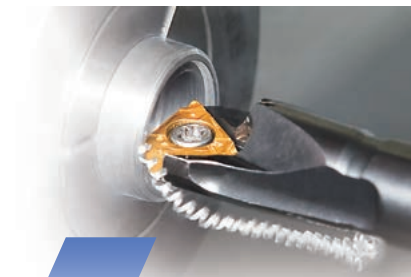


Chip controlled by gravity

Y-axis Toolholders

→O30

WATCH ON YouTube



High rigidity boring bars

Mogul Bar

→O55

WATCH ON YouTube



Tools for sub-spindle machining

DS-ACH / DS Toolholders / DS Sleeves

→O38 · O47

WATCH ON YouTube

Hexalobular Socket



NEW design

Hexagon Socket



Square Socket

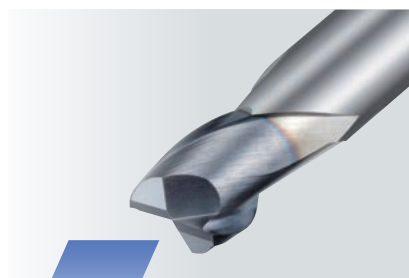


For Hexalobular, HEX and Square socket

SHAPER DUO

→O22

WATCH ON YouTube



Sharp carbide endmill for Swiss machine

S-MILL

→O19

WATCH ON YouTube

NEW



Swiss tooling catalog is now available

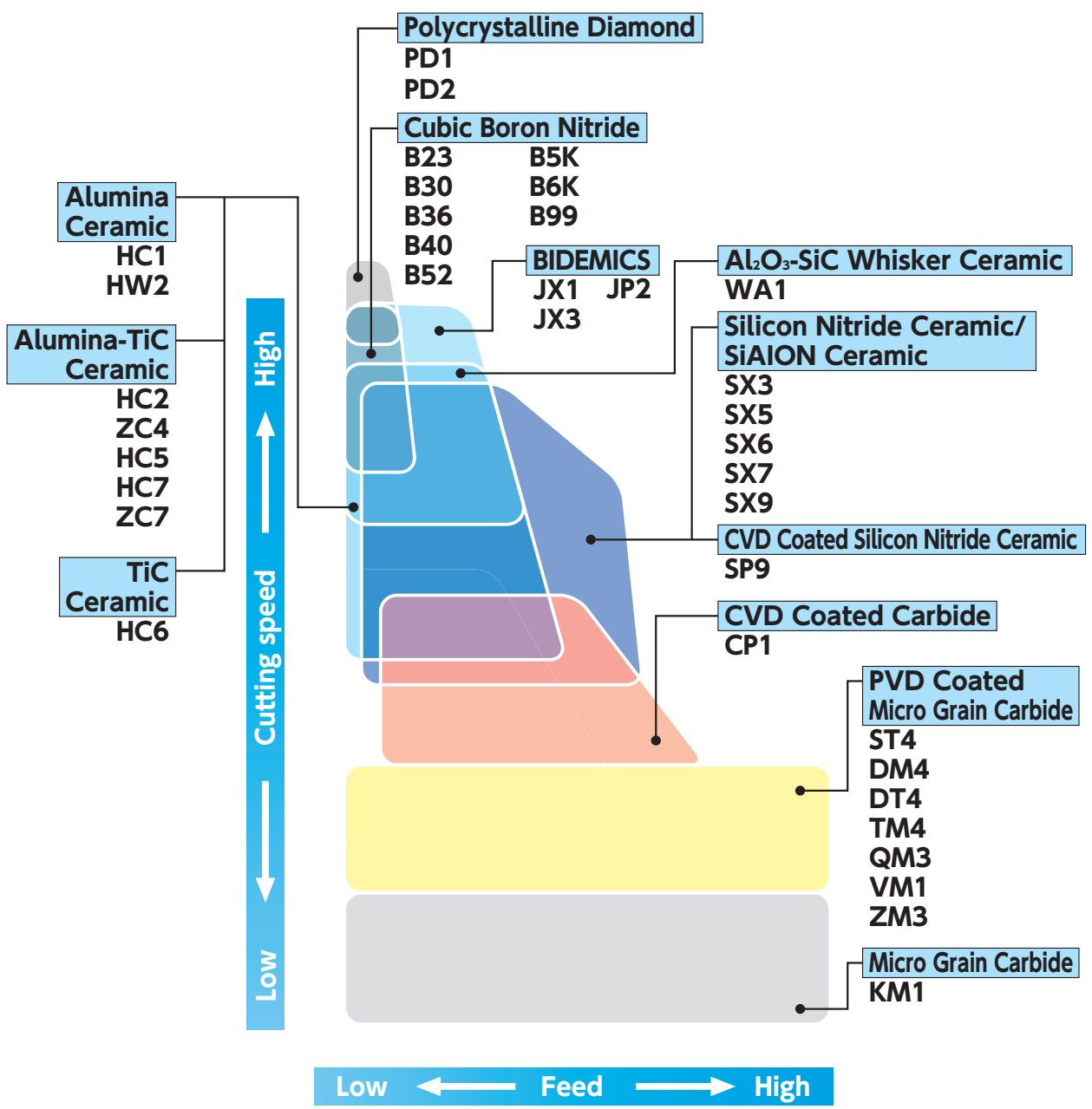
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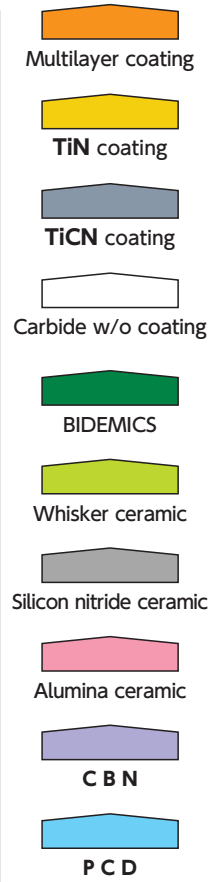
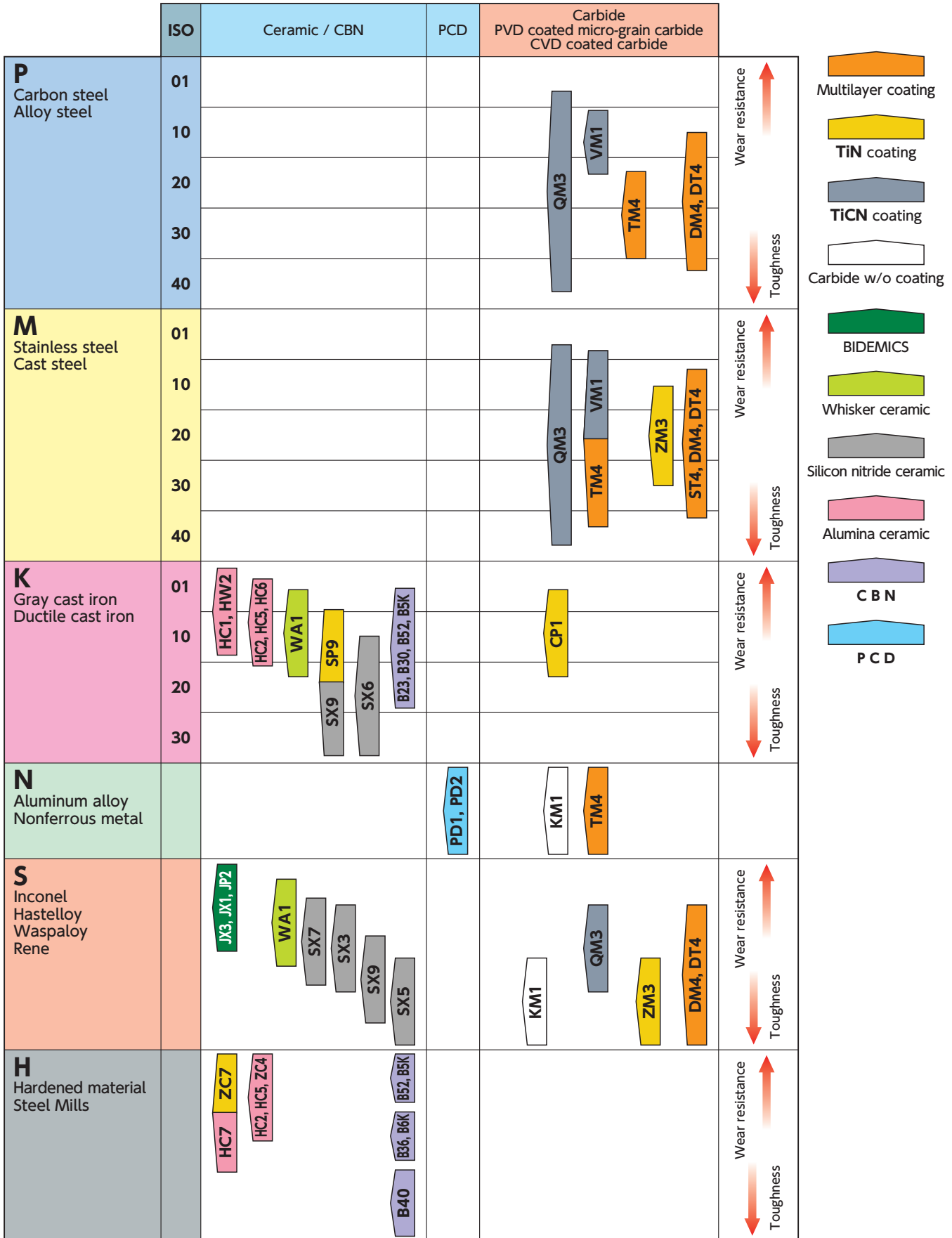
Tool Materials / Selection Guide

- **Application Range of NTK Insert**
 Grades **C2**
- **Recommended Types of Materials and Applications :**
 BIDEMICS, Ceramics and CBN..... **C4**
- **Recommended Types of Materials and Applications :**
 Carbide **C4**
- **ANSI / ISO Insert Nomenclature** ... **C6**
- **Chipbreakers for Positive Inserts** **C8**
- **Chipbreakers for Negative Inserts**
 **C11**

Application Range of NTK Insert Grades



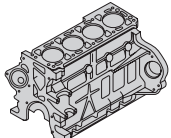






Insert grade recommendation by work material type



Tool Materials / Selection Guide

Recommended Types of Materials and Applications : BIDE MICS, Ceramics and CBN ●1st Choice ○2nd Choice

Work material	Tool Grade	Application			Coolant					
		Roughing	Semi-finishing	Finishing	Continuous	Light interruption	Interruption	Dry	Wet	
Heat-resistant alloy  * Based on Using 1/2" IC Insert except JP2	BIDE MICS	JX1/JX3	○	○	○	○			●	
		JP2		○	○	○	○			●
	Ceramic	SX5	○			○	○			● (Turning)
		SX3/SX7/SX9	○			○	○		○ (Milling)	● (Turning)
		WA1	○			○	○		○	●
Gray cast iron  	Ceramic	SX6	○			○	○	●	●	
		SP9		○		○	○	●	○	
		HC1/HW2			○	○	○	●	●	
		HC2/HC6			○	○	○	●	●	
	ZrC	WA1			○	○	○	●	●	
		B99	○			○	○	●	●	
B23/B30		○		○	○	○	○	●		
Chilled Liners 	Ceramic	HW2		○	○	○	●			
Ductile cast iron 	Ceramic	SP9	○			○	○	○	●	
		HC6			○	○	○	○	●	
	ZrC	B52			○	○	○	○	●	
Hardened material 	Ceramic	ZC4/ZC7			○	○	○	●	●	
		B5K/B52			○	○	○	○	●	
	ZrC	B6K/B36		○			○	○	●	●
		B40	○				○	○	○	●
Rolls  Steel, Cast iron, Ductile iron Carbide * Based on Using 1/2" IC Insert CPM	Ceramic	HC5/HC7		○		○	○	●		
		WA1		○		○	○	○	●	
	ZrC	B30/B99			○		○	○	●	
		HC5/ZC4/HC7		○			○	○	●	

Recommended Types of Materials and Applications : Carbide ●1st Choice ○2nd Choice

Work material	Tool Grade	Application			Coolant					
		Roughing	Semi-finishing	Finishing	Continuous	Light interruption	Interruption	Dry	Wet	
400 series Stainless	Hardness (HB) 160-350	Carbide	QM3/DM4/DT4/ST4	●	●		○	○		●
300 series Stainless	Hardness (HB) 200-350	Carbide	QM3/DM4/DT4/ST4	●	●		○	○		●
Precipitation Hardness (17-4PH etc)	Hardness (HB) 175-350	Carbide	QM3/DM4/DT4	●	●		○	○		●
Carbon Steels Alloy Steels	Hardness (HB) 130-300	Carbide	QM3/DM4/DT4	●	●		○	○		●
	300-400		QM3/DM4/DT4	●	●		○	○		●
Tool Steels	Hardness (HRC) -45 Turning	Carbide	QM3/DM4/DT4	●	●		○	○		●

Cutting speed (SFM)													Feed rate (IPR / IPT)							Depth of cut (inch)				
150	300	600	900	1200	1500	1800	2100	2400	2700	3000	3500	.004	.008	.012	.016	.020	.024	.02	.04	.08	.12	.16		

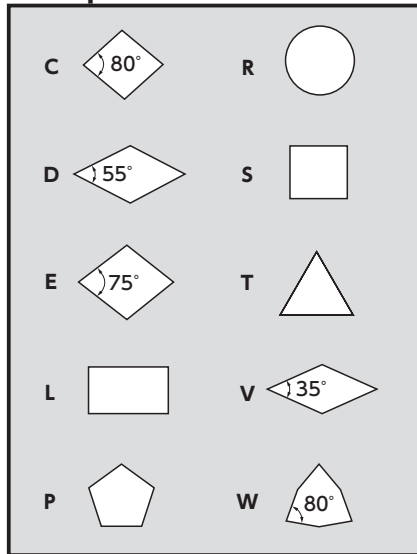
Cutting speed (SFM)												Feed rate (IPR / IPT)							Depth of cut (inch)				
100	200	300	400	500	600	700	800	900	1000	1100	1200	.002	.004	.006	.008	.010	.012	.014	.02	.04	.08	.12	.16

• Starting speed based on using CN.432 insert

Tool Materials / Selection Guide

ANSI / ISO Insert Nomenclature

1 Shape



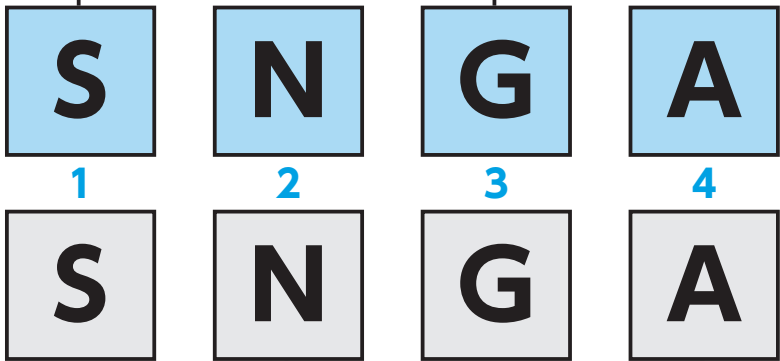
3 Tolerance Class

Symbol	d (inch)	m (inch)	s (inch)
A	±.0010	±.0002	±.0010
F	±.0050	±.0002	±.0010
C	±.0010	±.0005	±.0010
H	±.0050	±.0005	±.0010
E	±.0010	±.0010	±.0010
G	±.0010	±.0010	±.0050
J	±.0020	±.0020	±.0050
K	±.002~±.005	±.0005	±.0010
L	±.002~±.005	±.0010	±.0010
M	±.002~±.005	±.003~±.007	±.0050
N	±.002~±.005	±.003~±.007	±.0010
U	±.003~±.010	±.005~±.015	±.0050

Inscribed Circle	M tolerance	
	d (inch)	m (inch)
1/4"	±.002	±.003
3/8"	±.002	±.003
1/2"	±.003	±.005
5/8"	±.004	±.006
3/4"	±.004	±.006
1"	±.005	±.007

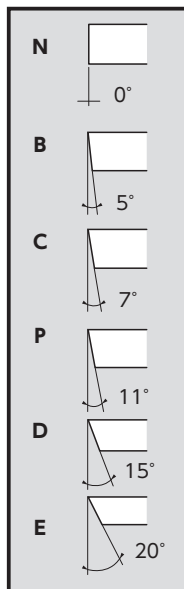
Inscribed Circle	M tolerance	
	d (inch)	m (inch)
1/4"	±.002	±.004
3/8"	±.002	±.004
1/2"	±.003	±.006
5/8"	±.004	±.006
3/4"	±.004	±.007

Inch



Metric

2 Clearances



4 Type

Type	Symbol	Type	Symbol
	N (E)		H
	F		B
	R		T
	A		W
	G		
	M		
Special design	X		

6 Thickness

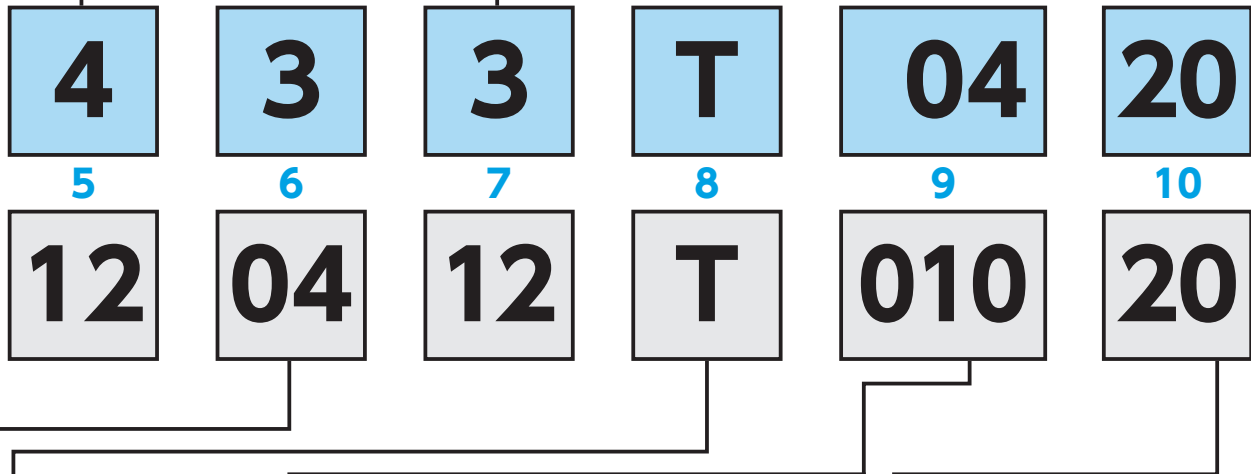
Thickness S(inch)	Inch	Metric
3/32"	1.5	02
1/8"	2	03
5/32"	2.5	T3
3/16"	3	04
1/4"	4	06
5/16"	5	07
3/8"	6	09
1/2"	8	12

5 Symbol for Insert Size

Inch		Metric					
Inscribed Circle							
1/4"	2	06	07	06	11	11	04
3/8"	3	09	11	09	16	16	06
1/2"	4	12	15	12	22	22	08
5/8"	5	16	19	15	27	27	10
3/4"	6	19	23	19	33	33	13
1"	8	25	31	25	44	44	17

7 Corner Radius

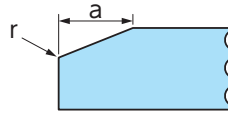
Corner Radius	Inch	Metric	
	1/64"	1	04
	1/32"	2	08
	3/64"	3	12
	1/16"	4	16
	5/64"	5	20
	3/32"	6	24
	1/8"	8	32



8 Edge Condition

Sharp	FNX08
Honed	E
Chamfered	T
Chamfered and Honed	Z
	S
	U
Double Chamfered	K
Double Chamfered and Honed	J
	P
	Q

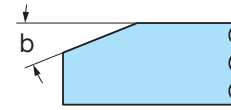
9 Negative Land Width



	Description		a (inch)	r (inch)
	inch	metric		
E	01	002	-	.001
	02	004	-	.002
	02	005	.002	-
T	03	008	.003	-
	04	010	.004	-
	05	012	.005	-
	06	015	.006	-
	08	020	.008	-
	04	010	.004	.001
Z	08	020	.008	.001
S	04	010	.004	.002
	08	020	.008	.002
U	16	040	.016	.003
K	28	070	.028	-
J	60	150	.060	.001
P	71	180	.071	.002
Q	95	240	.095	.003

Note: K, J, P & Q show its primary land width

10 Negative Land Angle

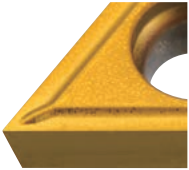
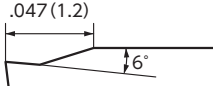
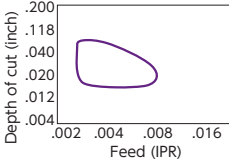

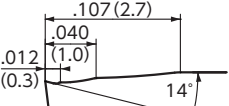
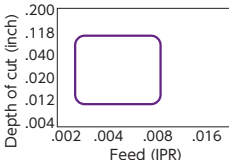
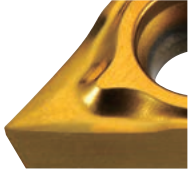
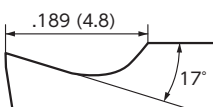
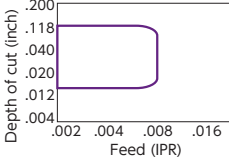

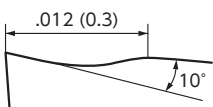
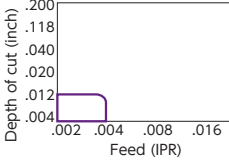

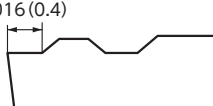
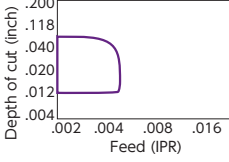

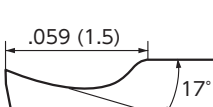
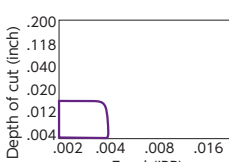
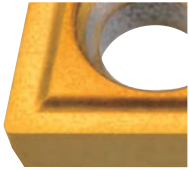
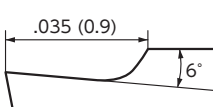
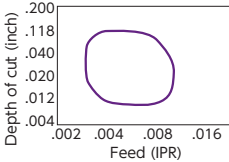


Description	b
10	10°
15	15°
20	20°
25	25°
30	30°

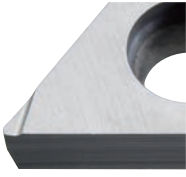
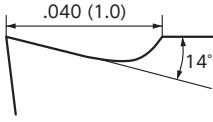
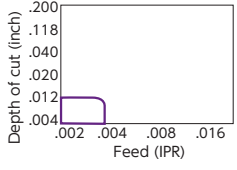
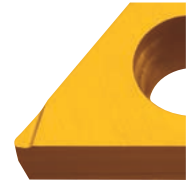
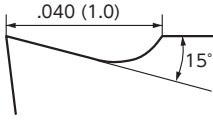
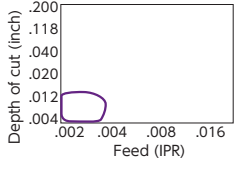
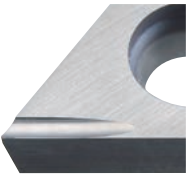
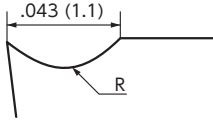
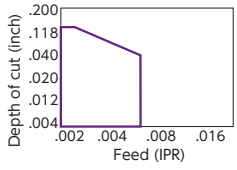
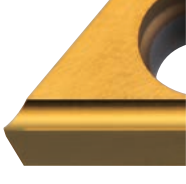
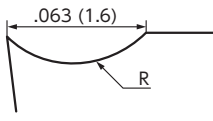
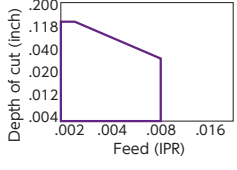
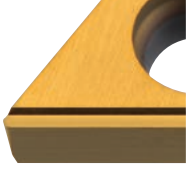
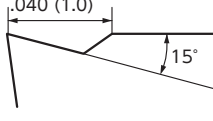
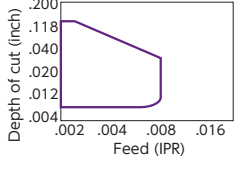

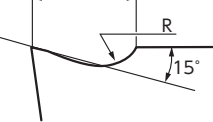
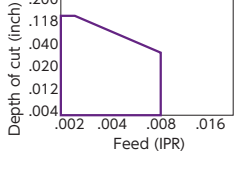
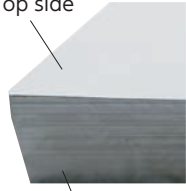
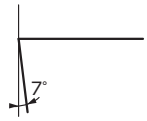
Note: K, J, P & Q show its primary land angle

Chipbreakers for Positive inserts

Molded Chipbreakers for Positive Inserts

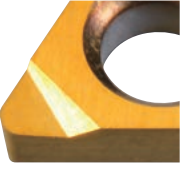
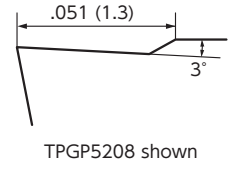
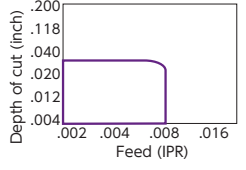
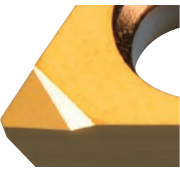
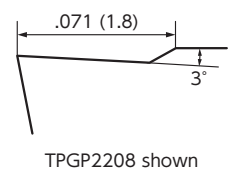
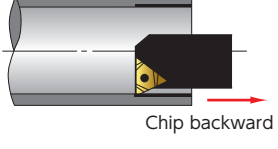
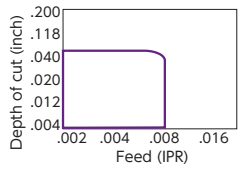
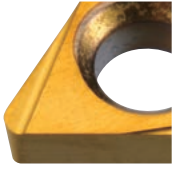
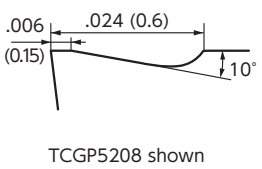
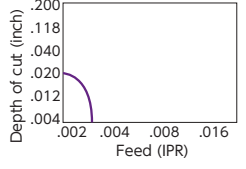
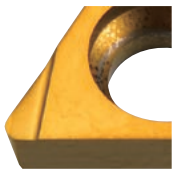
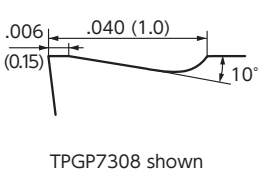
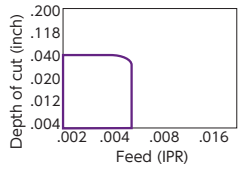

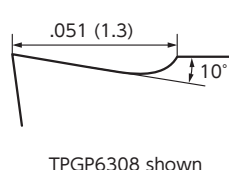
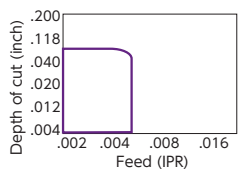
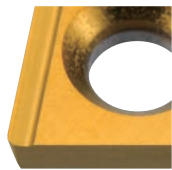
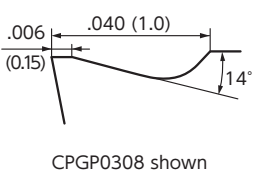
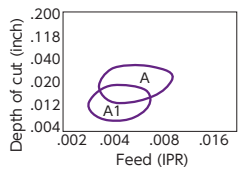

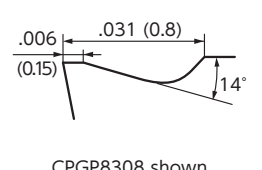

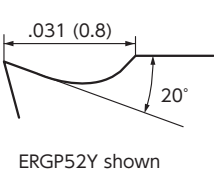
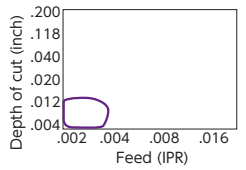
Name	Chipbreaker Geometry	Features	Chip Control Range
AM3	  <p>DCGT32.508 shown</p> <p>→O48</p>	<ul style="list-style-type: none"> ● All purpose chipbreaker ● Sharp edge with toughness 	
YL	  <p>DCGT11T302MYL</p> <p>WATCH ON YouTube →O48</p>	<ul style="list-style-type: none"> ● Great combination of sharpness and toughness ● Covers extremely wide range ● Excellent chip control 	
CL	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →O48</p>	<ul style="list-style-type: none"> ● Sharpest molded Chipbreaker ● Excellent chip control ● Less tool pressure 	
AMX	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →O48</p>	<ul style="list-style-type: none"> ● Designed for very light depth of cut ● Good sharpness 	
AZ7	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube</p>	<ul style="list-style-type: none"> ● Excellent chip control at light feed and light depth of cut 	
FG	  <p>TPGH221 shown</p> <p>→O55</p>	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD at light depth of cut ● Sharp cutting edge with high rake angle 	
AM5	  <p>CPGH21.508 shown</p>	<ul style="list-style-type: none"> ● Chipbreaker for boring ● Provides both good cutting performance and chip control 	

Ground Chipbreakers for Positive Inserts



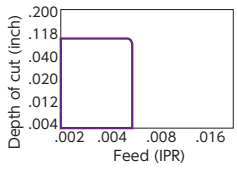


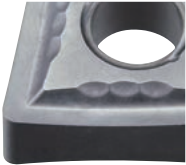

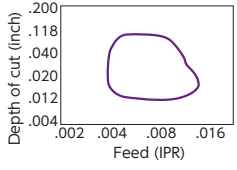
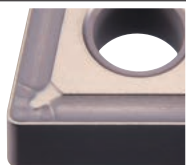
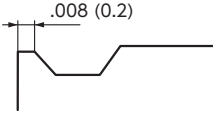
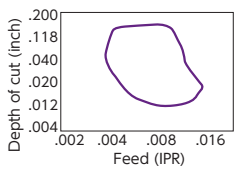
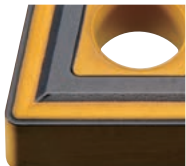
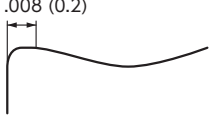
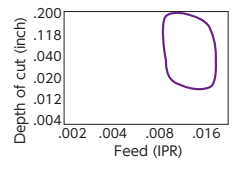
Name	Chipbreaker Geometry		Features	Chip Control Range
KHG		 DCET32.508 shown	<ul style="list-style-type: none"> ● Excellent chip control on finishing cuts ● For super high-precision machining <p>* Precision tolerance in corner radius: ±.0004"</p>	
		 TPGHP7308 shown	<ul style="list-style-type: none"> ● Superb chip control on finishing applications ● Sharp cutting edge with the high rake angle 	
UHG		 DCET32.504M shown	<ul style="list-style-type: none"> ● Sharp cutting edge ● Covers wide cutting condition range <p>* Precision tolerance in corner radius: ±.0004"</p>	
		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Sharp cutting edge prevents materials from work hardening 	
S		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Standard ground chipbreaker with wide cutting condition coverage ● Sharp cutting edge with excellent chip control 	
		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Excellent adhesion resistance with dimensional stability ● Best for small diameter parts and for machining low carbon steels 	
VPH	 Top side Flank side		<ul style="list-style-type: none"> ● Very up-sharp edge with mirror finish <p>V: Mirror finish on Top and Flank side with R0 nose radius P: Mirror finish on Top and Flank side H: Mirror finish on Top side</p>	—

Chipbreakers for Positive inserts

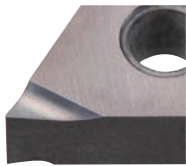
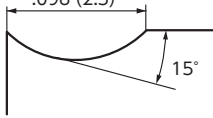
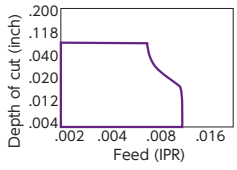
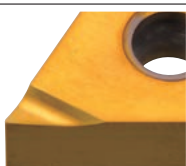
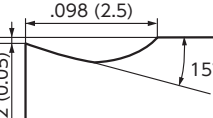
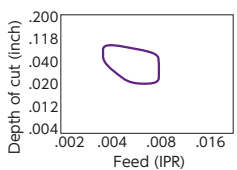
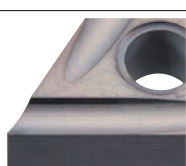
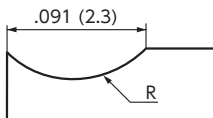
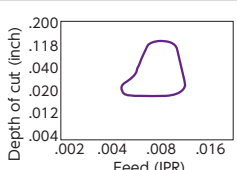

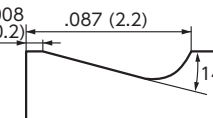
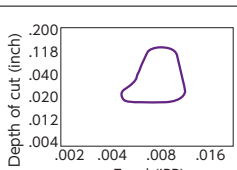
Ground Chipbreakers for Positive Inserts (continued)

Name	Chipbreaker Geometry		Features	Chip Control Range
F05		 TPGP5208 shown	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD ● Excellent choice for blind hole machining 	
F1		 TPGP2208 shown	 Chip backward	
B1		 TCGP5208 shown		
B2		 TPGP7308 shown	<ul style="list-style-type: none"> ● Stable cutting when boring thanks to sharp and tough cutting edge 	
B3		 TPGP6308 shown		
A		 CPGP0308 shown	<ul style="list-style-type: none"> ● Tough cutting edge and good chip control 	
A1		 CPGP8308 shown	<ul style="list-style-type: none"> ● General-purpose ID chipbreaker 	
A2		 ERGP52Y shown	<ul style="list-style-type: none"> ● Control chips at light feed and light depth of cut ● Sharp cutting edge due to large rake angle 	

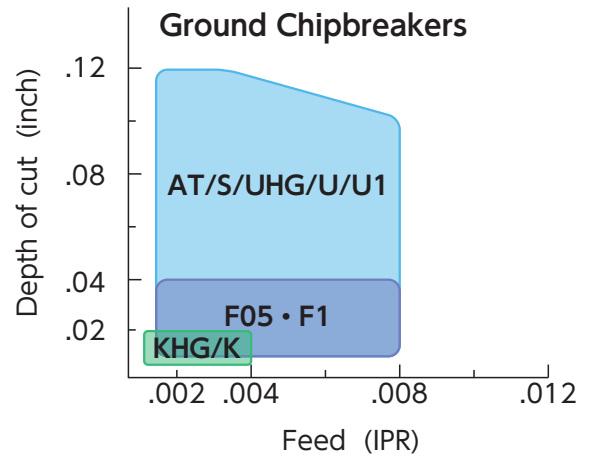
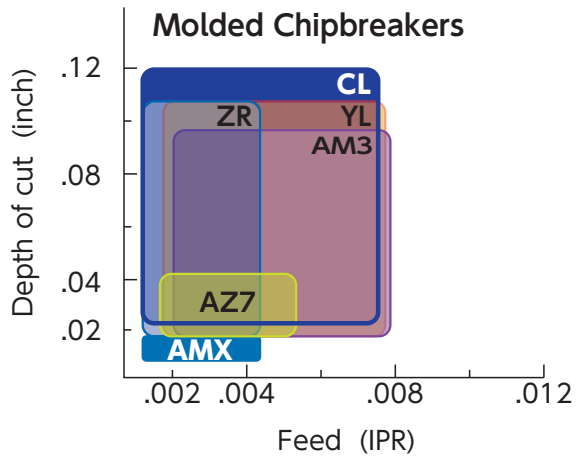
Molded Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
UL			<ul style="list-style-type: none"> ● Negative insert with a positive insert's chipbreaker ● Reduced burr ● Improved microfinish ● Superb advantage in cost per corner over positive inserts 	
	 	TNGG3304M shown		
ZP			<ul style="list-style-type: none"> ● Double-positive rake and sharp cutting edge ● Low tool pressure even at heavy depth of cut 	
		CNMG432 shown		
Z5			<ul style="list-style-type: none"> ● Very tough insert ● Designed for machining with heavy interruption 	
		CNMG432 shown		
G			<ul style="list-style-type: none"> ● Tough chipbreaker for roughing with exceptional stability 	
		CNMG432 shown		

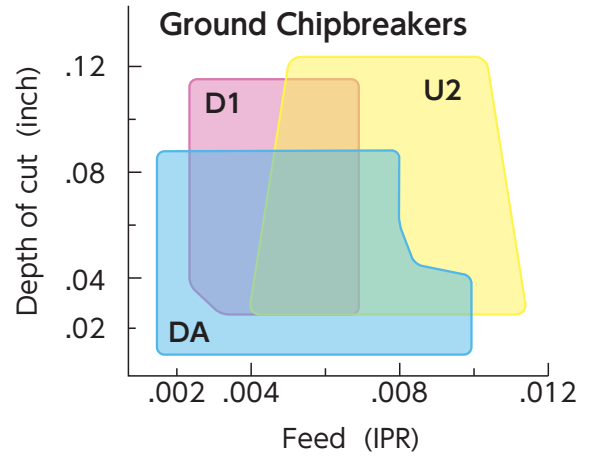
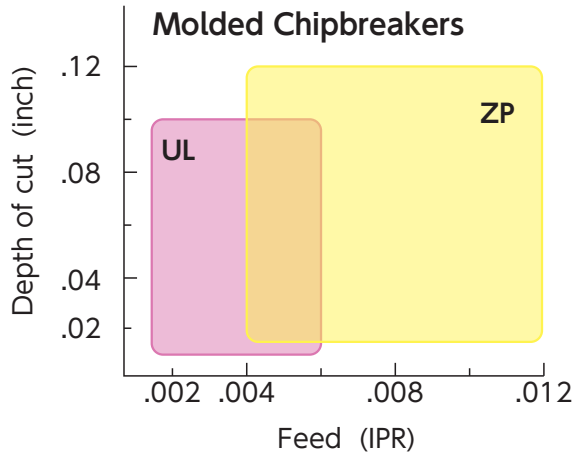
Ground Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
DA			<ul style="list-style-type: none"> ● Excellent chip control and sharp cutting edge 	
		TNGG3304 shown		
D1				
		TNEG3308 shown		
U2			<ul style="list-style-type: none"> ● Reduced burr and work hardening due to high rake design 	
		TNGG3308 shown		
C			<ul style="list-style-type: none"> ● General-purpose chipbreaker with excellent toughness and chip control 	
		TNGG3308 shown		

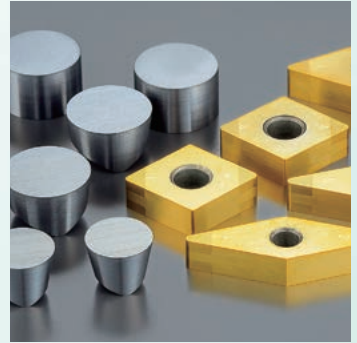
Positive Inserts



Negative Inserts



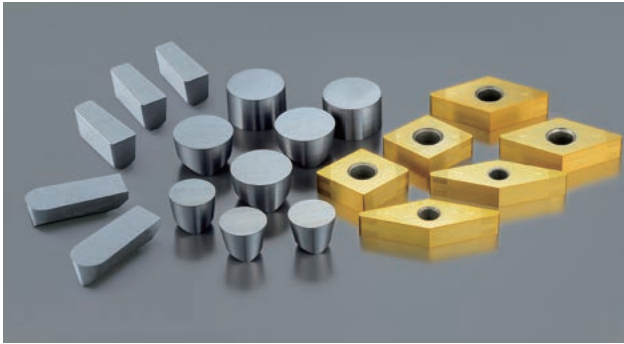
D



Grade Introduction

- **BIDEMICS**..... **D2**
- **Ceramics** **D11**
- **BIDEMICS (Brazed) / CBN / PCD** ... **D25**
- **Carbide / Coated Carbide** **D33**

BIDEMICS



NTK's BIDEMICS is the latest revolutionary insert material to hit the HRSA material machining industry since the release of Whisker ceramics. BIDEMICS is a patented material with unique physical characteristics that are above and beyond current whisker grades used on HRSA material applications. The word is spreading through the HRSA industry and around the world about the results achieved when using BIDEMICS.

Grade Introduction

JX1/JX3

NEW

Semi-finishing & Finishing / Rough no scale



- Up to 1600 SFM speed capability
- Much longer tool life at Whisker ceramics' speed range
- Better wear resistance and notching resistance than Whisker ceramics
- Superior surface finish vs. Whisker ceramics
- Newly added JX3 provides toughness to BIDEMICS family

JP2

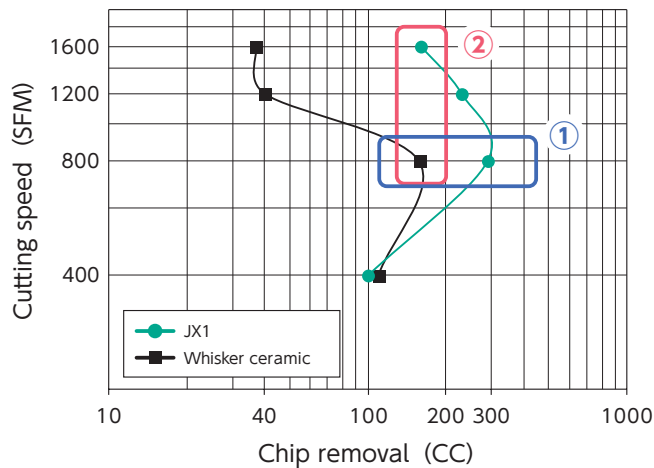
Finishing



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

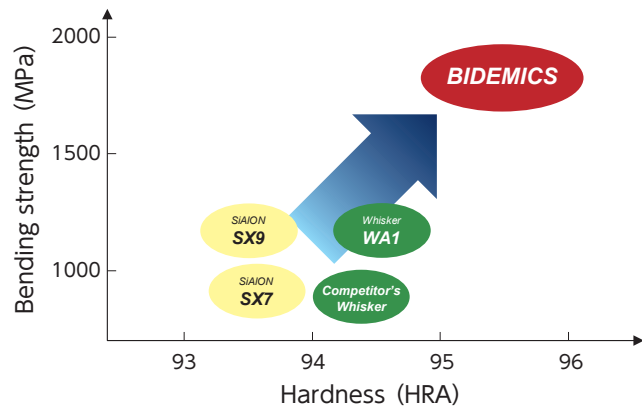
[BIDEMICS]

BIDEMICS over Whisker Ceramic

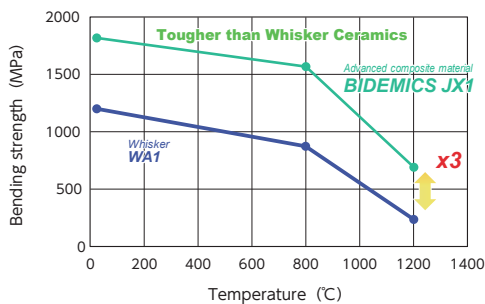


Physical properties

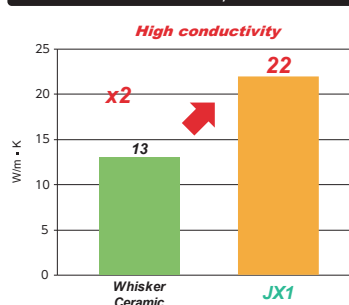
Grade	Hardness HRA	Bending Strength MPa	Thermal Conductivity W/m · K
JX1	95.5	1,800	40
WA1	94.5	1,200	35



- Harder than Whisker ceramic for improved tool life and superior surface finishes
- Tougher than Whisker ceramic in recommended applications



Thermal conductivity at 600°C



Thermal expansion coefficient at 600°C



1 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.

1600 SFM	Competitor's Whisker	JX1
1st pass after 0.50 min		
2nd pass after 1.00 min	Impossible	



2 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.

1100 SFM	Competitor's Whisker	JX1
1st pass after 0.75 min		
2nd pass after 1.50 min		

3 Works well on wide range of High Temperature Alloys

BIDEMICS has success on
Inconel 718
Inconel 625

- 718 Plus
- Rene104
- Rene41
- Waspaloy
- Rene88

etc.

5 Speed up grooving operations



VGW style Grooving inserts are now available

4 Superior surface finish

	JP2	CBN	Carbide
Machined surface			
Roughness			
Ra	0.64 μm	1.18 μm	2.75 μm
Rz	3.36 μm	5.56 μm	9.64 μm
Cutting speed	800 SFM	←	120 SFM
Feed rate	.006 IPR	←	←
Cycle time	3.3 min	←	14.7 min
Removed chip	48 cc	←	←

JP2's outstanding Wear Resistance and Notching Resistance results in work piece surface finishes consistently superior to either CBN or Carbide

JX1/JX3 NEW

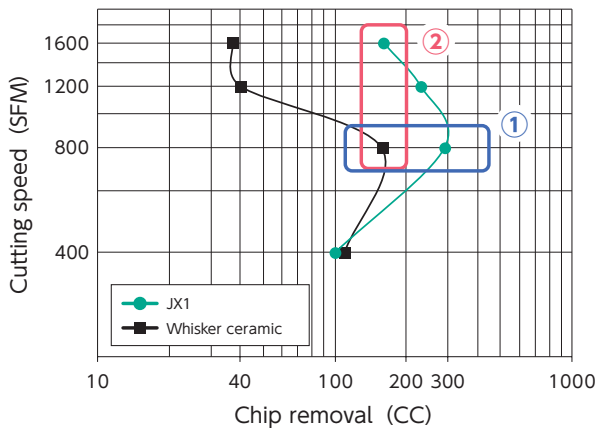
New Composite Material for HRSA Machining



Features

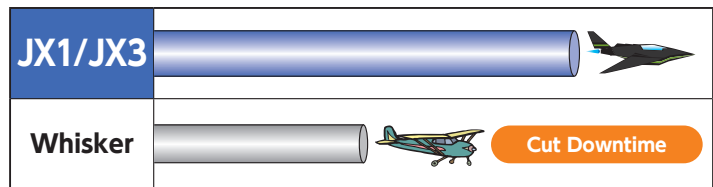
Patented

- Significantly extended tool life compared to Whisker ceramics
- Double the cutting speed potential compared to Whisker ceramics
- Superior surface finish compared to Whisker ceramics
- Applicable to powder-metallurgical heat resistant alloys
- Newly added JX3 provides toughness to BIDEMICS family

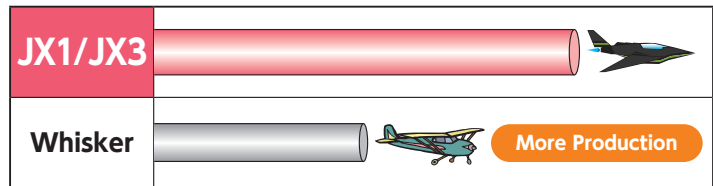


Increase Productivity vs. Whisker Ceramics

① Significantly extended tool life at same speed



② Double speed capability



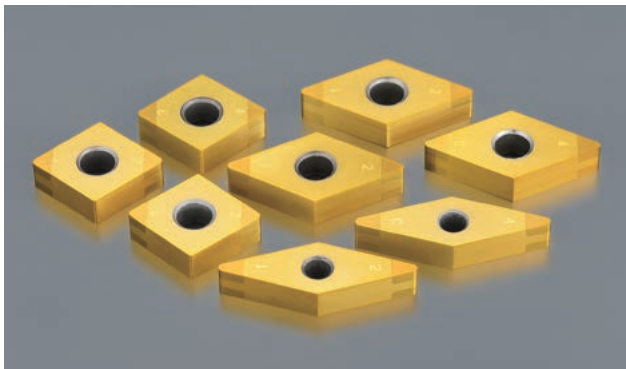
Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
JX1/JX3	Heat Resistant Alloy	Turning	Rough no scale	600- 1600	.005-.011	.040-.100		●
			Semi finishing	600- 1600	.004-.010	.020-.080		●
		Grooving	Rough no scale	600- 1600	.002-.005	—		●

TIPS for JX1/JX3

- JX1/JX3 works exceptionally well on Inconel 718 and Inconel 625 as well as on latest HRSA materials such as Rene, 718 plus.
- JX1 can withstand small interruption, and smooth scale, but JX3 will be better option for applications where toughness is required.
- A slower feed rate at the corner will bring stability.
- Check the “G-code” for Maximum Rotation Limit when you run higher speed than current parameter.
- JX1 can provide a big difference in productivity especially when running a 20" or bigger diameter part.

JP2

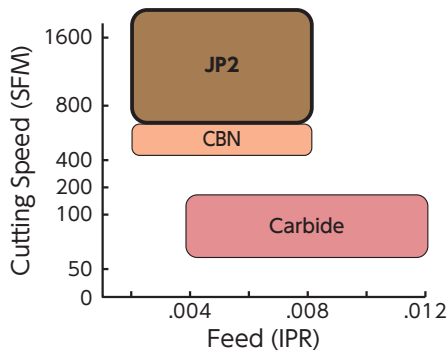
Ultra High-Speed Finishing of Super Alloys



Features

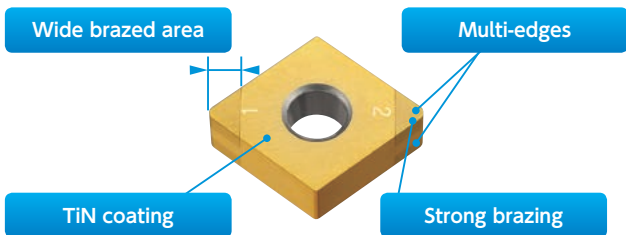
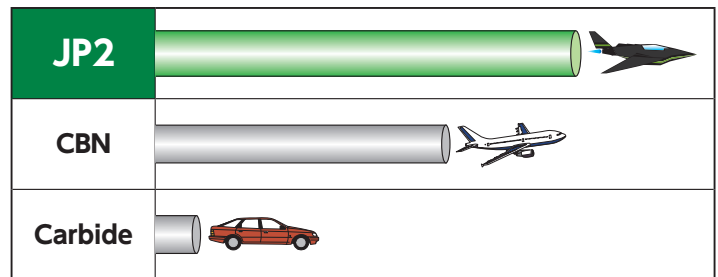
Patented

- High speed finish turning can be performed at 800SFM or higher
- Superior wear resistance compared to CBN's
- Superior notching resistance vs CBN or carbides
- Superior surface finishes vs CBNs and coated carbides



Increase Productivity vs. Carbide

① 10 to 15 times higher speed capability



Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
JP2	Heat Resistant Alloy	Turning	Finishing	600- 1700	.002-.007	.005-.030		●

TIPS for JP2

- JP2 works very well on Inconel 718 and Inconel 625.
- E02-honed edge preparation is 1st recommendation.
- Larger corner-Radius brings toughness, use as large a radius as you can.
- Check the "G-code" for Maximum Rotation Limit when you run higher speed than current parameter.

BIDEMICS are Changing the world

Grade Introduction

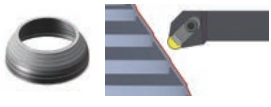


[BIDEMICS]

Ring Case (Inco718 Semi-finishing)

	Comp. Whisker	JX1
Shape	RNG45/RPGX35	←
Cutting speed (SFM)	800	1570
Feed (IPR)	.009 ~.012	.009 ~.010
Depth of cut (inch)	-.120	←
	WET	←

NTK : JX1 2.0 hours Time to complete part (side) Total 30 operations

Competitor's Whisker ceramic 3.5 hours




• Customer needed 3.5 hours to complete a part (one side). JX1 ran at 1570 SFM and cut machining time dramatically.

Turbine disc (Inco718 rough)

	Comp. Whisker	JX1
Shape	RPGX45	←
Cutting speed (SFM)	650	1300
Feed (IPR)	.006	←
Depth of cut (inch)	.080	←
	WET	←

NTK : JX1 120 cc/min

Competitor's Whisker ceramic 60 cc/min

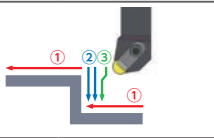


• JX1 cut at 1300 SFM which is double the Whisker ceramic speed and can reduced cycle time by 1/2.

Disc (Inco718 Roughing [thru scale] / Semi-finishing)

	Comp. Whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	750	←
Feed (IPR)	.006	←
Depth of cut (inch)	-.070	←
	WET	←

NTK : JX1 3 operations

Competitor's Whisker ceramic 1 operation




• JX1 cut 3 operations with one corner instead of 3 corners.

Disc (Inco718 Roughing [thru scale] / Semi-finishing)

	Comp. SIAION	JX1
Shape	RPG35	←
Cutting speed (SFM)	700	←
Feed (IPR)	.0015-.0048	←
Depth of cut (inch)	.030	←
	WET	←

NTK : JX1 13 minutes

Competitor's SIAION ceramic 6.5 minutes




• JX1 doubled tool life vs competitor's SIAION grade.

Turbine shaft (Inco718 pre-machined)

	Comp. Whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	800	←
Feed (IPR)	.008	←
Depth of cut (inch)	.080	←
	WET	←

NTK : JX1 10 min

Competitor's Whisker ceramic 3 min


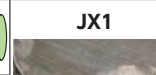

• Whisker needed to index 3 times to machine a whole part. JX1 cuts a whole part without indexing insert.

Disc (DP718 Grooving)

	Comp. Whisker	JX1
Shape	RPGX23	←
Cutting speed (SFM)	750	1000
Feed (IPR)	.003	.005
Depth of cut (inch)	-	-
	WET	←

NTK : JX1 25 passes

Competitor's Whisker ceramic 5 passes

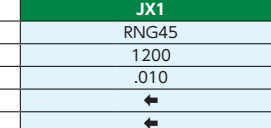


• JX1 used for grooving operation, ran faster than Competitor's Whisker and got 5 times longer tool life.

Test Part (Inco625 Semi-finishing)

	Comp. Carbide	JX1
Shape	CNMG543	RNG45
Cutting speed (SFM)	128	1200
Feed (IPR)	.011	.010
Depth of cut (inch)	.020	←
	WET	←

NTK : JX1 47.2 cc/min

Competitor's coated carbide 5.5 cc/min

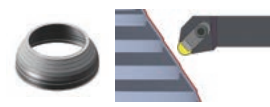


• Productivity increased when JX1 ran 8.5 times faster than carbide.

Turbine case (718 Plus semi finish)

	Comp. coated Whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	800	←
Feed (IPR)	.010	←
Depth of cut (inch)	.020	←
	WET	←

NTK : JX1 3 pass

Competitor's Whisker ceramic 1 pass

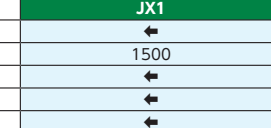


• JX1 produced 3 times longer tool life than coated Whisker ceramic on difficult to cut material, 718 Plus.

Ring (Rene41 Semi-finishing)

	Comp. Whisker	JX1
Shape	RCGX45	←
Cutting speed (SFM)	1000	1500
Feed (IPR)	.008	←
Depth of cut (inch)	.020	←
	WET	←

NTK : JX1 5 pcs with 50% higher productivity

Competitor's Whisker ceramic 2 pc

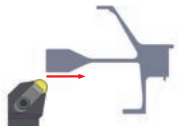

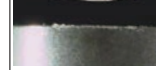
• Rene41 is difficult to cut, but JX1 could cut 1.5 times faster and 2.5 times longer than Competitor's Whisker.

Turbine Disc (Rene88 Semi-finishing)

	Comp. SIAION	JX1
Shape	RNG45	←
Cutting speed (SFM)	350	←
Feed (IPR)	.010	←
Depth of cut (inch)	.010	←
	WET	←

NTK : JX1 4 passes

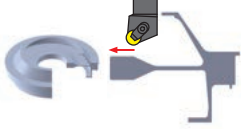
Competitor's SIAION ceramic 2 pcs

• Rene88 is very hard to cut, but JX1 cut 2 times longer than Competitor's SIAION and edge still in good condition.



Turbine disc (Rene104 rough)

	Comp. Whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	700	←
Feed (IPR)	.007	←
Depth of cut (inch)	.040	←
	WET	←



NTK : JX1 4 pass


Competitor's Whisker ceramic 1 pass

● Rene104 is a difficult material to cut, but JX1 cut 4 times longer than Whisker ceramic.



Disc (Inco901 Semi-finishing)

	Comp. Whisker	JX1
Shape	RPGX35	←
Cutting speed (SFM)	600	1000
Feed (IPR)	.005	←
Depth of cut (inch)	.052	←
	WET	←



NTK : JX1 51.1 cc/min


Competitor's Whisker ceramic 30.7 cc/min

● JX1 cut 1.7 times faster than Competitor's Whisker and kept good edge.

LPT disc (Inco718)

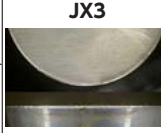
	Comp. Whisker	JX3
Shape	RPG45	←
Cutting speed (SFM)	690	1150
Feed (IPR)	.006	←
Depth of cut (inch)	.060	←
	WET	←



NTK : JX3 82 cc/min

Competitor's Whisker ceramic 48 cc/min

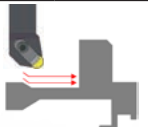
JX3



● JX3 cut 1.7 times faster than competitor's whisker and kept good edge.

LPT disc (Inco718)

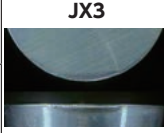
	Comp. Whisker	JX3
Shape	RPG45	←
Cutting speed (SFM)	700	1200
Feed (IPR)	.006	←
Depth of cut (inch)	.070	←
	WET	←



NTK : JX3 100 cc/min

Competitor's Whisker ceramic 60 cc/min

JX3



● JX3 cut 1.7 times faster than competitor's whisker and kept good edge.

Bottom Sub (Inco718 Semi-finishing)

	Comp. Carbide	JP2
Shape	DNMG432	DNGA432
Cutting speed (SFM)	200	1200
Feed (IPR)	.010	.008
Depth of cut (inch)	.011	←
	WET	←

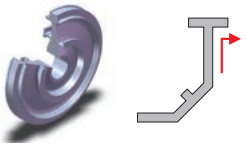
NTK : JP2 20.4 cc/min

Competitor's coated carbide 4.3 cc/min

● JP2 cut 5 times faster than carbide insert, reducing cycle time dramatically.

Disc (Inco718 Finishing)

	Competitor's Coated Carbide	JP2
Shape	CNGG432	CNGA432
Cutting speed (SFM)	70	800
Feed (IPR)	.003	←
Depth of cut (inch)	.010	←
	WET	←
Tool life	1pc	←



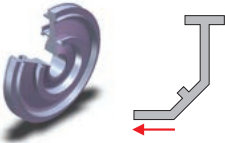
NTK : JP2 525 cc/min

Competitor's Whisker ceramic 45 cc/min

● JP2 could cut 11 times faster than carbide, this means cycle time was reduced to 1/11 of original.

Disc (Inco718 Semi-finishing / Finishing)

	Competitor's Coated Carbide	JP2
Shape	CNGP432	CNGA432
Cutting speed (SFM)	150	600
Feed (IPR)	.0035	←
Depth of cut (inch)	.015+.005	←
	WET	←
Tool life	1pc	4pcs




NTK : JP2 4 pcs with 4 times higher productivity

Competitor's Coated Carbide 1 pc

● JP2 cuts 4 times longer and 4 times faster than carbide.

Ring (Inco625 Finishing)

	Comp. Whisker	JP2
Shape	CNGA433	←
Cutting speed (SFM)	1100	1400
Feed (IPR)	.008	←
Depth of cut (inch)	.012	←
	WET	←



NTK : JP2 20 pcs/corner with 27% higher productivity

Competitor's Whisker ceramic 13 pcs/corner

● JP2 got both better productivity and tool life over Competitor's Whisker.

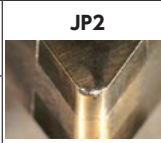
Bottom Sub (Inco625 ID-Semi-finishing)

	Comp. Carbide	JP2
Shape	DNMG432	DNGA432
Cutting speed (SFM)	180	700
Feed (IPR)	.008	←
Depth of cut (inch)	.010	←
	WET	←

NTK : JP2 11.01 cc/min

Competitor's coated carbide 2.83 cc/min

JP2



● JP2 cut 4 times faster than carbide insert, reducing cycle time dramatically.

Flange (Inco625 Finishing)

	Comp. Carbide	JP2
Shape	CNMG431	CNGA431
Cutting speed (SFM)	150	1400
Feed (IPR)	.007	←
Depth of cut (inch)	.010	.005×2
	WET	←

NTK : JP2 25 Parts with 4.5 times higher productivity

Competitor's coated carbide 15 Parts

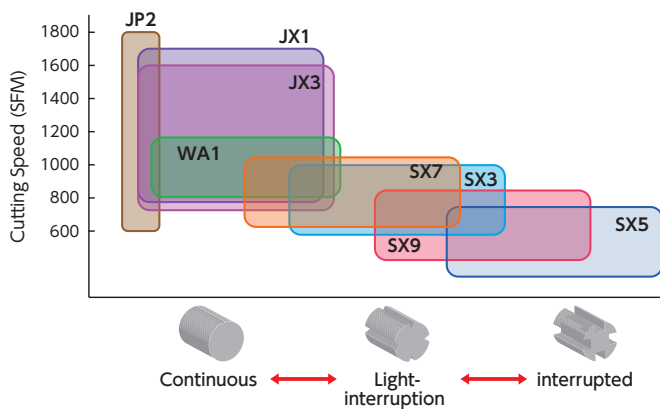
● JP2 ran at 1400 SFM while getting 1.7 times longer tool life.

Insert Grade

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	Special grade for finish turning				●			
	JX3	Added toughness in BIDEMICS		●	●	●	●		
Whisker	WA1	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 Map

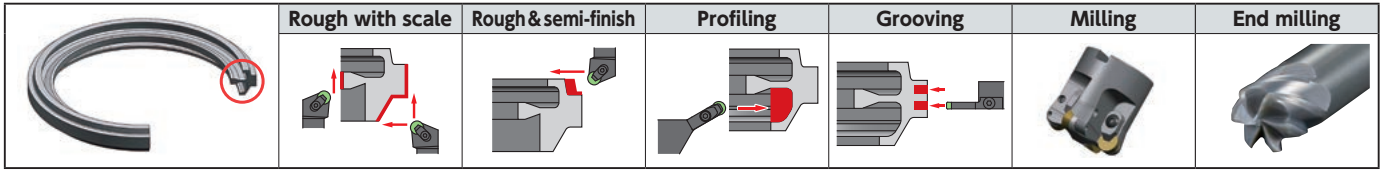


	Grade	Rough with Scale	Rough	Semi-Finishing	Finishing
BIDEMICS	JP2			██████████	██████████
	JX1		██████████	██████████	██████████
	JX3		██████████	██████████	██████████
Whisker	WA1	██████████	██████████	██████████	██████████
SIALON	SX7		██████████	██████████	██████████
	SX3		██████████	██████████	██████████
	SX9	██████████	██████████	██████████	██████████
	SX5	██████████	██████████	██████████	██████████

Grade Introduction

[Guidelines for Machining Heat Resistant Alloys]

Applications



Applications

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		.100
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	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	Overall	800 (600-1100) SFM					.008 (.004-.010) IPR					.060 (.040-.080)"					
Finishing 	JP2	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	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		.100
Milling 	SX3 SX7	Overall	2700 (2000-4000) SFM					.004 (.003-.005) IPT					.070 (.040-.100)"					DRY
	SX9	Overall	2500 (1500-3500) SFM					.005 (.004-.006) IPT					.080 (.040-.100)"					
End milling 	SX9	Overall	2000 (980-3300) SFM					.0008-.0013 IPT										DRY

MEMO

D



Ceramics

- **Alumina-based Ceramics** D14
- **Alumina TiC-based Ceramics** ... D16
- **Whisker-reinforced Ceramics** ... D19
- **Silicon Nitride-based Ceramics**... D20
- **SiAlON Ceramics** D22



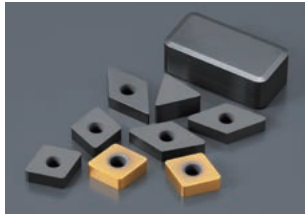
NTK's premium ceramic grades ensure higher productivity. All of the grades show superior high temperature hardness, heat resistance and chemical stability. NTK offers many types of ceramic cutting tool materials (silicon nitride-based, alumina-based and whisker-based) in a variety of geometries to meet customer demands.



● **Alumina-based ceramics (White ceramics)**
For Gray Cast Iron



● **Silicon nitride-based ceramics**
For Gray Cast Iron
Ductile Cast Iron
Heat Resistant Alloys



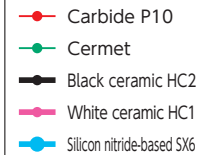
● **Alumina TiC-based ceramics (Black ceramics)**
For Gray Cast Iron
Ductile Cast Iron
Hardened Materials
Mill Rolls



● **Whisker-based ceramics**
For Heat Resistant Alloys
Gray Cast Iron
Hardened Materials
Mill Rolls

Advantages of ceramic cutting tool (1)

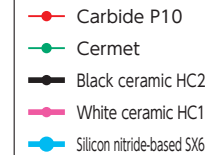
The material retains high hardness even at increased temperatures !!



Excellent wear resistance at high cutting speed

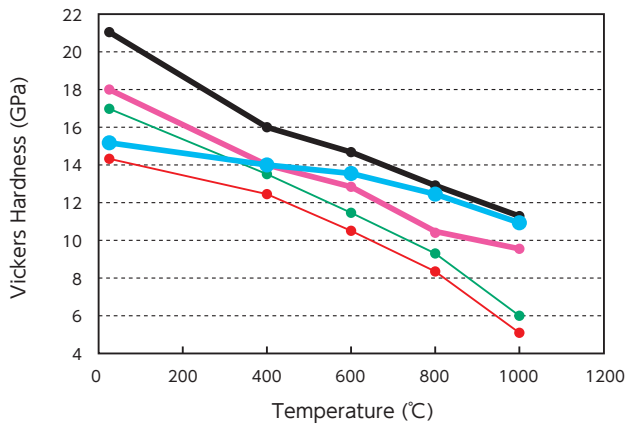
Advantages of ceramic cutting tools (2)

Low impact on bending strength even under high temperature

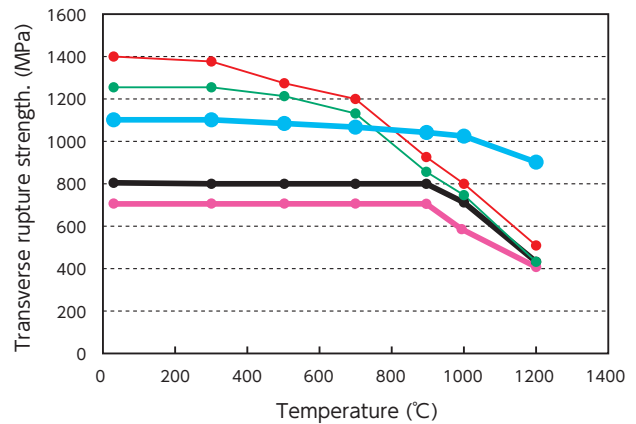



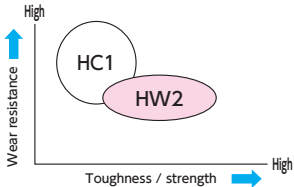


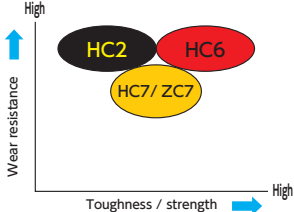



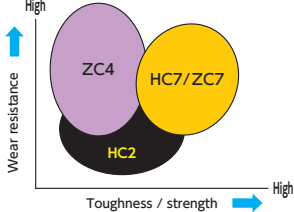








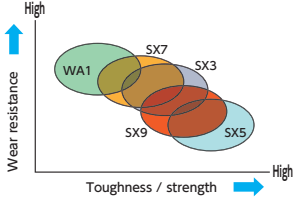


Stable machining is possible in the high speed range

[Hardness at high temperature by tool material]



[Breaking strength at high temperature by tool material]



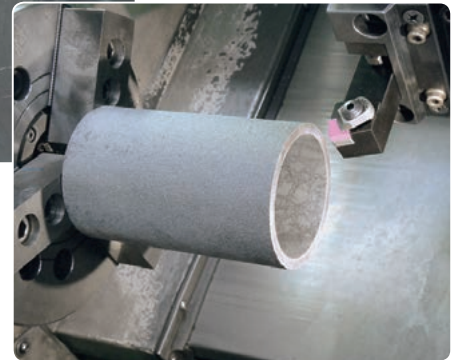
	Grade / Coating	Applications / Features	Physical properties*						Application map	
			Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K	Thermal conductivity W/m·K		
White ceramics Alumina - based ceramics	HC1  Al ₂ O ₃	K	4.0	94.0	700	400	7.8	17	[Gray cast iron, Finish, DRY, White ceramics] 	
		Semi-finish / Finish Best wear resistance								
	HW2  Al ₂ O ₃	K	4.1	94.0	750	390	7.8	19		
		Rough / Semi-finish / Finish Outstanding fracture toughness								
Black ceramics Alumina + TiC-based ceramics	HC2  Al ₂ O ₃ +TiC	K H	4.3	94.5	800	420	7.9	21	[Gray cast iron, Finish, WET, Black ceramics] 	
		Semi-finish / Finish General black ceramic								
	ZC4  Al ₂ O ₃ +TiC TiN coat	K H	4.6	95.5	1,000	420	7.8	25		
		Semi-finish / Finish Competitive vs CBN								
	HC5  Al ₂ O ₃ +TiC	K	4.3	95.0	900	420	7.8	25		
		Semi-finish / Finish Stable performance for Mill Rolls								
HC6  TiC+Al ₂ O ₃	K	4.7	94.0	800	450	7.6	29	[Machining of hardened materials] 		
	Semi-finish / Finish Excellent performance for Ductile									
HC7  Al ₂ O ₃ +TiC	K H	4.6	95.0	1,100	420	7.9	23			
	Semi-finish / Finish Stable performance for Mill Rolls									
ZC7  Al ₂ O ₃ +TiC TiN coat	K H	4.6	95.0	1,100	420	7.9	23			
	Semi-finish / Finish Excellent wear resistance in wide hardness range									
Whisker-reinforced ceramics	SX3  SiALON	K S	3.3	93.0	1,100	290	3.4	12	[Machining of Gray cast iron / Rough] 	
		Rough / Semi-finish Best balance of toughness and hardness								
	SX5  SiALON	K S	3.6	92.5	1,100	350	4.0	18		
		Rough / Semi-finish Excellent toughness								
	SX6  Si ₃ N ₄	K	3.2	93.5	1,200	320	3.0	50		
		Rough 1st choice for Cast Iron machining								
SX7  SiALON	K S	3.3	93.5	900	290	3.4	11			
	Rough / Semi-finish Versatile grade for turning and milling									
SX9  SiALON	K S	3.3	93.5	1,200	330	3.0	15	[Machining of Inco 718] 		
	Rough / Semi-finish Excellent combination of toughness and heat resistance									
SP9  Si ₃ N ₄ TiN+Al ₂ O ₃ coat	K	3.3	93.5	1,200	330	3.0	15			
	Rough / Semi-finish / Finish Low tool pressure and increased toughness									
WA1  Al ₂ O ₃ +SiC	K H S	3.7	94.5	1,200	400	7.0	35			
	Semi-finish / Finish Superior flank wear resistance with toughness									

*For coated grades, the values of the substrate material are indicated.

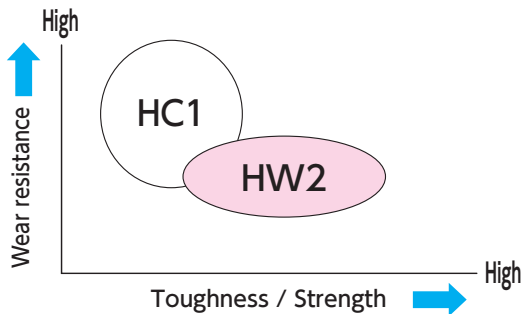
Alumina-based ceramics (White ceramics)



Characterized by high oxidation resistance and adhesion resistance. This ceramic utilizes alumina that is thermally and chemically stable. This ceramic is best suited for high-speed cutting applications where cutting temperature tends to be high with no coolant.



【Gray cast iron, Finishing, Dry cutting, White ceramic】



Grade Introduction

[Ceramics]

HC1

Ideal grade for high-speed finishing of cast iron



Features

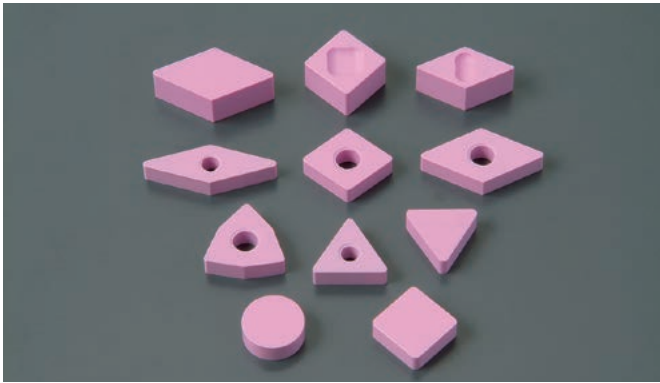
- Best wear resistance
- Stable machining performance in many high-speed machining applications

Brake rotor	
Gray cast iron	
2100 SFM	
.012 IPR	
.020" DOC	
DRY	
NTK : HC1	130 pcs
Competitor's black ceramic	65 pcs

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

HW2

Alumina-based ceramic grade with high toughness



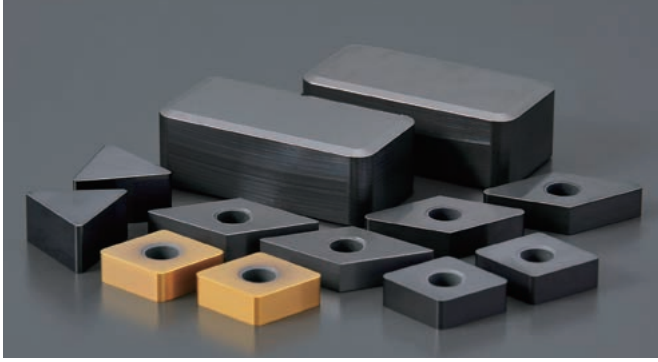
Cylinder liner	
Chilled liner	
1200 SFM	
.012 IPR	
.080" DOC	
DRY	
NTK : HW2	70 pcs
Competitor's white ceramic	30 pcs

Features

- Outstanding fracture toughness
- Stable machining performance in many high-speed machining applications

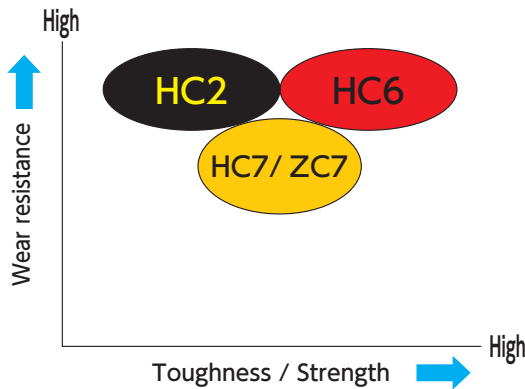
Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
HW2	Gray cast iron	Turning	Rough-Finish	1200-2100	.004-.016	.020-.080	●	
	Cylinder Liners	Turning	Rough-Finish	600-1800	.008-.016	.020-.100	●	

Alumina TiC-based ceramics (Black ceramics)

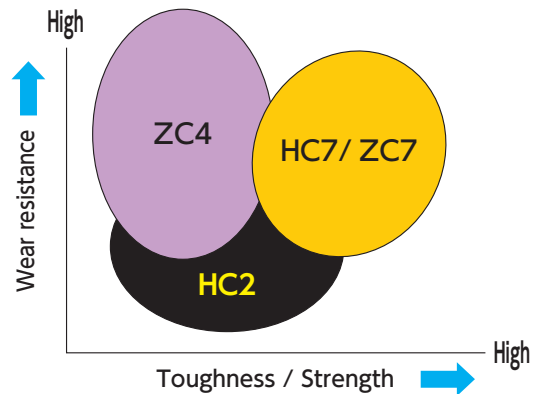


Alumina TiC-based ceramics are strengthened by adding hard carbide to highly pure alumina. This process results in ceramic materials that shows excellent performance in either wet or dry cutting conditions. As an added benefit, hardness and toughness has been improved which enables the machining of partially interrupted cuts. This ceramic material has both high-hot hardness and low plasticity needed to cut hardened materials.

[Gray cast iron, Finishing, WET, Black ceramic]



[Machining of hardened materials]



Grade Introduction

[Ceramics]

HC2

The standard grade for machining cast iron and hardened materials



Mill roll	
240 SFM	
.008 IPR	
.020" - .120" DOC	
DRY	
NTK : HC2	20 pcs
Competitor's black ceramic	10 pcs

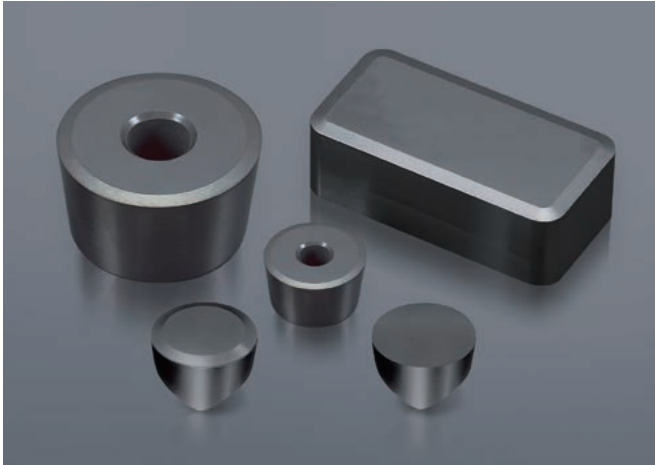
Features

- Well-balanced content of aluminum oxide and titanium carbide (Al_2O_3+TiC) sintered under pressure
- Stable performance under a wide range of machining conditions
- General purpose ceramic which works well in a wide range of cutting applications

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
HC2	Gray cast iron	Turning	Semi finish-Finish	1200-2100	.004-.016	.020-.060	●	●
	Mill rolls (Cast iron)	Turning	Semi finish-Finish	150-500	.003-.008	.020-.140	●	

HC5

Developed for Mill Rolls



Mill roll	
Chilled cast iron	
230 SFM	
.016 IPR	
.394" DOC	
DRY	
NTK : HC5	
Competitor's black ceramic	

Features

- Developed for use in hard turning applications for mill rolls
- Excellent toughness combined with wear resistance

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
HC5	Mill roll (Cast iron)	Turning	Rough-Finish	450-600	.004-.012	.025-.075	●	
	Mill roll (Steel)	Turning	Rough-Finish	450-600	.004-.012	.025-.075	●	

HC6

For machining ductile cast iron



Differential case	
Ductile cast iron	
900 SFM	
.008 IPR	
.020" DOC	
WET	
NTK : HC6	
Competitor's coated carbide	

Features

- Designed specifically for finish turning of ductile / nodular cast irons
- TiC-based ceramic with improved wear resistance at high cutting speed

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
HC6	Ductile cast iron	Turning	Finish	600-1500	.004-.012	-.040	○	●

ZC4

For machining hardened materials



Side gear	
Case carburizing steel	
Hardness : HRC63	
400 SFM	
.004 IPR	
.006" DOC	
DRY	
NTK : ZC4	60 pcs
Competitor's black ceramic	30 pcs

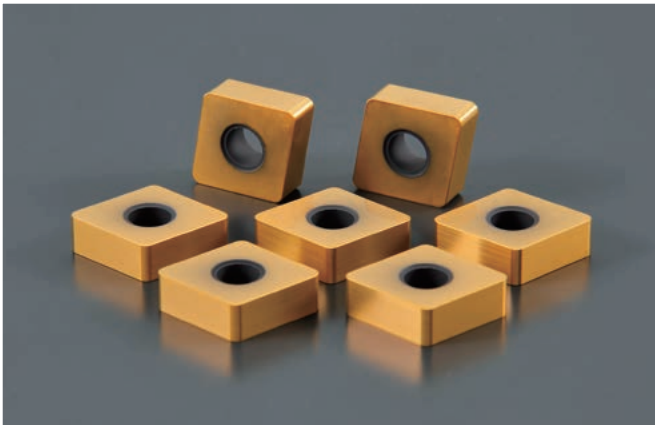
Features

- TiN-coated premium ceramic grade with the finest grain size of all the NTK ceramic grades
- Best for hard turning applications from (HRC 55 - 70)
- The gold coating makes edge wear easily detectable

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
ZC4	Hardened material (HRC55-70)	Turning	Finish	130-700	.003-.008	.005-.030	●	●

ZC7/HC7

For machining hardened parts with a wide range of hardness



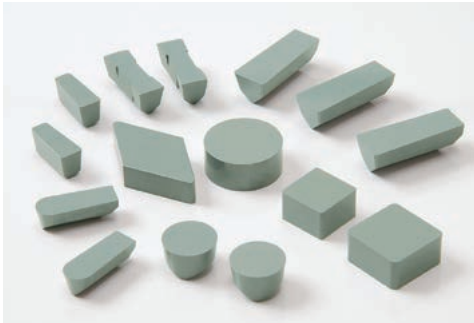
Gear	
Carburized and hardened steel	
300 SFM	
.005 IPR	
.006" DOC	
WET	
HRC58-62	
NTK : ZC7	80 pcs
Competitor's CBN	80 pcs

Features

- Excellent wear resistance in a wide range of applications such as machining carburized or induction hardened steels (HRC 30 - 62)
- High quality surface finishes with wiper facet inserts
- TiN coated ZC7 is available in various geometries as standard

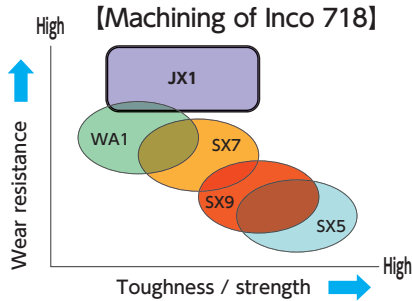
Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
ZC7 HC7	Hardened material (HRC30-62)	Turning	Finish	130-700	.003-.008	.005-.030	●	●
	Mill roll (Steel / Cast iron)	Turning	Rough - Finish	450-600	.004-.012	.025-.075	●	

Whisker-reinforced ceramics

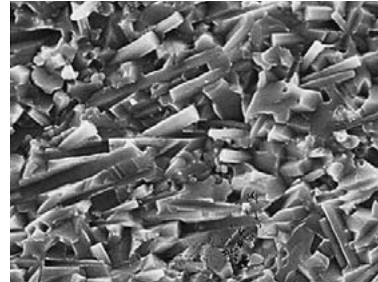


WA1 ceramic grade has a unique combination of superior wear resistance, toughness and flaking resistance as a result of adding SiC Whiskers to Alumina. WA1 is primarily used in machining continuous cuts of aerospace alloys because of its productivity and reliability characteristics. WA1 can also be used to machine gray cast iron and hardened steels because of its excellent thermal shock resistance.

[Heat-resistant alloy]

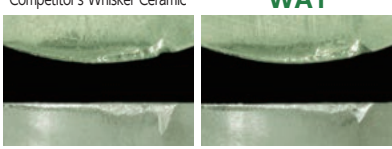
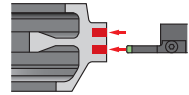




[WA1 structure]



WA1 High-speed machining of heat resistant alloys and cast iron



Housing	
Inco 625	Competitor's Whisker Ceramic WA1
900 SFM	
.006 IPR	
.020"-.030" DOC	
WET	
NTK : WA1	
Competitor's whisker ceramic	

Features

- Good flank wear resistance at high speed
- Best notch wear resistance compared to competitor's Whisker-reinforced ceramics
- Increased toughness compared to competitor's Whisker-reinforced ceramics

Recommended applications

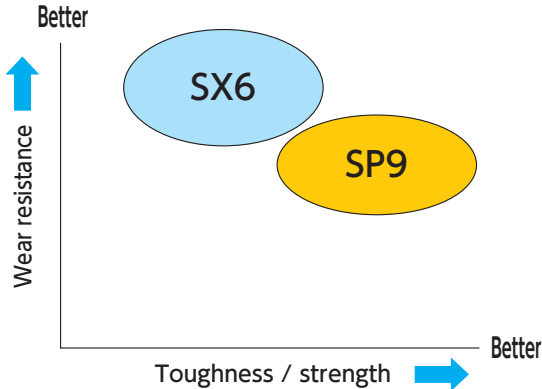
Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
WA1	Heat resistant alloy	Turning	Rough no scale	600-1000	.005-.010	.040-.100		●
			Semi finish Profiling	600-1100	.004-.010	.020-.080		●
			Grooving	600-1100	.002-.004	-		●
	Gray cast iron	Turning	Semi finish Finish	1200-2100	.004-.016	.020-.120	●	●
	Mill roll (Carbide)	Turning	Rough-Semi finish	150-500	.003-.008	.020-.140	●	
	Hardened Material (HRC 45-62)	Milling		550-850	.0025-.005	.030-.075	●	

Silicon Nitride-based ceramics



Silicon nitride-based ceramics have approximately twice the fracture toughness of alumina-based ceramics. Their fracture toughness is nearly the same as some carbide grades. Silicon nitride ceramic enables the user to perform productive high speed machining where traditional ceramic grades could not perform, including milling cast iron and interrupted cutting with scale.

[Gray cast iron, Roughing]



Grade Introduction

[Ceramics]

SX6

Premium Silicon Nitride



Features

- Excellent wear resistance in applications where notch wear appears
- Stable tool life in the applications where thermal shock resistance is required : such as WET machining or milling
- Long tool life and high productivity at high cutting speed

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

Brake rotor	
Gray cast iron	
2400 SFM	
.025 IPR	
.080" DOC	
DRY	
NTK : SX6	150 pcs
Competitor's silicon nitride ceramic	100 pcs

Cylinder block	
Gray Cast Iron	
3300 SFM	
.0043 IPT	
.080" + .040" DOC	
Residual coolant	
NTK : SX6	150 pcs
Competitor's solid CBN	150 pcs

SP9

High Speed machining with low cutting forces



Features

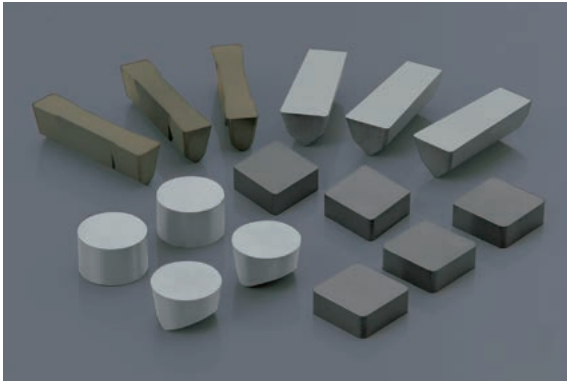
- Excellent wear-resistance and chipping resistance with CVD coated high-strength silicon nitride-based ceramic
- Achieves lower tool pressure with minimal edge preparation
- Also usable for finishing

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR / IPT)	Depth of cut (inch)	DRY	WET
SP9	Gray cast iron	Turning	Rough-Finish	1200-2700	.012-.024	-.140	●	○
		Milling	Rough-Semi finish	1200-2500	.003-.010	-.240	●	○
	Ductile cast iron	Turning	Rough-Finish	800-1800	.006-.016	-.120	●	●
		Milling	Rough-Semi finish	2100-3000	.003-.010	-.240	●	○

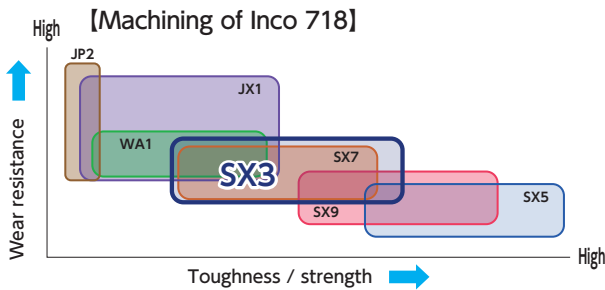
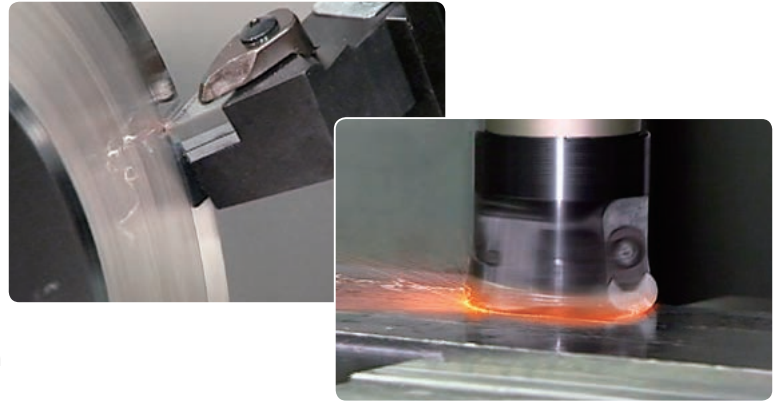
Brake rotor	
Gray cast iron	
1800 SFM	
.016 IPR	
DRY	
NTK : SP9	120 pcs
Competitor's silicon nitride	80 pcs

Mount bracket		
	Comp. carbide	SP9
Cutter	7 tooth	10 tooth
Cutting speed (SFM)	490	1820
Feed (IPT)	.008	.005
Depth of cut (inch)	.080+.080	←
	DRY	←
NTK : SP9	390 pcs with 3.6times higher productivity	
Competitor's carbide	180 pcs	

SiALON Ceramics



- SiALON ceramic is a silicon nitride based ceramic combined with "Al" and "O". SiALON ceramic offers excellent heat resistance, mechanical strength under high temperature, thermal shock resistance and wear resistance in addition to the toughness of silicon nitride. SiALON shows superb performance in high speed machining of high temperature alloys.



Grade Introduction

[Ceramics]

NEW SX3

Best balance of toughness and wear resistance



Rough turning (Rene 130) with Scale		
SNG656	Competitor's SiALON Ceramic	SX3
380 SFM		
.006 IPR		
Various DOC		
WET		
NTK : SX3	10 min	
Competitor's SiALON	10 min • Was chipping a lot	

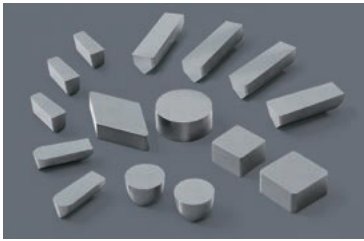
Features

- Excellent wear resistance and toughness.
Wide range of HRSA machining applications: Rough turning with scale ~ semi-finish turning.
- Able to machine even the newest generation of HRSA work materials (like Rene) as well as today's most common HRSA materials; such as Inconel 718.
- Able to mill with high efficiency.

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR / IPT)	Depth of cut (inch)	DRY	WET
SX3	Heat resistant alloy	Turning	Rough scale	600-900	.008-.014	.040-.200		●
			Rough no scale	600-900	.008-.016	.040-.100		●
			Semi finish / profiling	600-900	.004-.012	.040-.080		●
			Grooving	500-900	.003-.007	-		●
		Milling	-	2000-4000	.004-.006	.040-.100	●	

SX7

Wear resistant SiAlON ceramic



Features

- **Better notching resistance compared to Whisker ceramics**
No need to program ramping
- **Better flank wear resistance compared to other SiAlON ceramics**
Superior performance vs. whisker ceramics under same conditions-even higher productivity at higher feed rates
- **Excellent thermal shock resistance**
High speed milling can be performed at 3000SFM or higher

Turbine case (Waspaloy semi finish)

RPGX45	
800 SFM	
.012 IPR	
Various DOC	
WET	
NTK : SX7	7.2 min
Competitor's Whisker ceramic	5.3 min • Broken

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR / IPT)	Depth of cut (inch)	DRY	WET
SX7	Heat resistant alloy	Turning	Rough scale	600-900	.004-.009	.040-.200		●
			Rough no scale	600-900	.006-.012	.040-.100		●
			Semi finish / profiling	600-900	.005-.010	.040-.080		●
			Grooving	500-900	.003-.006	-		●
		Milling	-	2000-4000	.003-.005	.040-.100	●	

SX9

Best grade for roughing Inco 718 with scale



Features

- **Excellent notch wear resistance**
- **Better flank wear resistance compared to competitor's silicon nitride ceramics**
- **Superior toughness compared to Whisker-reinforced ceramics**
- **Best thermal shock resistance**
- **Best grade for roughing Inco 718 with scale**

Housing (Inco 718 with scale)

	Comp. Whisker	SX9	
Shape	RCGX45	←	
Cutting speed (SFM)	600	←	
Feed (IPR)	.005	.008	
Depth of cut (inch)	.100	←	
	WET	←	
NTK : SX9	• High productivity		
Competitor's Whisker ceramic			

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR / IPT)	Depth of cut (inch)	DRY	WET
SX9	Heat resistant alloy	Turning	Rough scale	600-800	.008-.014	.040-.200		●
			Rough no scale	600-800	.008-.016	.040-.100		●
			Semi finish / profiling	600-800	.004-.012	.040-.080		●
		Milling	-	1500-3500	.004-.006	.040-.100	●	

SX5

Best grade for roughing Waspaloy with scale



Features

- **Excellent notch wear resistance**
- **Toughest SiAlON grade on the market**
- **Better thermal shock resistance compared to Whisker-reinforced ceramics**
- **Use SX5 where heavy scale or interruptions exist**

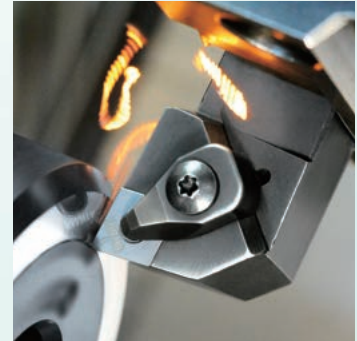
Ring (Waspaloy with scale)

RCGX35	
650 SFM	
.008 IPR	
.750-.100 DOC	
WET	
NTK : SX5	10 min
Competitor's SiAlON ceramic	10 min • Was chipping a lot

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR / IPT)	Depth of cut (inch)	DRY	WET
SX5	Heat resistant alloy	Turning	Rough scale	600-800	.008-.014	.040-.200		●
			Rough no scale	600-800	.008-.016	.040-.100		●
			Grooving	600-800	.003-.007	-		●

MEMO

D



BIDEMICS (Brazed) / CBN / PCD

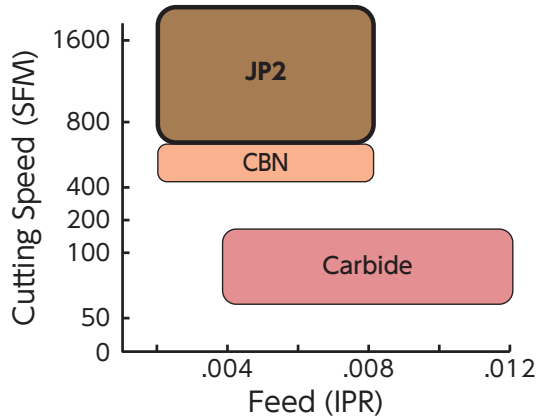
- **BIDEMICS**..... **D27**
- **CBN (EZ CUBE)** **D28**
- **PCD / Diamond Coating** **D30**

BIDEMICS (Brazed) / CBN / PCD

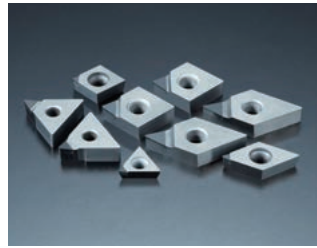
BIDEMICS



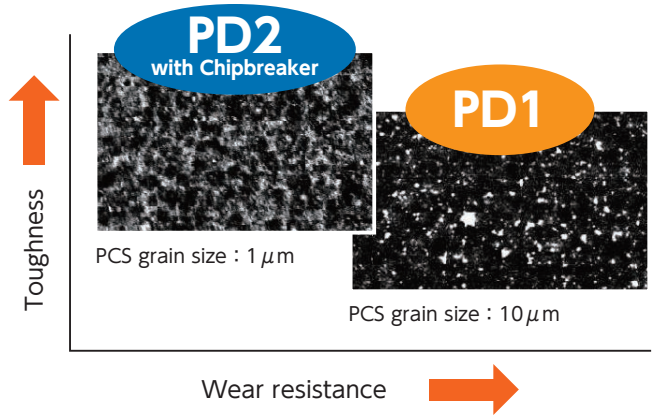
● *HRSA materials*



PCD / Diamond Coating



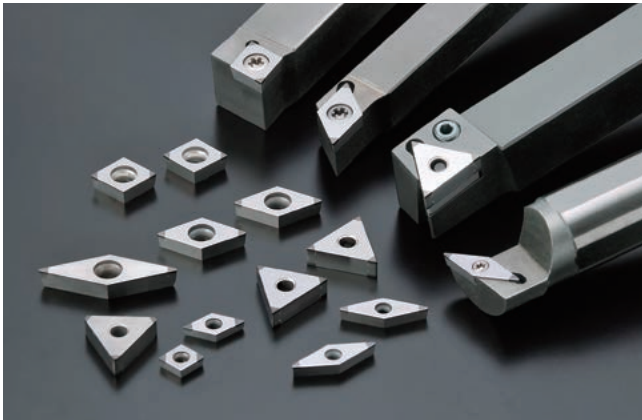
● *Non-ferrous material*



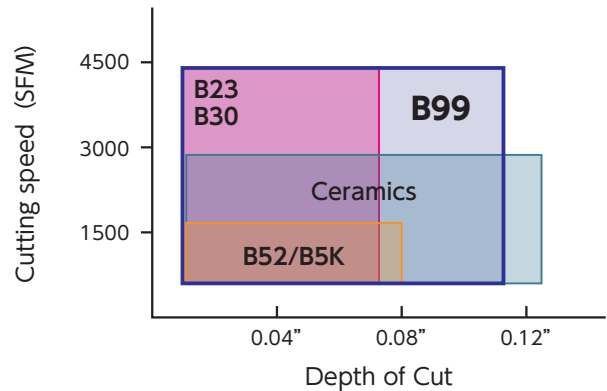
Grade Introduction

[BIDEMICS (Brazed) / CBN / PCD]

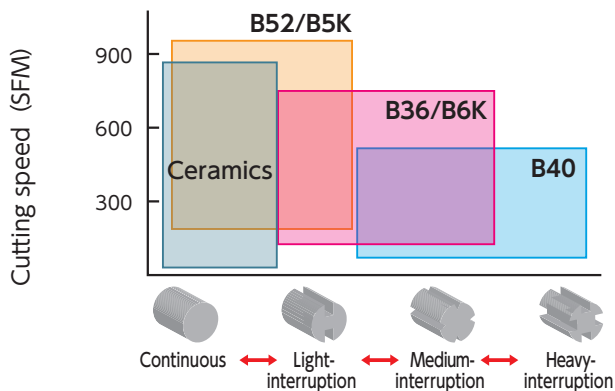
CBN Series



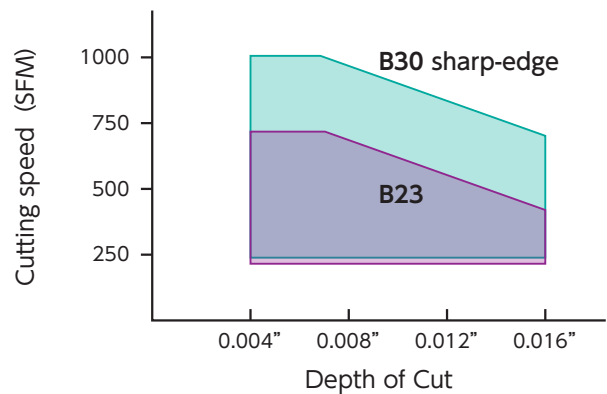
Gray / Ductile Cast Iron Applications



Hardened Material Applications



Sintered Alloy Applications



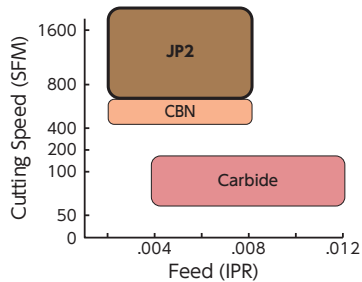
BIDEMICS



JP2 combines the unique cutting tool properties of NTK BIDEMICS with the ability to be brazed. This maximizes geometry flexibility and economy.

JP2

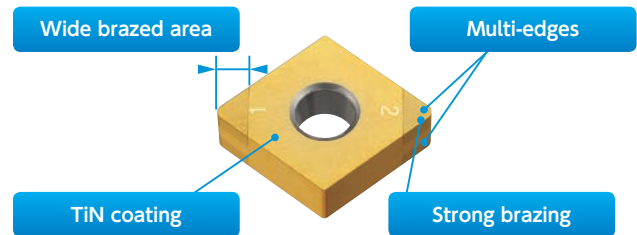
Ultra High-Speed Finishing of HRSA materials



Features

Patented

- High speed finish turning can be performed at 800SFM or higher
- Superior wear resistance compared to CBN's
- Superior notching resistance vs CBN or carbides
- Superior surface finishes vs CBNs and coated carbides



Increase Productivity vs. Carbide

- 10 to 15 times higher speed capability

JP2	
CBN	
Carbide	

Disc (Inco718 Semi-finishing / Finishing)

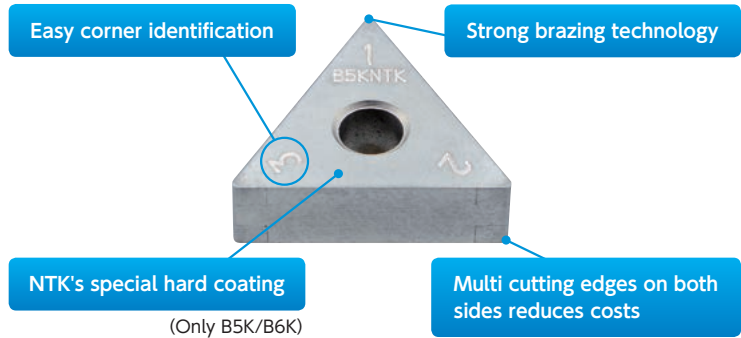
	Competitor's Coated Carbide	JP2
Shape	CNGP432	CNGA432
Cutting speed (SFM)	150	600
Feed (IPR)	.0035	←
Depth of cut (inch)	.015+-.005	←
	WET	←
Tool life	1pc	4pcs
NTK : JP2	4 pcs with 4 times higher productivity	
Competitor's Coated Carbide	1 pc	

Superior Surface Finish

	JP2	CBN	Carbide
Machined surface			
Roughness			
	Ra	0.64 μm	1.18 μm
	Rz	3.36 μm	5.56 μm
Cutting speed	800 SFM	←	120 SFM
Feed rate	.006 IPR	←	←
Cycle time	3.3 min	←	14.7 min
Removed chip	48 cc	←	←

Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
JP2	Heat Resistant Alloy	Turning	Finishing	600-1700	.002-.007	.005-.030		●

CBN series



Grade	Style	Coating	Main Binder	CBN Volume	Applications				
					Cast Iron	Ductile Cast Iron	Hardened Material	Mill Rolls	Sintered Alloy
B99	Solid	—	AlN	93%	●	○		●	
B23	Brazed	—	Ti	90%	●				●
B30	Brazed	—	Ti	95%	●			●	●
B36	Brazed	—	TiCN	65%			●		
B6K	Brazed	TiCN	TiCN	65%			●		
B40	Brazed	—	TiN	65%			●		
B52	Brazed	—	TiC	50%		●	●		
B5K	Brazed	TiCN	TiC	50%		●	●		

B99

Features

- Excellent wear resistance for high-speed cast iron machining
- Ideal for Mill-roll machining

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Cast iron	Turning	Rough Semi finish	2000-4500	.006-.020	.020-.140	●	●
Mill Rolls	Turning	Rough Semi finish	100-200	.004-.012	.010	●	

B23

Features

- Excellent wear resistance thanks to high CBN content
- Ideal for roughing cast iron and machining sintered materials

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Cast iron	Turning	Rough Semi finish	1300-4500	.004-.020	.008-.080	○	●
Sintered alloy	Turning	Rough-Finish	150-750	.001-.008	.002-.020	●	●

Brake rotor	
Gray cast iron	
820 SFM	
.0079 IPR	
.079" DOC	
WET	
NTK : B23	210 pcs
Competitor's CBN	70 pcs

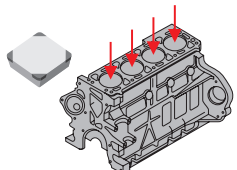
B30

Features

- **Excellent wear resistance thanks to high CBN content**
- **Designed for finishing cast iron**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Cast iron	Turning	Semi finish Finish	1300-4500	.004-.020	.008-.080	○	●

Cylinder block	
Cast iron	
2600 SFM	
.012 IPR	
.004" DOC	
WET	
NTK : B30	800 pcs
Competitor's CBN	500 pcs

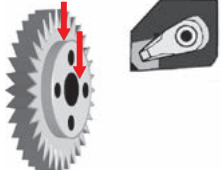
B6K / B36

Features

- **Excellent combination of wear resistance and toughness due to special TiCN binders**
- **Best for semi-interrupted cutting of hardened materials**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Hardened material	Turning (Light interruption) (Medium interruption)	Rough-Finish	130-800	.002-.008	.004-.040	●	●

Gear (HRC61-65)	
5120H	
430 SFM	
.006 IPR	
.004" DOC	
DRY	
NTK : B36	50 pcs
Competitor's CBN	20 pcs

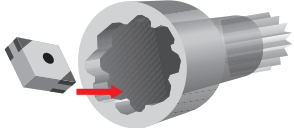
B40

Features

- **Exceptional toughness thanks to special TiN binders**
- **Designed for severely interrupted cutting of hardened materials**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Hardened material	Turning (Heavy interruption)	Rough-Finish	100-500	.002-.008	.004-.040	●	○

Universal joint (HRC62)	
1055	
360 SFM	
.0055 IPR	
.0059" DOC	
DRY	
NTK : B40	2300 pcs
Competitor's CBN	1500 pcs

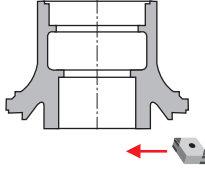
B5K / B52

Features

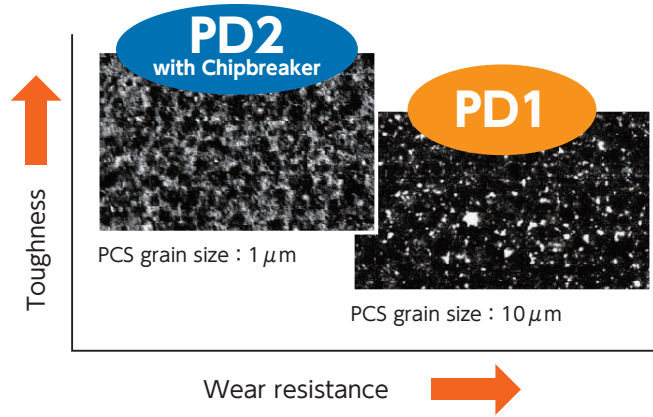
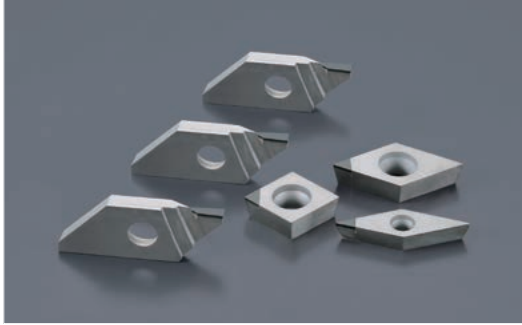
- **Excellent wear resistance due to optimum CBN content with special TiC binders**
- **Ideal for finishing ductile cast iron and continuous cuts for finishing hardened materials**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Ductile cast iron	Turning	Finish	300-1600	.004-.016	.012-.080	○	●
Hardened material	Turning (Continuous) (Light interruption)	Rough-Finish	300-1000	.004-.020	.004-.040	○	●

Hub	
Ductile cast iron	
1150-1130 SFM	
.003 IPR	
.0079" DOC	
WET	
NTK : B52	60 pcs
Competitor's CBN	30 pcs

PCD (Polycrystalline Diamond)



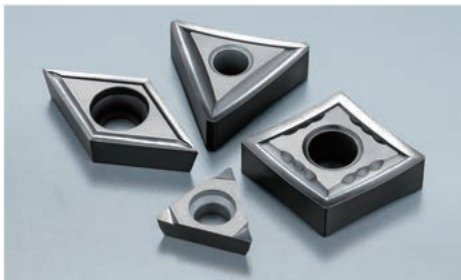
Features

- **Faster cutting speed than carbide**
- **Recommended for cutting aluminum and copper alloys thanks to its excellent adhesion resistance**
- **Incorporates a very sharp cutting edge**
- **Available for general turning and cut-off as well as inserts for milling cutters**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR/IPT)	Depth of cut (inch)	DRY	WET
Aluminum alloy Non-ferrous material	Turning	Rough-Finish	-6500	-.006	-.200		●
	Milling	Rough-Finish	-25000	-.008	-.200		●

UC1 (Diamond Coating)



	DLC	PCD	UC1
Crystal structure	Amorohous	Diamond	Diamond
Binder	None	Co, Ni	None
Diamond grain size	Amorohous	10 μm	<0.1 μm
Diamond surface roughness	0.25	0.25	25
Hardness (GPa)	10	75	90

Features

- **Pure and hard fine particle diamond coating, so it has better wear resistance compared to past PCD tools**
- **NTK's carbide base material and state of the art surface treatment ensures good coating adherence to reduce flaking which provides stable cutting and long tool life**
- **Molded chipbreakers provide excellent chip control reducing machine downtime**
- **Multiple insert edges reduces machining costs**

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR/IPT)	Depth of cut (inch)	DRY	WET
Aluminum alloy Non-ferrous material	Turning	Rough-Finish	-5000	-.010	-.160		●
Copper	Turning	Rough-Finish	-3000	-.010	-.160		●
Carbon	Turning	Rough-Finish	-1000	-.010	-.160	○	●

PD1

Features

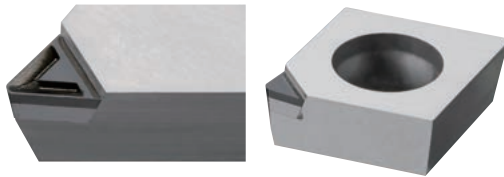
- **Sharp cutting edges**
- **Enables high precision and stable machining by controlling the potential for built-up edge**

Spool		
①Rough	②Finish	
A6061	A6061	
660 SFM	660 SFM	
.004 IPR	.002 IPR	
.200 DOC	.008 DOC	
①NTK : PD1		30,000 pcs
②NTK : PD1		30,000 pcs

PD2

Features

- **Super micro grain PCD maintains sharp cutting edges with increased chipping resistance**
- **Good chip control due to the high rake angle on the insert**
- **3D Chipbreaker is now available**



Spool		
A6061		
560 SFM		
.002 IPR		
.006 DOC		
NTK : PD2			15,000 pcs
Competitor's PCD		10,000 pcs

NEW UC1

Features

- **Improved wear resistance due to the sharp standard chipbreaker, and long tool life**
- **Multiple insert edges contributes to cost reduction**

Carbon Plate		
Carbon		
1000 SFM		
.004-.016 IPR		
.040 DOC		
DRY		
NTK : UC1		4 pcs/corner
Competitor's diamond coating		3 pcs/corner

MEMO

D



Micro-grain Carbide, PVD / CVD-coated Carbide

- Overview D34
- PVD-coated Carbide D36
- Micro-grain Carbide D38
- CVD-coated Carbide D38
- PVD Coatings D39

Micro-grain Carbide and PVD/CVD-coated Carbide

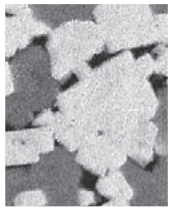
Micro-grain Carbide and PVD/CVD-coated Carbide



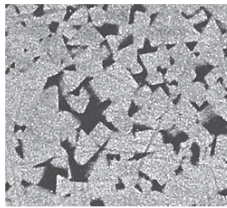
Excellence in precision machining and machining of hard-to-cut materials

These material grades use WC micro-grain carbide, the hard layer of which is granulated to a micro size $1\mu\text{m}$ as the substrate. Furthermore, the substrate is coated by the PVD method with TiN, TiCN, and/or TiAlN. The end results are materials that are suitable for precision machining and machining of difficult-to-cut materials. Inserts in these grades are tougher and harder than carbide and come with precision sharp cutting edges. They even have superior toughness and sharper cutting edges than ultra micro-grain carbide grades, with excellent wear resistance and thermal crack resistance.

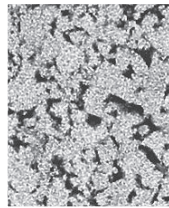
Carbide grade



General carbide structure



Micro-grain carbide structure

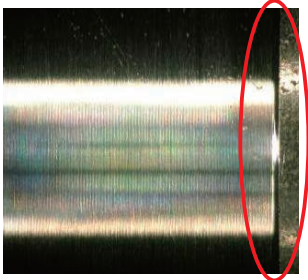


Super micro-grain carbide structure

The result of intensive research and development for improving carbide grades

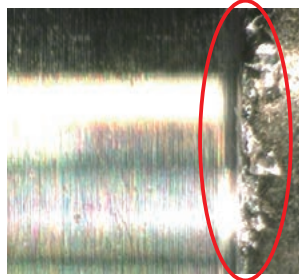
The NTK carbide grade series shows very stable performance under a wide range of conditions. NTK uses micro-grain carbide substrate with a balance of wear resistance and toughness.

Features Superior cutting performance



No burrs

Machined with NTK insert with a sharp cutting edge



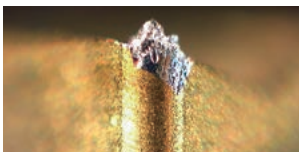
Burrs

Machined with a competitor's product with a honed cutting edge

Relentless pursuit of better cutting performance

NTK takes pride in its carbide grade series. Their outstanding cutting performance is due to the grinding of ultra sharp cutting edges. Sharper cutting edges provide for better burr control, lower tool pressure, holding tighter tolerances and reducing work hardening.

Features Precise analysis on insert wear patterns



Build-up edge



Chipping / fracture



Flank wear



Wear on rake

Continuous research on insert tool life

Damage to insert cutting edges varies depending on the machining process and the work material. There are various types of coatings that reduce such damage to prolong the tool life. NTK carbide series offers various coatings developed to improve their resistance characteristics including wear, fracture, adhesion and oxidation, by utilizing state of the art technology.

	Grade / Coating	Applications / Features	Physical properties*					Applications map	
			Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K		Thermal conductivity W/m·K
PVD coated	ST4 NEW  Micro-grain carbide + Thick CrAlN coat	P M S H • Best grade for 304 SS	14.4	91.0	3000	580	5.8	63	<p>Correlation chart 1</p>  <p>Correlation chart 2</p>  <p>Aluminum / Brass</p> 
	DM4  Micro-grain carbide + Thick TiN-TiCN-TiAlN coat	P M S H • Best oxidation resistance enable high temperature machining	14.4	91.0	3000	580	5.8	63	
	DT4  Micro-grain carbide + Thin TiN-TiCN-TiAlN coat	P M S H • Excellent oxidation resistance for Swiss-type lathes	14.4	91.0	3000	580	5.8	63	
	TM4  Micro-grain carbide + Thin TiN-TiCN-TiN coat	P M N S • Best combination of wear resistance and toughness and adhesion resistance for Swiss-type lathes	14.4	91.0	3000	580	5.8	63	
	ZM3  Micro-grain carbide + Thick TiN coat	P M N • Best Adhesion resistance enables high accuracy machining	14.4	91.0	3000	580	5.8	63	
	QM3  Micro-grain carbide + Thick TiCN coat	P M S H • Best wear resistance enable stable machining	14.4	91.0	3000	580	5.8	63	
	VM1  Micro-grain carbide + Thin TiCN coat	P M N • Best edge sharpness and good wear resistance	14.8	92.0	2500	640	5.7	84	
	AC3 NEW  Micro-grain carbide + Thin TiAlCrN-TiAlN coat	P M N S • Developed for solid carbide endmill	14.2	91.0	3000	560	6.1	49	
	UC1  Micro-grain carbide + Diamond coat	N • Pure and hard diamond coating.	14.8	92.0	2500	640	5.7	84	
Uncoated	KM1  Micro-grain carbide	P M N • Best for non-ferrous material with mirror finish	14.8	92.0	2500	640	5.7	84	
CVD coated	CP1  Carbide + Thick film Al ₂ O ₃ -TiCN coat	K • Good balance of wear resistance and toughness for cast iron machining	14.9	92.0	2400	640	—	—	

*For products with coating, the values of the base material are indicated.

NEW **ST4**

Best grade for 304SS



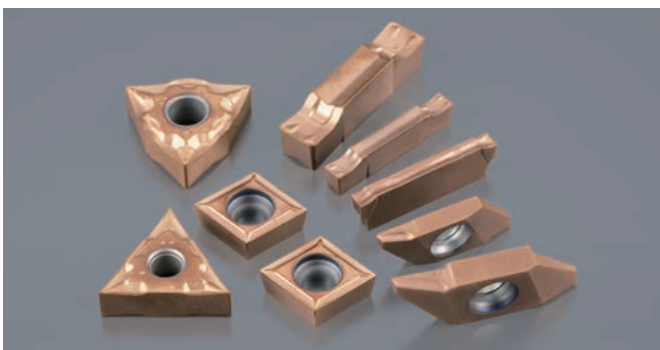
Features

- Best grade for 304SS thanks to New ST coating
- Excellent adhesion and wear resistance

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Stainless steels 	Conventional lathes Swiss-type lathes	Adhesion resistance

DM4

Excellent oxidation resistance



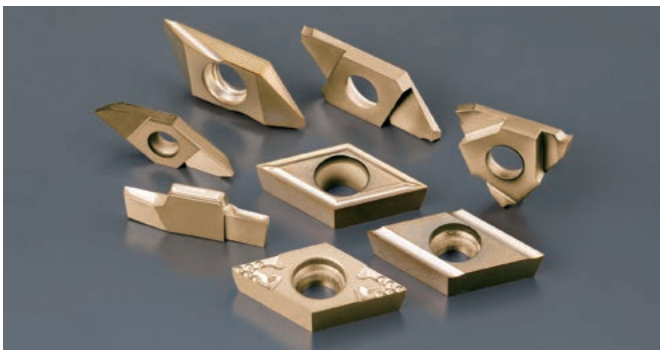
Features

- Best oxidation resistance for high temperature machining
- Optimized for Conventional / Swiss-type lathes

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Conventional lathes Swiss-type lathes	Oxidation Heat resistance

DT4

Excellent heat resistance for Swiss-type lathes



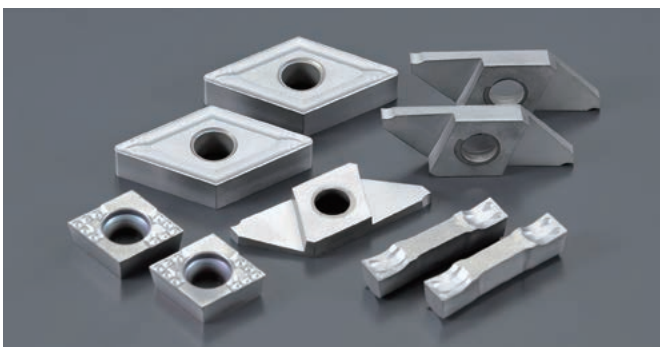
Features

- Excellent oxidation resistance for Swiss-type lathes

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Swiss-type lathes	Oxidation Heat resistance

QM3

Superb wear resistance and fracture resistance in interrupted cutting



Features

- Excellent toughness and wear resistance for wide speed range
- Stable interrupted machining of steel

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Heat resistant alloys 	Swiss-type lathes Conventional lathes	Wear resistance

TM4 Next generation standard insert grade for Swiss-type lathes

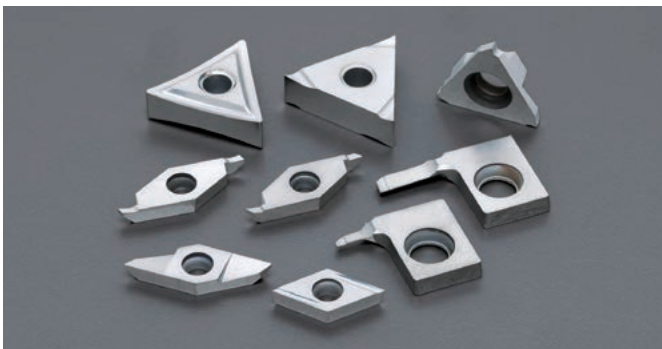


Features

- *Excellent dimensional stability and tool life thanks to triple titanium layers with excellent adherence to insert substrate*

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Balance

VM1 High precision machining of small diameter parts

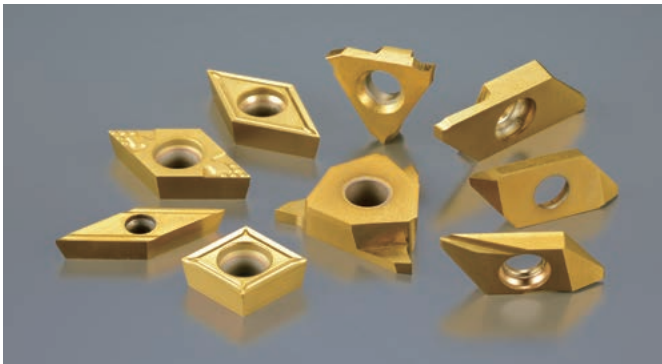


Features

- *Especially for machining free cutting steels (SUM materials)*
- *For high-precision machining with longer tool life even in the high-speed machining range*

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Edge sharpness

ZM3 The best selling grade for Swiss-type lathes



Features

- *Stabilizes machining dimensions thanks to the coating being firmly adhered to the substrate*
- *A wide range of cutting tools in various sizes available for Swiss-type lathes*

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Non-ferrous materials 	Swiss-type lathes Conventional lathes	Adhesion resistance

NEW AC3 Developed for solid carbide endmill



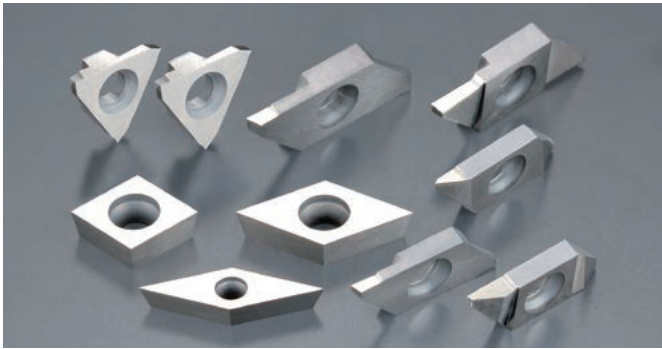
Features

- *Newly developed for Carbide endmill*
- *Excellent sharpness and great wear resistance*

Micro-grain Carbide

KM1

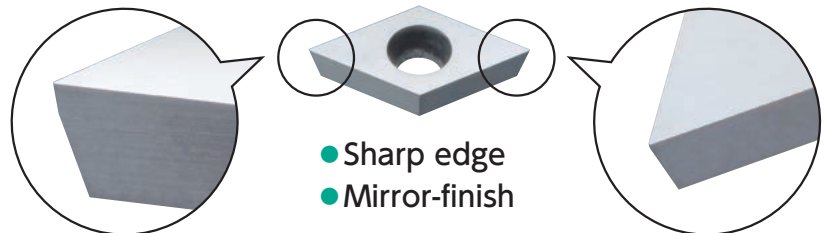
Good for non-ferrous materials like PEEK, Brass, Aluminum and Copper



Features

- **Very sharp cutting edges with uncoated Micro-grain carbide**
- **Excellent adhesion resistance because of mirror-finish**
- **A wide range of cutting tools in various types available for Swiss-type lathes**

Spool machining		
5056 (Aluminium)		
300 ~ 560 SFM		
.0016 IPR		
.02"-.20" DOC		
WET		
NTK : KM1	300 pcs	
Competitor's PVD-coated carbide	200 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Aluminium ● Plastic (PEEK) ● Non-ferrous materials 	Swiss-type lathes	Edge sharpness



CVD-coated Carbide

CP1

For roughing cast iron and ductile cast iron



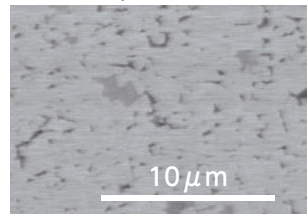
Features

- **High wear resistance achieved by laminating thick film TiCN layer and Al₂O₃ layer as the coating; Great for cast iron cutting even in high-speed range**
- **Excellent deposition resistance due to our original surface treatment**
- **Can also be used for machining ductile cast iron**

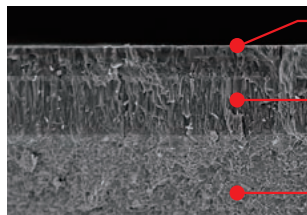
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Ductile cast iron ● Gray cast iron 	Conventional lathes	Wear resistance

[Coating structure]

Photo of composition (COMP)×5000



Film structure



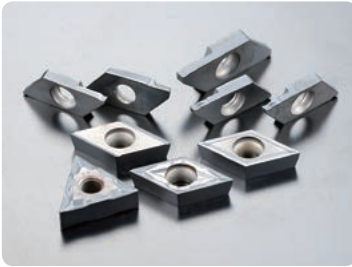
Coating of highly smooth micro-grain Al₂O₃

Coating of micro-grain pillar-shaped TiCN

Substrate: ultra-hard carbide

PVD Coatings for Turning

NEW ST4 ST-Coat

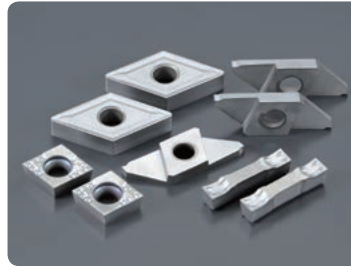


Best grade for 304SS

- Stainless steel

→D40

QM3 Q-Coat

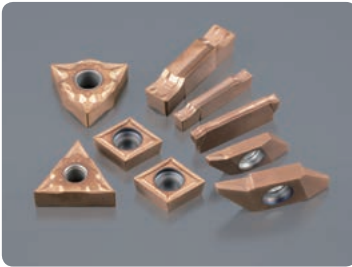


Best wear resistance

- Stainless steel
- Carbon steel
- Alloy steel

→D34 · D40

DM4 DM-Coat

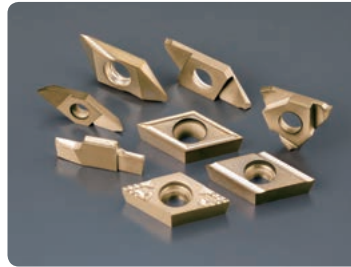


Best heat resistance

- Heat resistant alloy
- Stainless steel
- Hardened material

→D40

DT4 DT-Coat

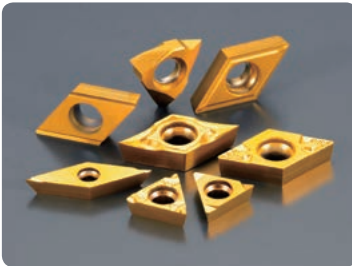


Best balance of heat resistance and sharp edges

- Titanium alloy
- Heat resistant alloy
- Stainless steel
- Hardened material

→D40

TM4 TM-Coat

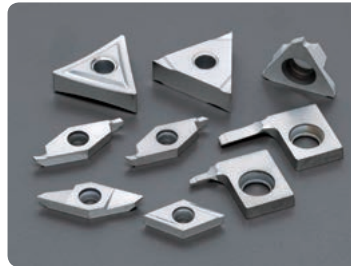


Best balance of wear resistance and adhesion resistance

- For small part machining in general

→D41

VM1 V-Coat



Best edge sharpness

- Titanium alloy
- Non-ferrous material
- Stainless steel
- Plastic

→D41

ZM3 Z-Coat



Best adhesion resistance

- General purpose machining

→D35 · D41

Grade Introduction

[Carbide]

Coating Specifications

	ST-Coat	Q-Coat	DM-Coat	DT-Coat	TM-Coat	V-Coat	Z-Coat
Thickness	Thick	Thick	Thick	Thin	Thin	Thin	Thick
Wear Resistance	○	◎	○	○	○	○	
Heat Resistance	○		◎	◎			○
Adhesion Resistance	○				○		◎
Edge Sharpness				○	○	◎	
Composition	CrAlN	TiCN	Multilayer	Multilayer	Multilayer	TiCN	TiN

◎1st choice ○2nd choice

MEMO

E



Insert Item List

- **BIDEMICS / Ceramics** E2
- **BIDEMICS (Brazed) / CBN / PCD**... E22
- **Carbide** E33

BIDEMICS / Ceramics

CCGW

(inch)	IC	T
CCGW 21.5	1/4	3/32
CCGW 32.5	3/8	5/32
CCGW 43	1/2	3/16

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS										Ceramics							
				Coated			SiAlON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
CCGW 21.51 T0225	CCGW 060204 T00525	1/4	.016																		
CCGW 21.52 T0225	CCGW 060208 T00525	1/4	.031																		
CCGW 32.51 T0425	CCGW 09T304 T01025	3/8	.016																		
CCGW 32.52 T0425	CCGW 09T308 T01025	3/8	.031																		
CCGW 431 T0420	CCGW 120404 T01020	1/2	.016																		
CCGW 432 T0420	CCGW 120408 T01020	1/2	.031																		

Holders → Q10

Boring bars → V30

CDH

(inch)	IC	T	H	(inch)	IC	T	H	(inch)	IC	T	H
CDH 22	1/2	1/4	.125	CDH 42	1	1/2	.266	CDH 515	1-1/4	3/8	.391
CDH 33	3/4	3/8	.250	CDH 43	1	3/4	.266	CDH 53	1-1/4	3/4	.391

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS										Ceramics							
				Coated			SiAlON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
CDH 22 P2810	CDH 1207 P07010	1/2																			
CDH 33 P6015	CDH 1909 P15015	3/4																			
CDH 33 Q6010	CDH 1909 Q15010	3/4																			
CDH 33 Q6010B	CDH 1909 Q15010B	3/4																			
CDH 42 P8015	CDH 2512 P20015	1																			
CDH 42 P12010	CDH 2512 P30010G	1																			
CDH 43 P6010	CDH 2519 P15015	1																			
CDH 515 P7110B	CDH 3209 P18010B	1-1/4																			
CDH 515 P7110	CDH 3209 P18010	1-1/4																			
CDH 515 P8015	CDH 3209 P20015	1-1/4																			
CDH 515 Q7110	CDH 3209 Q18010	1-1/4																			
CDH 53 P8015	CDH 3219 P20015	1-1/4																			
CDH 53 Q9515	CDH 3219 Q24015	1-1/4																			

Holders → F17

CNG

(inch)	IC	T	(inch)	IC	T	(inch)	IC	T
CNG 43	1/2	3/16	CNG 54	5/8	1/4	CNG 64	3/4	1/4
CNG 45	1/2	5/16	CNG 55	5/8	5/16	CNG 65	3/4	5/16

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics														
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
CNG 431 T0425	CNGN 120404 T01025	1/2	.016																		
CNG 431 T0525	CNGN 120404 T01225	1/2	.016																		
CNG 432 T0220	CNGN 120408 T00520	1/2	.031																		
CNG 432 T0420	CNGN 120408 T01020	1/2	.031																		
CNG 432 T0425	CNGN 120408 T01025	1/2	.031																		
CNG 432 T0525	CNGN 120408 T01225	1/2	.031																		
CNG 432 T0820	CNGN 120408 T02020	1/2	.031																		
CNG 432 S0825	CNGN 120408 S02025	1/2	.031																		
CNG 432 T0825	CNGN 120408 T02025	1/2	.031																		
CNG 433 T0220	CNGN 120412 T00520	1/2	.047																		
CNG 433 T0320	CNGN 120412 T01220	1/2	.047																		
CNG 433 T0420	CNGN 120412 T01020	1/2	.047																		
CNG 433 T0425	CNGN 120412 T01025	1/2	.047																		
CNG 433 T0525	CNGN 120412 T01225	1/2	.047																		
CNG 433 T0820	CNGN 120412 T02020	1/2	.047																		
CNG 433 S0825	CNGN 120412 S02025	1/2	.047																		
CNG 433 T0825	CNGN 120412 T02025	1/2	.047																		
CNG 434 T0220	CNGN 120416 T00520	1/2	.063																		
CNG 434 T0420	CNGN 120416 T01020	1/2	.063																		
CNG 434 T0820	CNGN 120416 T02020	1/2	.063																		
CNG 434 T0825	CNGN 120416 T02025	1/2	.063																		
CNG 435 T0825	CNGN 120420 T02025	1/2	.079																		
CNG 452 T0220	CNGN 120708 T00520	1/2	.031																		
CNG 452 T0825	CNGN 120708 T02025	1/2	.031																		
CNG 453 T0220	CNGN 120712 T00520	1/2	.047																		
CNG 453 T0825	CNGN 120712 T02025	1/2	.047																		
CNG 454 T0220	CNGN 120716 T00520	1/2	.063																		
CNG 454 T0825	CNGN 120716 T02025	1/2	.063																		
CNG 543 T0825	CNGN 160612 T02025	5/8	.047																		
CNG 552 T0825	CNGN 160708 T02025	5/8	.031																		
CNG 554 T0220	CNGN 160716 T00520	5/8	.063																		
CNG 643 T0825	CNGN 190612 T02025	3/4	.047																		
CNG 644 T0825	CNGN 190616 T02025	3/4	.063																		
CNG 646 T0220	CNGN 190624 T00520	3/4	.094																		
CNG 648 T0825	CNGN 190632 T02025	3/4	.125																		
CNG 656 T0220	CNGN 190724 T00520	3/4	.094																		

Holders → F6 · F7

Boring bars → G5

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ● : 1-2 week delivery ● : 1-2 week delivery (Newly added) ● : 1-2 week delivery (Right / Left-hand only) ● : 1-2 week delivery (Right / Left-hand only, Newly added) ● : Coolant through

Insert Item List

[BIDEMICS / Ceramics]

CNGA-WL with wiper for higher feed

(inch)	IC	T
CNGA 43 WL	1/2	3/16

● : 1st Choice ● : 2nd choice

	Steel	P																						
	Stainless Steel	M																						
	Cast Iron	K																						
	Non-Ferrous Material	N																						
	Heat Resistant Alloy	S																						
	Hardened Material	H																						
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																	
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC								
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4			
CNGA 431 WL T0425	CNGA 120404 WL T01025	1/2	.016																				●	
CNGA 431 WL T0525	CNGA 120404 WL T01225	1/2	.016																					●
CNGA 432 WL T0425	CNGA 120408 WL T01025	1/2	.031																				●	
CNGA 432 WL T0525	CNGA 120408 WL T01225	1/2	.031																				●	
CNGA 433 WL T0425	CNGA 120412 WL T01025	1/2	.047																				●	
CNGA 433 WL T0525	CNGA 120412 WL T01225	1/2	.047																				●	

Holders → F6 · F7 · Q38
Boring bars → G5

CNGG with chipbreaker

(inch)	IC	T
CNGG 43	1/2	3/16

● : 1st Choice ● : 2nd choice

	Steel	P																						
	Stainless Steel	M																						
	Cast Iron	K																						
	Non-Ferrous Material	N																						
	Heat Resistant Alloy	S																						
	Hardened Material	H																						
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																	
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC								
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4			
CNGG 432 Z0430 AG	CNGG 120408 Z01030 AG	1/2	.031																				●	
CNGG 433 Z0430 AG	CNGG 120412 Z01030 AG	1/2	.047																				●	

Holders → F6 · F7 · Q38
Boring bars → G5

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Insert Item List

[BIDEMICS / Ceramics]

BIDEMICS / Ceramics

DNGX

(inch)	IC	T
DNGX 35	.394	5/16
DNGX 45	1/2	5/16

● : 1st Choice ● : 2nd choice

	Steel	P																					
	Stainless Steel	M																					
	Cast Iron	K					●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Non-Ferrous Material	N																					
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Hardened Material	H																					
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																
				Coated	SiAlON			Whisker	Silicon Nitride		Alumina		Alumina - TiC										
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
DNGX 353 T0825	DNGX 120712 T02025	.394	.047																				
DNGX 452 T0220	DNGX 150708 T00520	1/2	.031							●													
DNGX 454 T0825	DNGX 150716 T02025	1/2	.063												○								

Holders → F8 • F9

Boring bars → G5

LNJ / LNM

(inch)	W	L	T
LNJ/M 6688	3/4	1-1/2	1/2

● : 1st Choice ● : 2nd choice

	Steel	P																				
	Stainless Steel	M																				
	Cast Iron	K					●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Non-Ferrous Material	N																				
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Hardened Material	H																				
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics															
				Coated	SiAlON			Whisker	Silicon Nitride		Alumina		Alumina - TiC									
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4	
LNJ 6688 P6015	LNJ 6688 P15015		.125							●												
LNJ 6688 Q8015	LNJ 6688 Q20015		.125																			
LNM 6688 S6015	LNM 6688 SN2		.125																			
LNM 6688 SNX2	LNM 6688 SNX2		.125																			
LNM 6688 SNX6	LNM 6688 SNX6		.125																			

RCGX

(inch)	IC	T	θ
RCGX 23	1/4	3/16	120
RCGX 25	1/4	5/16	120
RCGX 35	3/8	5/16	120
RCGX 45	1/2	5/16	120

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS				Ceramics															
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC							
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
RCGX 23 T0220	RCGX 060400 T00520	1/4																					
RCGX 23 T0320	RCGX 060400 T00820	1/4			●	●																	
RCGX 25 T0220	RCGX 060700 T00520	1/4																					
RCGX 25 Z0820	RCGX 060700 Z02020	1/4																					
RCGX 35 E02	RCGX 090700 E004	3/8			●	●																	
RCGX 35 T0220	RCGX 090700 T00520	3/8																					
RCGX 35 T0320	RCGX 090700 T00820	3/8																					
RCGX 35 T0420	RCGX 090700 T01020	3/8																					
RCGX 35 Z0420	RCGX 090700 Z01020	3/8																					
RCGX 35 Z0820	RCGX 090700 Z02020	3/8																					
RCGX 45 E02	RCGX 120700 E004	1/2			●	●																	
RCGX 45 T0220	RCGX 120700 T00520	1/2																					
RCGX 45 T0320	RCGX 120700 T00820	1/2																					
RCGX 45 T0420	RCGX 120700 T01020	1/2																					
RCGX 45 Z0620	RCGX 120700 Z01520	1/2																					
RCGX 45 Z0820	RCGX 120700 Z02020	1/2																					

Holders → F19 • F20 • F21 • F22

RCGX10

(inch)	IC	T	θ	(inch)	IC	T	θ
RCGX 101	3/16	.240	90	RCGX 105	5/8	.388	120
RCGX 102	1/4	.309	120	RCGX 106	3/4	.388	120
RCGX 103	3/8	.309	120	RCGX 108	1	.461	140
RCGX 104	1/2	.312	120				

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS				Ceramics															
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC							
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
RCGX 101 P2010		3/16																					
RCGX 102 P4815		1/4																					
RCGX 102 T0225		1/4																					
RCGX 102 T0820		1/4																					
RCGX 103 P4815		3/8																					
RCGX 103 P8015		3/8																					
RCGX 103 T0820		3/8																					
RCGX 103 T0825		3/8																					
RCGX 103 T1625		3/8																					
RCGX 104 P6015		1/2																					
RCGX 104 P8015		1/2																					
RCGX 104 T0820		1/2																					
RCGX 104 T1625		1/2																					
RCGX 105 P4815		5/8																					
RCGX 105 P8015		5/8																					
RCGX 105 S8020		5/8																					
RCGX 106 P4815		3/4																					
RCGX 106 P8015		3/4																					
RCGX 108 P8015		1																					

Holders → F19 • F20 • F21 • F22

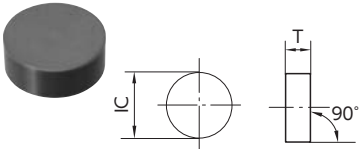
● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R/L) : 1-2 week delivery (Right / Left-hand only)
 (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

BIDEMICS / Ceramics

RNG

(inch)	IC	T	(inch)	IC	T	(inch)	IC	T
RNG 32	3/8	1/8	RNG 45	1/2	5/16	RNG 85	1	5/16
RNG 33	3/8	3/16	RNG 55	5/8	5/16	RNG 86	1	3/8
RNG 42	1/2	1/8	RNG 64	3/4	1/4			
RNG 43	1/2	3/16	RNG 65	3/4	5/16			

● : 1st Choice ● : 2nd choice



Item Number	ISO Item Number	IC	R	Ceramics																	
				BIDEMICS			SiAlON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				Coated	JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
RNG 32 T0220	RNGN 090300 T00525	3/8																			
RNG 32 T0425	RNGN 090300 T01025	3/8																			
RNG 32 T0525	RNGN 090300 T01225	3/8																			
RNG 33 T0320	RNGN 090400 T00820	3/8																			
RNG 42 T0425	RNGN 120300 T01025	1/2																			
RNG 43 E01	RNGN 120400 E002	1/2																			
RNG 43 E02	RNGN 120400 E004	1/2																			
RNG 43 T0220	RNGN 120400 T00520	1/2																			
RNG 43 T0225	RNGN 120400 T00525	1/2																			
RNG 43 T0320	RNGN 120400 T00820	1/2																			
RNG 43 T0420	RNGN 120400 T01020	1/2																			
RNG 43 T0425	RNGN 120400 T01025	1/2																			
RNG 43 T0525	RNGN 120400 T01225	1/2																			
RNG 43 T0820	RNGN 120400 T02020	1/2																			
RNG 43 S0825	RNGN 120400 S02025	1/2																			
RNG 43 T0825	RNGN 120400 T02025	1/2																			
RNG 43 Z0825	RNGN 120400 Z02025	1/2																			
RNG 43 T2820	RNGN 120400 T07020	1/2																			
RNG 45 E01	RNGN 120700 E002	1/2																			
RNG 45 E02	RNGN 120700 E004	1/2																			
RNG 45 E03	RNGN 120700 E007	1/2																			
RNG 45 T0220	RNGN 120700 T00520	1/2																			
RNG 45 T0225	RNGN 120700 T00525	1/2																			
RNG 45 T0320	RNGN 120700 T00820	1/2																			
RNG 45 T0420	RNGN 120700 T01020	1/2																			
RNG 45 T0525	RNGN 120700 T01225	1/2																			
RNG 45 Z0620	RNGN 120700 Z01520	1/2																			
RNG 45 S0825	RNGN 120700 S02025	1/2																			
RNG 45 T0825	RNGN 120700 T02025	1/2																			
RNG 45 Z0825	RNGN 120700 Z02025	1/2																			
RNG 45 P2810	RNGN 120700 P07010	1/2																			
RNG 55 T0220	RNGN 150700 T00520	5/8																			
RNG 55 T0225	RNGN 150700 T00525	5/8																			
RNG 55 T0320	RNGN 150700 T00820	5/8																			
RNG 64 T0825	RNGN 190600 T02025	3/4																			
RNG 64 P6010	RNGN 190600 P15010	3/4																			
RNG 65 T0220	RNGN 190700 T00520	3/4																			
RNG 65 T0225	RNGN 190700 T00525	3/4																			
RNG 65 T0320	RNGN 190700 T00820	3/4																			
RNG 65 T0420	RNGN 190700 T01020	3/4																			
RNG 85 T0220	RNGN 250700 T00520	1																			
RNG 85 S6015	RNGN 250700 S15015	1																			
RNG 86 T0220	RNGN 250900 T00520	1																			

Holders → F16
 Boring bars → G4
 Cutters → I14

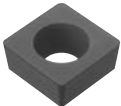
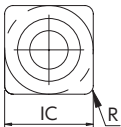
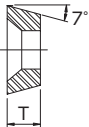
Insert Item List
 [BIDEMICS / Ceramics]

BIDEMICS / Ceramics

SCGW

(inch)	IC	T
SCGW 32	3/8	5/32
SCGW 43	1/2	3/16

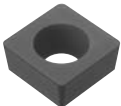
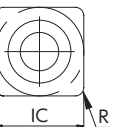

● : 1st Choice ● : 2nd choice

  	Steel	P																					
	Stainless Steel	M																					
	Cast Iron	K				●	●	●	●	●	●	●	●	●	●	●	●	●	●				
	Non-Ferrous Material	N																					
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
	Hardened Material	H									●							●	●				
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																
				Coated	SiAlON			Whisker	Silicon Nitride		Alumina		Alumina - TiC										
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
SCGW 32.52 T0420	SCGW 09T308 T01020	3/8	.031															●					
SCGW 431 T0420	SCGW 120404 T01020	1/2	.016															●					
SCGW 432 T0420	SCGW 120408 T01020	1/2	.031															●					

SDCW

(inch)	IC	T
SDCW 43	1/2	3/16

● : 1st Choice ● : 2nd choice

  	Steel	P																					
	Stainless Steel	M																					
	Cast Iron	K				●	●	●	●	●	●	●	●	●	●	●	●	●	●				
	Non-Ferrous Material	N																					
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
	Hardened Material	H										●							●	●			
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																
				Coated	SiAlON			Whisker	Silicon Nitride		Alumina		Alumina - TiC										
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
SDCW 432 T0420	SDCW 120408 T01020	1/2	.031															●	○				
SDCW 433 T0420	SDCW 120412 T01020	1/2	.047															●					
SDCW 434 T0420	SDCW 120416 T01020	1/2	.063															●					

Cutters → I25 • I26 • I27

SNG6

(inch)	IC	T
SNG 63	3/4	3/16
SNG 64	3/4	1/4
SNG 65	3/4	5/16

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	Ceramics																	
				BIDEMICS			SiAlON			Whisker	Silicon Nitride	Alumina	Alumina - TiC								
				Coated	JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
SNG 632 T0820	SNGN 190408 T02020	3/4	.031																		
SNG 634 T0820	SNGN 190416 T02020	3/4	.063																		
SNG 643 T0820	SNGN 190612 T02020	3/4	.047																		
SNG 644 T0120	SNGN 190616 T00320	3/4	.063																		
SNG 644 T0220	SNGN 190616 T00520	3/4	.063																		
SNG 644 T0225	SNGN 190616 T00525	3/4	.063																		
SNG 644 T0320	SNGN 190616 T00820	3/4	.063																		
SNG 644 T0420	SNGN 190616 T01020	3/4	.063																		
SNG 644 Z0620	SNGN 190616 Z01520	3/4	.063																		
SNG 644 T0825	SNGN 190616 T02025	3/4	.063																		
SNG 653 T0825	SNGN 190712 T02025	3/4	.047																		
SNG 654 T0825	SNGN 190716 T02025	3/4	.063																		
SNG 656 T0120	SNGN 190724 T00320	3/4	.094																		
SNG 656 T0225	SNGN 190724 T00525	3/4	.094																		
SNG 656 T0320	SNGN 190724 T00820	3/4	.094																		

SNG3 / 4 / 5 → E13

SNGA

(inch)	IC	T
SNGA 43	1/2	3/16
SNGA 54	5/8	1/4
SNGA 64	3/4	1/4

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	Ceramics																	
				BIDEMICS			SiAlON			Whisker	Silicon Nitride	Alumina	Alumina - TiC								
				Coated	JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
SNGA 432 T0220	SNGA 120408 T00520	1/2	.031																		
SNGA 432 T0425	SNGA 120408 T01025	1/2	.031																		
SNGA 432 T0525	SNGA 120408 T01225	1/2	.031																		
SNGA 432 T0820	SNGA 120408 T02020	1/2	.031																		
SNGA 432 S0825	SNGA 120408 S02025	1/2	.031																		
SNGA 432 T0825	SNGA 120408 T02025	1/2	.031																		
SNGA 432 Z0825	SNGA 120408 Z02025	1/2	.031																		
SNGA 433 T0220	SNGA 120412 T00520	1/2	.047																		
SNGA 433 T0420	SNGA 120412 T01020	1/2	.047																		
SNGA 433 T0425	SNGA 120412 T01025	1/2	.047																		
SNGA 433 T0525	SNGA 120412 T01225	1/2	.047																		
SNGA 433 T0820	SNGA 120412 T02020	1/2	.047																		
SNGA 433 S0825	SNGA 120412 S02025	1/2	.047																		
SNGA 433 Z0825	SNGA 120412 Z02025	1/2	.047																		
SNGA 434 T0525	SNGA 120416 T01225	1/2	.063																		
SNGA 434 T0820	SNGA 120416 T02020	1/2	.063																		
SNGA 543 T0220	SNGA 150612 T00520	5/8	.047																		
SNGA 543 T0225	SNGA 150612 T00525	5/8	.047																		
SNGA 544 T0220	SNGA 150616 T00520	5/8	.063																		
SNGA 544 T0820	SNGA 150616 T02020	5/8	.063																		
SNGA 644 T0825	SNGA 190616 T02025	3/4	.063																		

Holders → F11

Boring bars → G6

Insert Item List

[BIDEMICS / Ceramics]

SNGX

(inch)	IC	T
SNGX 45	1/2	5/16
SNGX 55	5/8	5/16

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics														
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
SNGX 452 T0220	SNGX 120708 T00520	1/2	.031																		
SNGX 452 T0320	SNGX 120708 T00820	1/2	.031																		
SNGX 453 T0220	SNGX 120712 T00520	1/2	.047																		
SNGX 453 T0320	SNGX 120712 T00820	1/2	.047																		
SNGX 453 T0820	SNGX 120712 T02020	1/2	.047																		
SNGX 453 T0825	SNGX 120712 T02025	1/2	.047																		
SNGX 454 T0820	SNGX 120716 T02020	1/2	.063																		
SNGX 454 T0825	SNGX 120716 T02025	1/2	.063																		
SNGX 552 T0320	SNGX 150708 T00820	5/8	.031																		
SNGX 553 T0220	SNGX 150712 T00520	5/8	.047																		
SNGX 553 T0320	SNGX 150712 T00820	5/8	.047																		
SNGX 554 T0320	SNGX 150716 T00820	5/8	.063																		

Holders → F10 • F11

Boring bars → G6

SPG

(inch)	IC	T
SPG 32	3/8	1/8
SPG 42	1/2	1/8
SPG 43	1/2	3/16
SPG 63	3/4	3/16

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics														
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
SPG 322 T0425	SPGN 090308 T01025	3/8	.031																		
SPG 324 S0820	SPGN 090316 S02020	3/8	.063																		
SPG 422 T0425	SPGN 120308 T01025	1/2	.031																		
SPG 422 T0525	SPGN 120308 T01225	1/2	.031																		
SPG 432 T0420	SPGN 120408 T01020	1/2	.031																		
SPG 432 T0425	SPGN 120408 T01025	1/2	.031																		
SPG 433 T0420	SPGN 120412 T01020	1/2	.047																		
SPG 433 T0425	SPGN 120412 T01025	1/2	.047																		
SPG 434 T0420	SPGN 120416 T01020	1/2	.063																		
SPG 434 T0425	SPGN 120416 T01025	1/2	.063																		
SPG 434 T0820	SPGN 120416 T02020	1/2	.063																		
SPG 634 T0420	SPGN 190416 T01020	3/4	.063																		

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

TBGE

(inch)	IC	T
TBGE 52	5/32	.063

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																			
				Coated	SiAlON				Whisker	Silicon Nitride	Alumina		Alumina - TiC													
					JP2	JX1	JX3	SX7			SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
TBGE 521 T0225	TBGE 060104 T00525	5/32	.016																							
TBGE 522 T0225	TBGE 060108 T00525	5/32	.031																							

TNG2 / TNG3

(inch)	IC	T
TNG 22	1/4	1/8
TNG 32	3/8	1/8
TNG 33	3/8	3/16
TNG 35	3/8	5/16

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																				
				Coated	SiAlON				Whisker	Silicon Nitride	Alumina		Alumina - TiC														
					JP2	JX1	JX3	SX7			SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4			
TNG 221 T0225	TNGN 110304 T00525	1/4	.016																								
TNG 222 T0225	TNGN 110308 T00525	1/4	.031																								
TNG 321 T0425	TNGN 160304 T01025	3/8	.016																								
TNG 322 T0425	TNGN 160308 T01025	3/8	.031																								
TNG 322 T0525	TNGN 160308 T01225	3/8	.031																								
TNG 322 T0825	TNGN 160308 T02025	3/8	.031																								
TNG 331 T0425	TNGN 160404 T01025	3/8	.016																								
TNG 332 T0420	TNGN 160408 T01020	3/8	.031																								
TNG 332 T0425	TNGN 160408 T01025	3/8	.031																								
TNG 332 T0525	TNGN 160408 T01225	3/8	.031																								
TNG 332 T0820	TNGN 160408 T02020	3/8	.031																								
TNG 332 S0825	TNGN 160408 S02025	3/8	.031																								
TNG 332 T0825	TNGN 160408 T02025	3/8	.031																								
TNG 333 T0420	TNGN 160412 T01020	3/8	.047																								
TNG 333 T0425	TNGN 160412 T01025	3/8	.047																								
TNG 333 T0525	TNGN 160412 T01225	3/8	.047																								
TNG 333 T0820	TNGN 160412 T02020	3/8	.047																								
TNG 333 S0825	TNGN 160412 S02025	3/8	.047																								
TNG 333 T0825	TNGN 160412 T02025	3/8	.047																								
TNG 334 T0420	TNGN 160416 T01020	3/8	.063																								
TNG 334 T0425	TNGN 160416 T01025	3/8	.063																								
TNG 334 T0525	TNGN 160416 T01225	3/8	.063																								
TNG 334 T0820	TNGN 160416 T02020	3/8	.063																								
TNG 334 T0825	TNGN 160416 T02025	3/8	.063																								
TNG 335 T0425	TNGN 160420 T01025	3/8	.079																								
TNG 335 T0820	TNGN 160420 T02020	3/8	.079																								
TNG 352 T0825	TNGN 160708 T02025	3/8	.031																								
TNG 353 T0825	TNGN 160712 T02025	3/8	.047																								

TNG4 / 5 → E17

Holders → F14

Insert Item List

[BIDEMICS / Ceramics]

TNG4 / TNG5

(inch)	IC	T
TNG 43	1/2	3/16
TNG 45	1/2	5/16
TNG 54	5/8	1/4

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics														
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
TNG 431 T0425	TNGN 220404 T01025	1/2	.016																		
TNG 432 T0220	TNGN 220408 T00520	1/2	.031																		
TNG 432 T0420	TNGN 220408 T01020	1/2	.031																		
TNG 432 T0425	TNGN 220408 T01025	1/2	.031																		
TNG 432 T0525	TNGN 220408 T01225	1/2	.031																		
TNG 432 T0820	TNGN 160408 T02020	1/2	.031																		
TNG 432 Z0825	TNGN 220408 Z02025	1/2	.031																		
TNG 433 T0220	TNGN 220412 T00520	1/2	.047																		
TNG 433 T0225	TNGN 220412 T00525	1/2	.047																		
TNG 433 T0425	TNGN 220412 T01025	1/2	.047																		
TNG 433 T0630	TNGN 220412 T01530	1/2	.047																		
TNG 433 Z0820	TNGN 220412 Z02020	1/2	.047																		
TNG 433 Z0825	TNGN 220412 Z02025	1/2	.047																		
TNG 434 T0220	TNGN 220416 T00520	1/2	.063																		
TNG 434 T0625	TNGN 220416 T01525	1/2	.063																		
TNG 452 T0220	TNGN 220708 T00520	1/2	.031																		
TNG 452 T0825	TNGN 220708 T02025	1/2	.031																		
TNG 453 T0220	TNGN 220712 T00520	1/2	.047																		
TNG 454 T0825	TNGN 220716 T02025	1/2	.063																		
TNG 543 T0825	TNGN 270612 T02025	5/8	.047																		
TNG 544 T0120	TNGN 270616 T00320	5/8	.063																		
TNG 544 T0220	TNGN 270616 T00520	5/8	.063																		
TNG 544 T0825	TNGN 270616 T02025	5/8	.063																		

TNG2 / 3 → E16

Insert Item List

[BIDEMICS / Ceramics]

TNGA

(inch)	IC	T	(inch)	IC	T
TNGA 32	3/8	1/8	TNGA 43	1/2	3/16
TNGA 33	3/8	3/16			

● : 1st Choice ● : 2nd choice

				Steel	P																		
				Stainless Steel	M																		
				Cast Iron	K			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Non-Ferrous Material	N																		
				Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Hardened Material	H								●						●	●	●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC							
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
TNGA 321 T0425	TNGA 160304 T01025	3/8	.016																			●	
TNGA 322 T0525	TNGA 160308 T01225	3/8	.031																			●	
TNGA 331 T0425	TNGA 160404 T01025	3/8	.016																			●	
TNGA 331 S0825	TNGA 160404 S02025	3/8	.016																			●	●
TNGA 331 Z0825	TNGA 160404 Z02025	3/8	.016																			●	●
TNGA 332 T0425	TNGA 160408 T01025	3/8	.031																			○	
TNGA 332 T0525	TNGA 160408 T01225	3/8	.031																			○	
TNGA 332 T0820	TNGA 160408 T02020	3/8	.031																			○	
TNGA 332 S0825	TNGA 160408 S02025	3/8	.031																			○	
TNGA 332 T0825	TNGA 160408 T02025	3/8	.031																			○	
TNGA 332 Z0825	TNGA 160408 Z02025	3/8	.031																			○	
TNGA 333 T0425	TNGA 160412 T01025	3/8	.047																			○	
TNGA 333 T0525	TNGA 160412 T01225	3/8	.047																			○	
TNGA 333 T0820	TNGA 160412 T02020	3/8	.047																			○	
TNGA 333 S0825	TNGA 160412 S02025	3/8	.047																			○	
TNGA 333 T0825	TNGA 160412 T02025	3/8	.047																			○	
TNGA 333 Z0825	TNGA 160412 Z02025	3/8	.047																			○	
TNGA 334 T0825	TNGA 160416 T02025	3/8	.063																			○	
TNGA 431 T0425	TNGA 220404 T01025	1/2	.016																			●	
TNGA 432 T0220	TNGA 220408 T00520	1/2	.031																			●	
TNGA 432 T0525	TNGA 220408 T01225	1/2	.031																			●	
TNGA 432 S0825	TNGA 220408 S02025	1/2	.031																			●	
TNGA 432 T0825	TNGA 220408 T02025	1/2	.031																			●	
TNGA 433 T0825	TNGA 220412 T02025	1/2	.047																			●	
TNGA 433 Z0825	TNGA 220412 Z02025	1/2	.047																			●	
TNGA 434 T0525	TNGA 220416 T01225	1/2	.063																			●	
TNGA 434 T0825	TNGA 220416 T02025	1/2	.063																			●	

Holders → F14 • Q34

[BIDEMICS / Ceramics] Insert Item List

TNGG with chip-breaker

(inch)	IC	T
TNGG 33	3/8	3/16

● : 1st Choice ● : 2nd choice

				Steel	P																			
				Stainless Steel	M																			
				Cast Iron	K			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
				Non-Ferrous Material	N																			
				Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Hardened Material	H																		●	●
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																	
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC								
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4			
TNGG 332 Z0430 AG	TNGG 160408 Z01030 AG	3/8	.031																			●		
TNGG 333 Z0430 AG	TNGG 160412 Z01030 AG	3/8	.047																			●		

Holders → F14 • Q34

TP

(inch)	IC	T
TP 41	1/4	3/32
TP 42	1/4	3/32

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics														
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
TP 41 T0225		1/4	.016																		
TP 42 T0225		1/4	.031																		

TPG / TPGE

(inch)	IC	T	(inch)	IC	T
TPG 22	1/4	1/8	TPGE 52	5/32	1/16
TPG 32	3/8	1/8	TPGE 73	7/32	3/32
TPG 43	1/2	3/16			

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics														
				Coated			SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC					
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
TPG 221 T0225	TPGN 110304 T00525	1/4	.016																		
TPG 221 T0425	TPGN 110304 T01025	1/4	.016																		
TPG 221 T0525	TPGN 110304 T01225	1/4	.016																		
TPG 222 T0225	TPGN 110308 T00525	1/4	.031																		
TPG 222 T0425	TPGN 110308 T01025	1/4	.031																		
TPG 222 T0525	TPGN 110308 T01225	1/4	.031																		
TPG 222 T0825	TPGN 110308 T02025	1/4	.031																		
TPG 223 T0225	TPGN 110312 T00525	1/4	.047																		
TPG 223 T0820	TPGN 110312 T02020	1/4	.047																		
TPG 32Y T0425	TPGN 160302 T01025	3/8	.008																		
TPG 321 T0425	TPGN 160304 T01025	3/8	.016																		
TPG 321 T0525	TPGN 160304 T01225	3/8	.016																		
TPG 322 T0220	TPGN 160308 T00520	3/8	.031																		
TPG 322 T0425	TPGN 160308 T01025	3/8	.031																		
TPG 322 T0525	TPGN 160308 T01225	3/8	.031																		
TPG 323 T0220	TPGN 160312 T00520	3/8	.047																		
TPG 323 T0425	TPGN 160312 T01025	3/8	.047																		
TPG 323 T0525	TPGN 160312 T01225	3/8	.047																		
TPG 324 T0425	TPGN 160316 T01025	3/8	.063																		
TPG 431 T0425	TPGN 220404 T01025	1/2	.016																		
TPG 432 T0220	TPGN 220408 T00520	1/2	.031																		
TPG 432 T0425	TPGN 220408 T01025	1/2	.031																		
TPG 432 T0525	TPGN 220408 T01225	1/2	.031																		
TPG 433 T0220	TPGN 220412 T00520	1/2	.047																		
TPG 434 T0220	TPGN 220416 T00520	1/2	.063																		
TPG 434 T0425	TPGN 220416 T01025	1/2	.063																		
TPGE 521 T0225	TPGN 060104 T00525	5/32	.016																		
TPGE 731 T0225	TPGN 090204 T00525	7/32	.016																		
TPGE 732 T0225	TPGN 090208 T00525	7/32	.031																		

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through (R/L) : 1-2 week delivery (Right / Left-hand only) (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Insert Item List

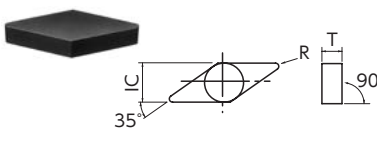
[BIDEMICS / Ceramics]

BIDEMICS / Ceramics

VNG

(inch)	IC	T
VNG 33	3/8	3/16

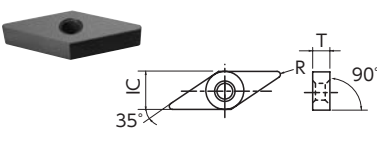
● : 1st Choice ● : 2nd choice

	Steel	P																		
	Stainless Steel	M																		
	Cast Iron	K																		
	Non-Ferrous Material	N																		
	Heat Resistant Alloy	S																		
	Hardened Material	H																		
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics													
				Coated			SiAlON				Whisker	Silicon Nitride		Alumina		Alumina - TiC				
				JP2	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
VNG 331 T0425	VNGN 160404 T01025	3/8	.016																	
VNG 332 T0425	VNGN 160408 T01025	3/8	.031																	

VNGA

(inch)	IC	T
VNGA 33	3/8	3/16
VNGA 43	1/2	3/16

● : 1st Choice ● : 2nd choice

	Steel	P																		
	Stainless Steel	M																		
	Cast Iron	K																		
	Non-Ferrous Material	N																		
	Heat Resistant Alloy	S																		
	Hardened Material	H																		
Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics													
				Coated			SiAlON				Whisker	Silicon Nitride		Alumina		Alumina - TiC				
				JP2*	JX1	JX3	SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
VNGA 331 BQ T0220	VNGA 160404 BQ T00520	3/8	.016	●																
VNGA 331 BQ E02	VNGA 160404 BQ ENB	3/8	.016	●																
VNGA 331 T0220	VNGA 160404 T00520	3/8	.016																	
VNGA 331 T0225	VNGA 160404 T00525	3/8	.016																	
VNGA 331 T0420	VNGA 160404 T01020	3/8	.016																	
VNGA 331 T0425	VNGA 160404 T01025	3/8	.016																	
VNGA 331 T0525	VNGA 160404 T01225	3/8	.016																	
VNGA 331 S0825	VNGA 160404 S02025	3/8	.016																	
VNGA 331 Z0825	VNGA 160404 Z02025	3/8	.016																	
VNGA 332 BQ T0220	VNGA 160408 BQ T00520	3/8	.031	●																
VNGA 332 BQ E02	VNGA 160408 BQ ENB	3/8	.031	●																
VNGA 332 T0220	VNGA 160408 T00520	3/8	.031																	
VNGA 332 T0320	VNGA 160408 T00820	3/8	.031																	
VNGA 332 T0420	VNGA 160408 T01020	3/8	.031																	
VNGA 332 T0425	VNGA 160408 T01025	3/8	.031																	
VNGA 332 T0525	VNGA 160408 T01225	3/8	.031																	
VNGA 332 S0825	VNGA 160408 S02025	3/8	.031																	
VNGA 332 Z0825	VNGA 160408 Z02025	3/8	.031																	
VNGA 333 BQ T0220	VNGA 160412 BQ T00520	3/8	.047	●																
VNGA 333 BQ E02	VNGA 160412 BQ ENB	3/8	.047	●																
VNGA 333 T0220	VNGA 160412 T00520	3/8	.047																	
VNGA 333 T0320	VNGA 160412 T00820	3/8	.047																	
VNGA 333 T0420	VNGA 160412 T01020	3/8	.047																	
VNGA 333 T0425	VNGA 160412 T01025	3/8	.047																	
VNGA 333 S0825	VNGA 160412 S02025	3/8	.047																	
VNGA 333 Z0825	VNGA 160412 Z02025	3/8	.047																	
VNGA 431 T0425	VNGA 220404 T01025	1/2	.016																	
VNGA 432 T0425	VNGA 220408 T01025	1/2	.031																	
VNGA 433 T0425	VNGA 220412 T01025	1/2	.047																	
VNGA 436 T0420	VNGA 220424 T01020	1/2	.094																	

*Brazed insert

HOLDERS → F12 • F13

Insert Item List

[BIDEMICS / Ceramics]

WNGA

	(inch)	IC	T
WNGA 33	3/8	3/8	3/16
WNGA 43	1/2	1/2	3/16

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																		
				Coated	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC												
					SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4						
				JP2	JX1	JX3																			
WNGA 331 T0525	WNGA 060404 T01225	3/8	.016																						
WNGA 332 T0525	WNGA 060408 T01225	3/8	.031																					●	
WNGA 333 T0525	WNGA 060412 T01225	3/8	.047																					●	
WNGA 431 T0220	WNGA 080404 T00520	1/2	.016							●														●	
WNGA 431 Z0825	WNGA 080404 Z02025	1/2	.016																					●	
WNGA 432 T0220	WNGA 080408 T00520	1/2	.031					●	●	●														●	
WNGA 432 T0420	WNGA 080408 T01020	1/2	.031									●												●	
WNGA 432 T0525	WNGA 080408 T01225	1/2	.031													●								●	
WNGA 432 T0820	WNGA 080408 T02020	1/2	.031									●					●							●	
WNGA 432 Z0825	WNGA 080408 Z02025	1/2	.031																					●	
WNGA 433 T0220	WNGA 080412 T00520	1/2	.047						●	●	●														
WNGA 433 T0420	WNGA 080412 T01020	1/2	.047										●												
WNGA 433 T0525	WNGA 080412 T01225	1/2	.047													●									
WNGA 433 T0820	WNGA 080412 T02020	1/2	.047														●								
WNGA 434 T0420	WNGA 080416 T01020	1/2	.063						●																
WNGA 434 T0820	WNGA 080416 T02020	1/2	.063									●													

Holders → F15
Boring bars → G6

ZT 1130

	(inch)	IC	T
ZT1130	1-1/2	1-1/2	1/2

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	R	BIDEMICS			Ceramics																		
				Coated	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC												
					SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4						
				JP2	JX1	JX3																			
ZT 1130 PNX5		1-1/2	4-1/2																						

Insert Item List

[BIDEMICS / Ceramics]

● : Stock
● : Stock (Newly added)
■ □ R L : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

ⓀL : 1-2 week delivery (Right / Left-hand only)
ⓀL : 1-2 week delivery (Right / Left-hand only, Newly added)

DC. W

(inch)	IC	T
DC.. 21	1/4	3/32
DC.. 32	3/8	5/32

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material / Coating															Diamond Coating	
								Steel	P															
								Stainless Steel	M															
								Cast Iron	K															
Non-Ferrous Material	N																							
Heat Resistant Alloy	S																							
Hardened Material	H																							
								CBN (Brazed)											PCD					
								BIDEMICS Coated		Solid CBN	Coated													
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1					
	DCGW 21.508 PD FNX	DCGW 070202 PD FNX	None	1/4	.008	2	.094																	
	DCGW 21.508 PD S0415	DCGW 070202 PD S01015	S0415	1/4	.008	2	.094																	
	DCGW 21.508 PD S0635	DCGW 070202 PD S01535	S0635	1/4	.008	2	.094																	
	DCGW 21.51 PD FNX	DCGW 070204 PD FNX	None	1/4	.016	2	.087																	
	DCGW 21.51 PD S0415	DCGW 070204 PD S01015	S0415	1/4	.016	2	.087																	
	DCGW 21.51 PD S0635	DCGW 070204 PD S01535	S0635	1/4	.016	2	.087																	
	DCGW 21.52 PD FNX	DCGW 070208 PD FNX	None	1/4	.031	2	.075																	
	DCGW 21.52 PD S0415	DCGW 070208 PD S01015	S0415	1/4	.031	2	.075																	
	DCGW 21.52 PD S0525	DCGW 070208 PD S01325	S0525	1/4	.031	2	.075																	
	DCGW 21.52 PD S0635	DCGW 070208 PD S01535	S0635	1/4	.031	2	.075																	
	DCGW 32.504 PD S0415	DCGW 11T301 PD S01015	S0415	3/8	.004	2	.091																	
	DCGW 32.508 PD FNX	DCGW 11T302 PD FNX	None	3/8	.008	2	.094																	
	DCGW 32.508 PD S0415	DCGW 11T302 PD S01015	S0415	3/8	.008	2	.094																	
	DCGW 32.508 PD S0525	DCGW 11T302 PD S01325	S0525	3/8	.008	2	.094																	
	DCGW 32.508 PD S0635	DCGW 11T302 PD S01535	S0635	3/8	.008	2	.094																	
	DCGW 32.51 PD FNX	DCGW 11T304 PD FNX	None	3/8	.016	2	.087																	
	DCGW 32.51 PD T0415	DCGW 11T304 PD T01015	T0415	3/8	.016	2	.087																	
	DCGW 32.51 PD S0415	DCGW 11T304 PD S01015	S0415	3/8	.016	2	.087																	
DCGW 32.51 PD S0525	DCGW 11T304 PD S01325	S0525	3/8	.016	2	.087																		
DCGW 32.51 PD S0635	DCGW 11T304 PD S01535	S0635	3/8	.016	2	.087																		
DCGW 32.52 PD FNX	DCGW 11T308 PD FNX	None	3/8	.031	2	.075																		
DCGW 32.52 PD S0415	DCGW 11T308 PD S01015	S0415	3/8	.031	2	.075																		
DCGW 32.52 PD S0525	DCGW 11T308 PD S01325	S0525	3/8	.031	2	.075																		
DCGW 32.52 PD S0635	DCGW 11T308 PD S01535	S0635	3/8	.031	2	.075																		
DCGW 32.53 PD S0415	DCGW 11T312 PD S01015	S0415	3/8	.047	2	.102																		
	DCMW 32.504	DCMW 11T301	None	3/8	.004	1	—																	
	DCMW 32.508	DCMW 11T302	None	3/8	.008	1	—																	
	DCMW 32.51	DCMW 11T304	None	3/8	.016	1	—																	
	DCMW 32.52	DCMW 11T308	None	3/8	.031	1	—																	
	DCMT 21.504 PBF	DCMT 070201 PBF	None	1/4	.004	1	—																	
	DCMT 21.508 PBF	DCMT 070202 PBF	None	1/4	.008	1	—																	
	DCMT 32.504 PBF	DCMT 11T301 PBF	None	3/8	.004	1	—																	
	DCMT 32.508 PBF	DCMT 11T302 PBF	None	3/8	.008	1	—																	
	DCMT 32.51 PBF	DCMT 11T304 PBF	None	3/8	.016	1	—																	
	DCMT 21.504 PF	DCMT 070201 PF	None	1/4	.004	1	—																	
	DCMT 21.508 PF	DCMT 070202 PF	None	1/4	.008	1	—																	
	DCMT 32.508 PF	DCMT 11T302 PF	None	3/8	.008	1	—																	
	DCMT 32.51 PF	DCMT 11T304 PF	None	3/8	.016	1	—																	
	DCMT 32.504 FNAM3	DCMT 11T301 FNAM3	None	3/8	.004	2	—																	
	DCMT 32.508 FNAM3	DCMT 11T302 FNAM3	None	3/8	.008	2	—																	
	DCMT 32.51 FNAM3	DCMT 11T304 FNAM3	None	3/8	.016	2	—																	


Holders → Q16 • Q17 • Q18 • Q19

BIDEMICS / CBN / PCD

RCGX

(inch)	IC	T	(inch)	IC	T
RCGX 102	1/4	.309	RCGX 105	5/8	.388
RCGX 103	3/8	.309	RCGX 106	3/4	.388
RCGX 104	1/2	.312			

● : 1st Choice ● : 2nd choice


Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS										PCD		
								Coated	Solid CBN	CBN (Brazed)							Diamond Coating			
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1	
	RCGX 102 P4815		P4815	1/4	—	—	—													
	RCGX 103 P4815		P4815	3/8	—	—	—													
	RCGX 104 P4815		P4815	1/2	—	—	—													
	RCGX 105 P4815		P4815	5/8	—	—	—													
	RCGX 106 P4815		P4815	3/4	—	—	—													

Holders → F19 • F20 • F21 • F22

RNG

(inch)	IC	T
RN.. 32	3/8	1/8
RN.. 43	1/2	3/16

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS										PCD		
								Coated	Solid CBN	CBN (Brazed)							Diamond Coating			
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1	
	RNG 32 Z0525	RNGN 090300 Z01225	Z0520	3/8	—	—	—		●											
	RNG 43 Z0525	RNGN 120400 Z01225	Z0520	1/2	—	—	—		●											

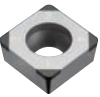
Holders → F16

Boring bars → G4

SCGW 32

(inch)	IC	T
SCGW.. 32	3/8	5/32


● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS										PCD		
								Coated	Solid CBN	CBN (Brazed)							Diamond Coating			
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1	
	SCGW 32.51 PQ Z0415	SCGW 09T304 PQ Z01015	Z0415	3/8	.016	4	.059													
	SCGW 32.52 PQ Z0415	SCGW 09T308 PQ Z01015	Z0415	3/8	.031	4	.051													

SN. A 43

(inch)	IC	T
SN.. 43	1/2	3/16

● : 1st Choice ● : 2nd choice


Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material													PCD			Diamond Coating								
								Steel	Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material	P	M	K	N	S	H													
																					BIDEMICS Coated	Solid CBN	CBN (Brazed)						PD1	PD2	UC1	
																					JP2	B99	B5K		B52	B6K	B36	B40	B23	B30		
	SNGA 4308 PE S0525	SNGA 120402 PE S01325	S0525	1/2	.008	8	.059																									
	SNGA 431 PE S0415	SNGA 120404 PE S01015	S0415	1/2	.016	8	.059																									
	SNGA 431 PE T0420	SNGA 120404 PE T01020	T0420	1/2	.016	8	.059																									
	SNGA 431 PE S0420	SNGA 120404 PE S01020	S0420	1/2	.016	8	.059																									
	SNGA 431 PE S0525	SNGA 120404 PE S01325	S0525	1/2	.016	8	.059																									
	SNGA 431 PE S0635	SNGA 120404 PE S01535	S0635	1/2	.016	8	.059																									
	SNGA 432 PE S0415	SNGA 120408 PE S01015	S0415	1/2	.031	8	.051																									
	SNGA 432 PE T0420	SNGA 120408 PE T01020	T0420	1/2	.031	8	.051																									
	SNGA 432 PE S0420	SNGA 120408 PE S01020	S0420	1/2	.031	8	.051																									
	SNGA 432 PE S0525	SNGA 120408 PE S01325	S0525	1/2	.031	8	.051																									
	SNGA 432 PE S0635	SNGA 120408 PE S01535	S0635	1/2	.031	8	.051																									
	SNGA 433 PE S0415	SNGA 120412 PE S01015	S0415	1/2	.047	8	.059																									
	SNGA 433 PE T0420	SNGA 120412 PE T01020	T0420	1/2	.047	8	.059																									
	SNGA 433 PE S0420	SNGA 120412 PE S01020	S0420	1/2	.047	8	.059																									
	SNGA 433 PE S0525	SNGA 120412 PE S01325	S0525	1/2	.047	8	.059																									
	SNGA 433 PE S0635	SNGA 120412 PE S01535	S0635	1/2	.047	8	.059																									
	SNGA 434 PE S0415	SNGA 120416 PE S01015	S0415	1/2	.063	8	.051																									
	SNGA 434 PE T0420	SNGA 120416 PE T01020	T0420	1/2	.063	8	.051																									
	SNGA 434 PE S0525	SNGA 120416 PE S01325	S0525	1/2	.063	8	.051																									

Holders → F11
 Boring bars → G6

SPG 32

(inch)	IC	T
SP.. 32	3/8	1/8

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material													PCD			Diamond Coating								
								Steel	Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material	P	M	K	N	S	H													
																					BIDEMICS Coated	Solid CBN	CBN (Brazed)						PD1	PD2	UC1	
																					JP2	B99	B5K		B52	B6K	B36	B40	B23	B30		
	SPG 321 PQ S0415	SPGN 090304 PQ S01015	S0415	3/8	.016	4	.059																									
	SPG 321 PQ T0420	SPGN 090304 PQ T01020	T0420	3/8	.016	4	.059																									
	SPG 321 PQ S0420	SPGN 090304 PQ S01020	S0420	3/8	.016	4	.059																									
	SPG 321 PQ S0635	SPGN 090304 PQ S01535	S0635	3/8	.016	4	.059																									
	SPG 322 PQ S0415	SPGN 090308 PQ S01015	S0415	3/8	.031	4	.051																									
	SPG 322 PQ T0420	SPGN 090308 PQ T01020	T0420	3/8	.031	4	.051																									
	SPG 322 PQ S0420	SPGN 090308 PQ S01020	S0420	3/8	.031	4	.051																									
	SPG 322 PQ S0635	SPGN 090308 PQ S01535	S0635	3/8	.031	4	.051																									
	SPG 323 PQ S0415	SPGN 090312 PQ S01015	S0415	3/8	.047	4	.059																									
	SPG 323 PQ T0420	SPGN 090312 PQ T01020	T0420	3/8	.047	4	.059																									
	SPG 323 PQ S0420	SPGN 090312 PQ S01020	S0420	3/8	.047	4	.059																									
	SPG 323 PQ S0635	SPGN 090312 PQ S01535	S0635	3/8	.047	4	.059																									

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □□□□ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R,L) : 1-2 week delivery (Right / Left-hand only)
 (R,L) : 1-2 week delivery (Right / Left-hand only, Newly added)

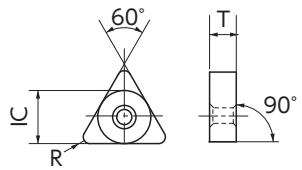
Insert Item List

[BIDEMICS / CBN / PCD]

TN. A 33

(inch)	IC	T
TN.. 33	3/8	3/16

● : 1st Choice ● : 2nd choice



Steel	P																	
Stainless Steel	M																	
Cast Iron	K		●	●	●									●	●			
Non-Ferrous Material	N														●	●	●	
Heat Resistant Alloy	S		●															
Hardened Material	H			●	●	●	●	●	●	●								

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS											PCD			Diamond Coating			
								Coated	Solid CBN	CBN (Brazed)									Coated	Coated	Coated				
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1						
	TNGA 3304 PH FNX	TNGA 160401 PH FNX	None	3/8	.004	6	.083																		
	TNGA 3304 PH S0415	TNGA 160401 PH S01015	S0415	3/8	.004	6	.083																		
	TNGA 3304 PH S0525	TNGA 160401 PH S01325	S0525	3/8	.004	6	.083																		
	TNGA 3304 PH S0635	TNGA 160401 PH S01535	S0635	3/8	.004	6	.083																		
	TNGA 3308 PT FNX	TNGA 160402 PT FNX	None	3/8	.008	3	.087																		
	TNGA 3308 PH FNX	TNGA 160402 PH FNX	None	3/8	.008	6	.087																		
	TNGA 3308 PH S0415	TNGA 160402 PH S01015	S0415	3/8	.008	6	.087			●	●	○	○												
	TNGA 3308 PH S0525	TNGA 160402 PH S01325	S0525	3/8	.008	6	.087			○	○	○	○												
	TNGA 3308 PH S0635	TNGA 160402 PH S01535	S0635	3/8	.008	6	.087			○	○	○	○	●											
	TNGA 331 PH FNX	TNGA 160404 PH FNX	None	3/8	.016	3	.079																		
	TNGA 331 PT FNX	TNGA 160404 PT FNX	None	3/8	.016	3	.079																		
	TNGA 331 PH S0415	TNGA 160404 PH S01015	S0415	3/8	.016	6	.079			●	●	○	○												
	TNGA 331 PH S0420	TNGA 160404 PH S01020	S0420	3/8	.016	6	.079																		
	TNGA 331 PH S0525	TNGA 160404 PH S01325	S0525	3/8	.016	6	.079			○	○	●	○												
	TNGA 331 PH S0635	TNGA 160404 PH S01535	S0635	3/8	.016	6	.079			○	○	○	○												
	TNGA 331 PH T0420	TNGA 160404 PH T01020	T0420	3/8	.016	6	.079																		
	TNGA 332 PT FNX	TNGA 160408 PT FNX	None	3/8	.031	3	.067																		
	TNGA 332 PH FNX	TNGA 160408 PH FNX	None	3/8	.031	6	.067																		
	TNGA 332 PH S0415	TNGA 160408 PH S01015	S0415	3/8	.031	6	.067			●	●	○	○												
	TNGA 332 PH T0420	TNGA 160408 PH T01020	T0420	3/8	.031	6	.067																		
	TNGA 332 PH S0420	TNGA 160408 PH S01020	S0420	3/8	.031	6	.067																		
	TNGA 332 PH S0525	TNGA 160408 PH S01325	S0525	3/8	.031	6	.067			○	○	●	○												
	TNGA 332 PH S0635	TNGA 160408 PH S01535	S0635	3/8	.031	6	.067			○	○	○	○												
	TNGA 333 PT FNX	TNGA 160412 PT FNX	None	3/8	.047	3	.091																		
	TNGA 333 PH FNX	TNGA 160412 PH FNX	None	3/8	.047	6	.091																		
TNGA 333 PH S0415	TNGA 160412 PH S01015	S0415	3/8	.047	6	.091			○	●	○	○													
TNGA 333 PH T0420	TNGA 160412 PH T01020	T0420	3/8	.047	6	.091																			
TNGA 333 PH S0420	TNGA 160412 PH S01020	S0420	3/8	.047	6	.091																			
TNGA 333 PH S0525	TNGA 160412 PH S01325	S0525	3/8	.047	6	.091			○	○	○	○													
TNGA 333 PH S0635	TNGA 160412 PH S01535	S0635	3/8	.047	6	.091			○	○	○	○													
TNGA 334 PH S0415	TNGA 160416 PH S01015	S0415	3/8	.063	6	.083																			
TNGA 334 PH T0420	TNGA 160416 PH T01020	T0420	3/8	.063	6	.083																			
TNGA 334 PH S0525	TNGA 160416 PH S01325	S0525	3/8	.063	6	.083			○																
TNGA 334 PH S0635	TNGA 160416 PH S01535	S0635	3/8	.063	6	.083			○																
TNGA 433 PH S0415	TNGA 220412 PH S01015	S0415	1/2	.047	6	.091																			
TNGA 433 PH S0635	TNGA 220412 PH S01535	S0635	1/2	.047	6	.091																			
	TNMX 331 PF	TNMX 160404 PF	None	3/8	.016	1	—																	●	
	TNMX 332 PF	TNMX 160408 PF	None	3/8	.031	1	—																	●	
	TNMG 3308 FNZP	TNMG 160402 FNZP	None	3/8	.008	6	—																	●	
	TNMG 331 FNZP	TNMG 160404 FNZP	None	3/8	.016	6	—																	●	
	TNMG 332 FNZP	TNMG 160408 FNZP	None	3/8	.031	6	—																	●	

Holders → F14 • Q34

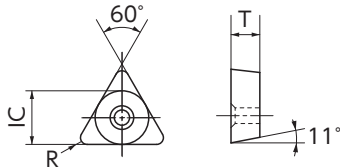
Insert Item List

[BIDEMICS / CBN / PCD]

TPG

(inch)	IC	T
TP.. 22	1/4	1/8
TP.. 32	3/8	1/8

● : 1st Choice ● : 2nd choice



Steel	P																			
Stainless Steel	M																			
Cast Iron	K	●	●	●												●	●			
Non-Ferrous Material	N																●	●	●	
Heat Resistant Alloy	S	●																		
Hardened Material	H		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)								PCD		Diamond Coating
								Coated	Solid CBN	Coated								PD1	PD2	UC1
										JP2	B99	B5K	B52	B6K	B36	B40	B23				B30
	TPG 2208 PT S0415	TPGN 110302 PT S01015	S0415	1/4	.008	3	.087													
	TPG 2208 PT S0420	TPGN 110302 PT S01020	S0420	1/4	.008	3	.087													
	TPG 2208 PT S0525	TPGN 110302 PT S01325	S0525	1/4	.008	3	.087													
	TPG 2208 PT S0635	TPGN 110302 PT S01535	S0635	1/4	.008	3	.087													
	TPG 221 PT S0415	TPGN 110304 PT S01015	S0415	1/4	.016	3	.079													
	TPG 221 PT T0420	TPGN 110304 PT T01020	T0420	1/4	.016	3	.079													
	TPG 221 PT S0420	TPGN 110304 PT S01020	S0420	1/4	.016	3	.079													
	TPG 221 PT S0525	TPGN 110304 PT S01325	S0525	1/4	.016	3	.079													
	TPG 221 PT S0635	TPGN 110304 PT S01535	S0635	1/4	.016	3	.079													
	TPG 222 PT S0415	TPGN 110308 PT S01015	S0415	1/4	.031	3	.067													
	TPG 222 PT T0420	TPGN 110308 PT T01020	T0420	1/4	.031	3	.067													
	TPG 222 PT S0420	TPGN 110308 PT S01020	S0420	1/4	.031	3	.067													
	TPG 222 PT S0525	TPGN 110308 PT S01325	S0525	1/4	.031	3	.067													
	TPG 222 PT S0635	TPGN 110308 PT S01535	S0635	1/4	.031	3	.067													
	TPG 223 PT S0415	TPGN 110312 PT S01015	S0415	1/4	.047	3	.091													
	TPG 223 PT T0420	TPGN 110312 PT T01020	T0420	1/4	.047	3	.091													
	TPG 223 PT S0420	TPGN 110312 PT S01020	S0420	1/4	.047	3	.091													
	TPG 223 PT S0525	TPGN 110312 PT S01325	S0525	1/4	.047	3	.091													
	TPG 223 PT S0635	TPGN 110312 PT S01535	S0635	1/4	.047	3	.091													
	TPG 3208 PT S0415	TPGN 160302 PT S01015	S0415	3/8	.008	3	.087													
	TPG 3208 PT S0525	TPGN 160302 PT S01325	S0525	3/8	.008	3	.087													
	TPG 3208 PT S0635	TPGN 160302 PT S01535	S0635	3/8	.008	3	.087													
	TPG 321 PT S0415	TPGN 160304 PT S01015	S0415	3/8	.016	3	.079													
	TPG 321 PT T0420	TPGN 160304 PT T01020	T0420	3/8	.016	3	.079													
	TPG 321 PT S0420	TPGN 160304 PT S01020	S0420	3/8	.016	3	.079													
	TPG 321 PT S0525	TPGN 160304 PT S01325	S0525	3/8	.016	3	.079													
	TPG 321 PT S0635	TPGN 160304 PT S01535	S0635	3/8	.016	3	.079													
	TPG 322 PT S0415	TPGN 160308 PT S01015	S0415	3/8	.031	3	.067													
	TPG 322 PT T0420	TPGN 160308 PT T01020	T0420	3/8	.031	3	.067													
	TPG 322 PT S0420	TPGN 160308 PT S01020	S0420	3/8	.031	3	.067													
	TPG 322 PT S0525	TPGN 160308 PT S01325	S0525	3/8	.031	3	.067													
	TPG 322 PT S0635	TPGN 160308 PT S01535	S0635	3/8	.031	3	.067													
	TPG 323 PT S0415	TPGN 160312 PT S01015	S0415	3/8	.047	3	.091													
	TPG 323 PT T0420	TPGN 160312 PT T01020	T0420	3/8	.047	3	.091													
	TPG 323 PT S0420	TPGN 160312 PT S01020	S0420	3/8	.047	3	.091													
	TPG 323 PT S0525	TPGN 160312 PT S01325	S0525	3/8	.047	3	.091													
	TPG 323 PT S0635	TPGN 160312 PT S01535	S0635	3/8	.047	3	.091													

Insert Item List

[BIDEMICS / CBN / PCD]

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) □ : Mirror finish

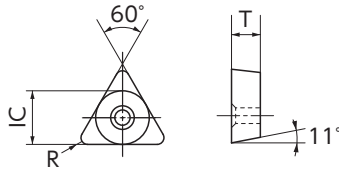
○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through

ⓇL : 1-2 week delivery (Right / Left-hand only) ⓇL : 1-2 week delivery (Right / Left-hand only, Newly added)

BIDEMICS / CBN / PCD

(inch)	IC	T
TP.. 22	1/4	1/8
TP.. 73	7/32	3/32

● : 1st Choice ● : 2nd choice



Steel	P																		
Stainless Steel	M																		
Cast Iron	K	●	●	●					●	●									
Non-Ferrous Material	N															●	●	●	
Heat Resistant Alloy	S	●																	
Hardened Material	H		●	●					●	●	●	●	●	●					

Insert Item List

[BIDEMICS / CBN / PCD]

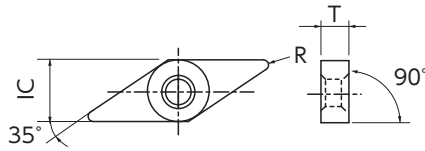
Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS														PCD	Diamond Coating	
								Coated		Solid CBN			CBN (Brazed)											
								JP2	B99	B5K	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1				
	TPGD 7308 PT S0415	TPGW 090202 PT S01015	S0415	7/32	008	3	.087																	
	TPGD 7308 PT S0525	TPGW 090202 PT S01325	S0525	7/32	008	3	.087																	
	TPGD 7308 PT S0635	TPGW 090202 PT S01535	S0635	7/32	008	3	.087																	
	TPGD 731 PT S0415	TPGW 090204 PT S01015	S0415	7/32	.016	3	.079																	
	TPGD 731 PT S0525	TPGW 090204 PT S01325	S0525	7/32	.016	3	.079																	
	TPGD 731 PT S0635	TPGW 090204 PT S01535	S0635	7/32	.016	3	.079																	
	TPGD 732 PT S0415	TPGW 090208 PT S01015	S0415	7/32	.031	3	.067																	
	TPGD 732 PT S0525	TPGW 090208 PT S01325	S0525	7/32	.031	3	.067																	
	TPGD 732 PT S0635	TPGW 090208 PT S01535	S0635	7/32	.031	3	.067																	
	TPGD 743 PT S0415	TPGW 090312 PT S01015	S0415	7/32	.047	3	.091																	
	TPGD 743 PT S0525	TPGW 090312 PT S01325	S0525	7/32	.047	3	.091																	
	TPGD 743 PT S0635	TPGW 090312 PT S01535	S0635	7/32	.047	3	.091																	
	TPGW 2208 PT S0415	TPGW 110302 PT S01015	S0415	1/4	.008	3	.087																	
	TPGW 2208 PT T0420	TPGW 110302 PT T01020	T0420	1/4	.008	3	.087																	
	TPGW 2208 PT S0525	TPGW 110302 PT S01325	S0525	1/4	.008	3	.087																	
	TPGW 2208 PT S0635	TPGW 110302 PT S01535	S0635	1/4	.008	3	.087																	
	TPGW 221 PT S0415	TPGW 110304 PT S01015	S0415	1/4	.016	3	.079																	
	TPGW 221 PT T0420	TPGW 110304 PT T01020	T0420	1/4	.016	3	.079																	
	TPGW 221 PT S0525	TPGW 110304 PT S01325	S0525	1/4	.016	3	.079																	
	TPGW 221 PT T0615	TPGW 110304 PT T01515	T0615	1/4	.016	3	.079																	
	TPGW 221 PT S0635	TPGW 110304 PT S01535	S0635	1/4	.016	3	.079																	
	TPGW 222 PT S0415	TPGW 110308 PT S01015	S0415	1/4	.031	3	.067																	
	TPGW 222 PT T0420	TPGW 110308 PT T01020	T0420	1/4	.031	3	.067																	
	TPGW 222 PT S0525	TPGW 110308 PT S01325	S0525	1/4	.031	3	.067																	
TPGW 222 PT T0615	TPGW 110308 PT T01515	T0615	1/4	.031	3	.067																		
TPGW 222 PT S0635	TPGW 110308 PT S01535	S0635	1/4	.031	3	.067																		
TPGW 223 PT S0415	TPGW 110312 PT S01015	S0415	1/4	.047	3	.091																		
TPGW 223 PT T0420	TPGW 110312 PT T01020	T0420	1/4	.047	3	.091																		
TPGW 223 PT S0525	TPGW 110312 PT S01325	S0525	1/4	.047	3	.091																		
TPGW 223 PT T0615	TPGW 110312 PT T01515	T0615	1/4	.047	3	.091																		
TPGW 223 PT S0635	TPGW 110312 PT S01535	S0635	1/4	.047	3	.091																		
	TPMT 7304 PBF	TPMT 090201 PBF	None	7/32	.004	1	—																	
	TPMT 7308 PBF	TPMT 090202 PBF	None	7/32	.008	1	—																	
	TPMT 731 PBF	TPMT 090204 PBF	None	7/32	.016	1	—																	
	TPMT 2204 PBF	TPMT 110301 PBF	None	1/4	.004	1	—																	
	TPMT 2208 PBF	TPMT 110302 PBF	None	1/4	.008	1	—																	
	TPMT 221 PBF	TPMT 110303 PBF	None	1/4	.016	1	—																	
	TPMT 7308 PF	TPMT 090202 PF	None	7/32	.008	1	—																	
	TPMT 731 PF	TPMT 090204 PF	None	7/32	.016	1	—																	
	TPMT 2208 PF	TPMT 110302 PF	None	1/4	.008	1	—																	
	TPMT 221 PF	TPMT 110304 PF	None	1/4	.016	1	—																	
	TPMH 2208 F $\frac{R}{L}$ F1	TPMH 110302 FRF1	None	1/4	.008	3	—																®	
TPMH 221 F $\frac{R}{L}$ F1	TPMH 110304 FRF1	None	1/4	.016	3	—																	®	

Boring bars (TP..73) → V26
Boring bars (TP..22) → V28

VNGA 33

(inch)	IC	T
VN.. 33	3/8	3/16

● : 1st Choice ● : 2nd choice



Steel	P																			
Stainless Steel	M																			
Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-Ferrous Material	N																	●	●	●
Heat Resistant Alloy	S	●																		
Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS											PCD			Diamond Coating				
								Coated	Solid CBN	CBN (Brazed)								Coated	Coated	Coated	Coated		Coated	Coated	Coated	
										B99	B5K	B52	B6K	B36	B40	B23	B30									PD1	PD2	UC1
								JP2																		
	VNGA 331 BQ	VNGA 160404 BQ	T0220	3/8	.016	4	.157	●																		
	VNGA 331 BQ E02	VNGA 160404 BQ ENB	Honed	3/8	.016	4	.157	●																		
	VNGA 332 BQ	VNGA 160408 BQ	T0220	3/8	.031	4	.157	●																		
	VNGA 332 BQ E02	VNGA 160408 BQ ENB	Honed	3/8	.031	4	.157	●																		
	VNGA 333 BQ	VNGA 160412 BQ	T0220	3/8	.047	4	.157	●																		
	VNGA 333 BQ E02	VNGA 160412 BQ ENB	Honed	3/8	.047	4	.157	●																		
	VNGA 3304 PQ S0415	VNGA 160401 PQ S01015	S0415	3/8	.004	4	.106				○															
	VNGA 3304 PQ S0635	VNGA 160401 PQ S01535	S0635	3/8	.004	4	.106							○												
	VNGA 3308 PD FNX	VNGA 160402 PD FNX	None	3/8	.008	2	.102														○					
	VNGA 3308 PQ FNX	VNGA 160402 PQ FNX	None	3/8	.008	4	.102															○				
	VNGA 3308 PQ S0415	VNGA 160402 PQ S01015	S0415	3/8	.008	4	.102			○	○			○	○							○				
	VNGA 3308 PQ S0525	VNGA 160402 PQ S01325	S0525	3/8	.008	4	.102			○	○			○	○											
	VNGA 3308 PQ S0635	VNGA 160402 PQ S01535	S0635	3/8	.008	4	.102			○	○			○	○	●										
	VNGA 3308 PQ T0420	VNGA 160402 PQ T01020	T0420	3/8	.008	4	.102															○				
	VNGA 331 PD FNX	VNGA 160404 PD FNX	None	3/8	.016	2	.098															○				
	VNGA 331 PQ FNX	VNGA 160404 PQ FNX	None	3/8	.016	4	.098															○				
	VNGA 331 PQ S0415	VNGA 160404 PQ S01015	S0415	3/8	.016	4	.098			●	●	○	○	○	○								○			
	VNGA 331 PQ T0420	VNGA 160404 PQ T01020	T0420	3/8	.016	4	.098																○			
	VNGA 331 PQ S0525	VNGA 160404 PQ S01325	S0525	3/8	.016	4	.098			○	○	●	○	○	○											
	VNGA 331 PQ S0635	VNGA 160404 PQ S01535	S0635	3/8	.016	4	.098			○	○	○	○	○	○	●										
	VNGA 332 PD FNX	VNGA 160408 PD FNX	None	3/8	.031	2	.063																○			
	VNGA 332 PQ FNX	VNGA 160408 PQ FNX	None	3/8	.031	4	.063																○			
	VNGA 332 PDQ S0415	VNGA 160408 PQ S01015	S0415	3/8	.031	4	.063								○											
	VNGA 332 PQ S0415	VNGA 160408 PQ S01015	S0415	3/8	.031	4	.063			●	●	○			○											
	VNGA 332 PQ T0420	VNGA 160408 PQ T01020	T0420	3/8	.031	4	.063																○			
	VNGA 332 PQ S0525	VNGA 160408 PQ S01325	S0525	3/8	.031	4	.063			○	○	●	○	○	○											
	VNGA 332 PQ S0635	VNGA 160408 PQ S01535	S0635	3/8	.031	4	.063			○	○	○	○	○	○	●										
	VNGA 333 PD FNX	VNGA 160412 PD FNX	None	3/8	.047	2	.106																○			
	VNGA 333 PQ S0415	VNGA 160412 PQ S01015	S0415	3/8	.047	4	.106																			
	VNGA 333 PQ T0420	VNGA 160412 PQ T01020	T0420	3/8	.047	4	.106																○			
VNGA 333 PQ S0525	VNGA 160412 PQ S01325	S0525	3/8	.047	4	.106			○	○	○	○	○	○												
VNGA 333 PQ S0635	VNGA 160412 PQ S01535	S0635	3/8	.047	4	.106			○	○	○	○	○	○	●											

Holders → F12 • F13

Insert Item List

[BIDEMICS / CBN / PCD]

80 degree Diamond Positive type(CC..)

(inch)	IC	T
CC..21.5	1/4	3/32
CC..32.5	3/8	5/32

Shape	Item Number	ISO Item Number	IC	R	Carbide										● : 1st Choice ● : Alternate choice			
					PVD Coated											CVD	Diamond Coating	
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1				
					Steel	P	●	●	●	●	●	●	●	●		●	●	●
	CCGT 32.501 YL	CCGT 09T300 YL	3/8	.001														
	CCGT 32.504M YL	CCGT 09T301M YL	3/8	.003	●	●	○	●	○									
	CCGT 32.508M YL	CCGT 09T302M YL	3/8	.007	●	●	○	●	○									
	CCGT 32.51M YL	CCGT 09T304M YL	3/8	.015	●	●	○	●	○									
	CCGT 32.52M YL	CCGT 09T308M YL	3/8	.031	●	●	○	●	○									
	CCGT 21.504M CL	CCGT 060201M CL	1/4	.003	○	○	●	●	○									
	CCGT 21.508M CL	CCGT 060202M CL	1/4	.007	○	○	●	●	○									
	CCGT 32.501 CL	CCGT 09T300 CL	3/8	.001	○	○	●	●	○									
	CCGT 32.504M CL	CCGT 09T301M CL	3/8	.003	○	○	●	●	○									
	CCGT 32.508M CL	CCGT 09T302M CL	3/8	.007	○	○	●	●	○									
	CCGT 21.501 FNAM3	CCGT 060200 FNAM3	1/4	.001			●	●	○	○								
	CCGT 21.504M FNAM3	CCGT 060201M FNAM3	1/4	.003	○		●	●	○									
	CCGT 21.508M FNAM3	CCGT 060202M FNAM3	1/4	.007	○		●	●	○									
	CCGT 21.508 FNAM3	CCGT 060202 FNAM3	1/4	.008						○	○							
	CCGT 21.51M FNAM3	CCGT 060204M FNAM3	1/4	.015	○		●	●	○									
	CCGT 32.501 FNAM3	CCGT 09T300 FNAM3	3/8	.001			●	●	○	○								
	CCGT 32.504M FNAM3	CCGT 09T301M FNAM3	3/8	.003	○		●	●	○	○	○							
	CCGT 32.508M FNAM3	CCGT 09T302M FNAM3	3/8	.007	○		●	●	○	○	○							
	CCGT 32.508 FNAM3	CCGT 09T302 FNAM3	3/8	.008														
	CCGT 32.51M FNAM3	CCGT 09T304M FNAM3	3/8	.015	○		●	●	○	○	○							
	CCGT 32.51 FNAM3	CCGT 09T304 FNAM3	3/8	.016														
	CCGT 32.52 FNAM3	CCGT 09T308 FNAM3	3/8	.031														
	CCMT 21.508 FNAM3	CCMT 060202 FNAM3	1/4	.008		○												
CCMT 21.51 FNAM3	CCMT 060204 FNAM3	1/4	.016		○													
CCMT 32.508 FNAM3	CCMT 09T302 FNAM3	3/8	.008		○													
CCMT 32.51 FNAM3	CCMT 09T304 FNAM3	3/8	.016		○													
CCMT 32.52 FNAM3	CCMT 09T308 FNAM3	3/8	.031		○													
	CCGT 21.501 AZ7	CCGT 060200 AZ7	1/4	.001					○									
	CCGT 21.504M AZ7	CCGT 060201M AZ7	1/4	.003					○									
	CCGT 21.508M AZ7	CCGT 060202M AZ7	1/4	.007					○									
	CCGT 32.501 AZ7	CCGT 09T300 AZ7	3/8	.001		○	○	●	○		○							
	CCGT 32.504M AZ7	CCGT 09T301M AZ7	3/8	.003		○	○	●	○		○							

Holders → Q10
Boring bars → V30

Insert Item List

[Carbide]

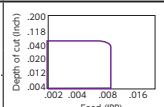
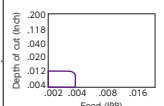
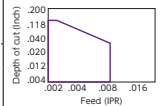
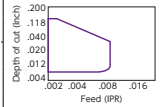
● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R/L) : 1-2 week delivery (Right / Left-hand only)
 (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

80 degree Diamond Positive type (CC.. ,continued)

(inch)	IC	T
CC...21.5	1/4	3/32
CC...32.5	3/8	5/32

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide																																																																																																																																																																																																																																																									
					PVD Coated							CVD	Diamond Coating																																																																																																																																																																																																																																																	
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3			KM1	CP1	UC1																																																																																																																																																																																																																																														
					Steel	P	●	●	●	●	●	●	●	●	●	●	Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	Cast Iron	K										●		Non-Ferrous Material	N						●	●	●	●	●	●	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●																																																																																																																																																																														
	CCGT 21.501	R/4 S	CCGT 060200	R/4 S	1/4 .001			Ⓡ	R		R/L	R/L					CCGT 21.504M	R/4 S	CCGT 060201M	R/4 S	1/4 .003			Ⓡ	R		R/L	R/L							CCGT 21.508	R/4 S	CCGT 060202	R/4 S	1/4 .008			Ⓡ	R		R/L	R/L							CCGT 21.51	R/4 S	CCGT 060204	R/4 S	1/4 .016						R/L	R/L							CCGT 32.501	R/4 S	CCGT 09T300	R/4 S	3/8 .001			R	R	R	R/L	R						CCGT 32.504M	R/4 S	CCGT 09T301M	R/4 S	3/8 .003			R	R	R	R/L	R						CCGT 32.504	R/4 S	CCGT 09T301	R/4 S	3/8 .004			Ⓡ	R	R	R/L	R/L						CCGT 32.508M	R/4 S	CCGT 09T302M	R/4 S	3/8 .007			R	R	R	R/L	R/L						CCGT 32.508	R/4 S	CCGT 09T302	R/4 S	3/8 .008			R	R	R	R/L	R						CCGT 32.51M	R/4 S	CCGT 09T304M	R/4 S	3/8 .015			Ⓡ	Ⓡ	R								CCGT 32.51	R/4 S	CCGT 09T304	R/4 S	3/8 .016			Ⓡ	Ⓡ	R																																																																								
		CCGT 21.501	R/4 U	CCGT 060200	R/4 U	1/4 .001			Ⓡ							Ⓡ	CCGT 21.504	R/4 U	CCGT 060201	R/4 U	1/4 .004			Ⓡ				R/L						CCGT 21.508	R/4 U	CCGT 060202	R/4 U	1/4 .008			Ⓡ					R/L	R/L				CCGT 32.501	R/4 U1	CCGT 09T300	R/4 U1	3/8 .001			Ⓡ					R/L	R/L				CCGT 32.504	R/4 U1	CCGT 09T301	R/4 U1	3/8 .004			Ⓡ					R/L	R/L				CCGT 32.508	R/4 U1	CCGT 09T302	R/4 U1	3/8 .008			Ⓡ					R/L	R/L				CCGT 32.51	R/4 U1	CCGT 09T304	R/4 U1	3/8 .016			Ⓡ					R/L	R/L																																																																																																																																											
			CCET 21.502	R/4 KHG	CCET 0602005	R/4 KHG	1/4 .002										R/L	CCET 21.503	R/4 KHG	CCET 0602008	R/4 KHG	1/4 .003						R/L						CCET 21.507	R/4 KHG	CCET 0602018	R/4 KHG	1/4 .007						R/L						CCET 21.508	R/4 KHG	CCET 060202	R/4 KHG	1/4 .008						R/L						CCET 32.502	R/4 KHG	CCET 09T3005	R/4 KHG	3/8 .002								R/L	R/L				CCET 32.503	R/4 KHG	CCET 09T3008	R/4 KHG	3/8 .003								R/L	R/L				CCET 32.507	R/4 KHG	CCET 09T3018	R/4 KHG	3/8 .007								R/L	R/L				CCET 32.508	R/4 KHG	CCET 09T302	R/4 KHG	3/8 .008								R/L	R/L																																																																																																																												
				CCGT 21.504	F R/4 F1	CCGT 060201	F R/4 F1	1/4 .004		Ⓡ									CCGT 21.508	F R/4 F1	CCGT 060202	F R/4 F1	1/4 .008		Ⓡ										CCGT 21.51	F R/4 F1	CCGT 060204	F R/4 F1	1/4 .016		Ⓡ										CCGT 32.508	F R/4 F1	CCGT 09T302	F R/4 F1	3/8 .008		Ⓡ										CCGT 32.51	F R/4 F1	CCGT 09T304	F R/4 F1	3/8 .016		Ⓡ																																																																																																																																																																																					
					CCGW 21.501	FN	CCGW 060200	FN	1/4 .001										○	CCGW 21.504	FN	CCGW 060201	FN	1/4 .004												CCGW 21.504	H	Ⓜ	CCGW 060201	H	1/4 .004												CCGW 21.508	H	Ⓜ	CCGW 060202	H	1/4 .008												CCGW 21.51	FN	CCGW 060204	FN	1/4 .016												CCGW 21.52	FN	CCGW 060208	FN	1/4 .031										■		CCGW 32.500	V	Ⓜ	CCGW 09T30	V	3/8 .001												CCGW 32.501	FN	Ⓜ	CCGW 09T300	FN	3/8 .001												CCGW 32.501	H	Ⓜ	CCGW 09T300	H	3/8 .001												CCGW 32.504	FN	Ⓜ	CCGW 09T301	FN	3/8 .004												CCGW 32.504	H	Ⓜ	CCGW 09T301	H	3/8 .004												CCGW 32.504	P	Ⓜ	CCGW 09T301	P	3/8 .004												CCGW 32.508M	P	Ⓜ	CCGW 09T302M	P	3/8 .007			○									CCGW 32.508	H	Ⓜ	CCGW 09T302	H	3/8 .008												CCGW 32.508	P	Ⓜ	CCGW 09T302	P	3/8 .008											



Holders → Q10

Boring bars → V30

Insert Item List

[Carbide]

80 degree Diamond Negative type (CN..)

(inch)	IC	T
CN..43	1/2	3/16

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	Graph		
					PVD Coated														
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	
					Carbide														
					PVD Coated														
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
	CNMG 432 G	CNMG 120408 G	1/2	.031															
	CNMG 433 G	CNMG 120412 G	1/2	.047															
	CNMG 434 G	CNMG 120416 G	1/2	.063															
	CNGG 431 FNUL	CNGG 120404 FNUL	1/2	.016		●		●	○										
	CNGG 432 FNUL	CNGG 120408 FNUL	1/2	.031		●		●	○										
	CNMG 432 Z5	CNMG 120408 TNBZ5	1/2	.031		○		○											
	CNGG 431 FNZP	CNGG 120404 FNZP	1/2	.016		●		●		●									
	CNGG 432 FNZP	CNGG 120408 FNZP	1/2	.031		●		●		●									
	CNMG 431 FNZP	CNMG 120404 FNZP	1/2	.015												●			
	CNMG 432 FNZP	CNMG 120408 FNZP	1/2	.031												●			

Holders → F6 • F7 • Q38 Boring bars → G5

80 degree Diamond Positive type (CP..)

(inch)	IC	T
CP..21.5	1/4	3/32
CP..2.51.5	5/16	3/32
CP..32.5	3/8	5/32
CP..62	.187	5/32

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	Graph	
					PVD Coated													
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1				
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	
					Carbide													
					PVD Coated													
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1				
	CPGH 21.508 FNAM5	CPGH 060202 FNAM5	1/4	.008					○		○							
	CPGP 2.51.508 FNAM5	CPGP 080202 FNAM5	5/16	.008					○		○							
	CPGM 3208 FNAM5	CPGM 090302 FNAM5	3/8	.008					○		○							
	CPGM 321 FNAM5	CPGM 090304 FNAM5	3/8	.016					○		○							
	CPGM 322 FNAM5	CPGM 090308 FNAM5	3/8	.031					○		○							
	CPGP 6208 F ^{R/L} A1	CPGH 040102 F ^{R/L} A1	.187	.008					○		○							
	CPGP 621 F ^{R/L} A1	CPGH 040104 F ^{R/L} A1	.187	.016					○		○							
	CPGP 21.508 F ^{R/L} A	CPGH 060202 F ^{R/L} A	1/4	.008					○		○							
	CPGP 21.51 F ^{R/L} A	CPGH 060204 F ^{R/L} A	1/4	.016					○		○							
	CPGH 2.51.508 F ^{R/L} A	CPGH 080202 F ^{R/L} A	5/16	.008					○		○							
	CPGH 2.51.51 F ^{R/L} A	CPGH 080204 F ^{R/L} A	5/16	.016					○		○							
	CPGP 6204 F ^{R/L} F1	CPGH 040101 F ^{R/L} F1	.187	.004	R			○	R									
	CPGP 6208 F ^{R/L} F1	CPGH 040102 F ^{R/L} F1	.187	.008	R			○	R									
	CPGP 621 F ^{R/L} F1	CPGH 040104 F ^{R/L} F1	.187	.016	R			○	R									
	CPGP 21.508 F ^{R/L} F1	CPGH 060202 F ^{R/L} F1	1/4	.008	R			○	R									
	CPGP 21.51 F ^{R/L} F1	CPGH 060204 F ^{R/L} F1	1/4	.016	R			○	R									
	CPGP 6204 F ^{R/L} S	CPGH 040101 F ^{R/L} S	.187	.004				○	○									
	CPGP 6208 F ^{R/L} S	CPGH 040102 F ^{R/L} S	.187	.008				○	○									
	CPGP 621 F ^{R/L} S	CPGH 040104 F ^{R/L} S	.187	.016				○	○									
	CPGP 21.508 F ^{R/L} S	CPGH 060202 F ^{R/L} S	1/4	.008				○	○									
	CPGP 21.51 F ^{R/L} S	CPGH 060204 F ^{R/L} S	1/4	.016				○	○									

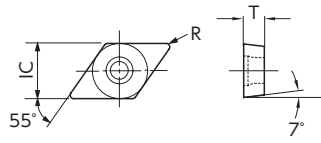
Boring bars → V24

● : Stock ● : Stock (Newly added) ■ □ □ □ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through (R/L) : 1-2 week delivery (Right / Left-hand only) (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

55 degree Diamond Positive type (DC..)

(inch)	IC	T
DC...21.5	1/4	3/32
DC...32.5	3/8	5/32

● : 1st Choice ● : 2nd choice

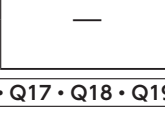
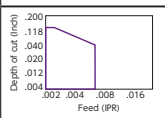
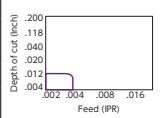
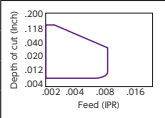
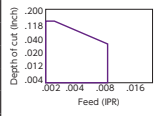
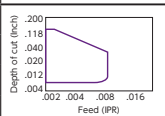
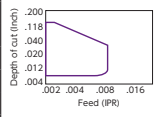


Shape	Item Number	ISO Item Number	IC	R	Carbide											Depth of cut (inch) Feed (IPR)		
					PVD Coated							CVD	Diamond Coating					
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3			KM1	CP1		UC1	
	DCGT 21.504M YL	DCGT 070201M YL	1/4	.003	●	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 21.508M YL	DCGT 070202M YL	1/4	.007	●	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 21.51M YL	DCGT 070204M YL	3/8	.015	●	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 32.501 YL	DCGT 11T300 YL	3/8	.001	●	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 32.504M YL	DCGT 11T301M YL	3/8	.003	●	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 32.508M YL	DCGT 11T302M YL	3/8	.007	●	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 32.51M YL	DCGT 11T304M YL	3/8	.015	●	●	●	●	●	●	●	●	●	●	●	●		
DCGT 32.52M YL	DCGT 11T308M YL	3/8	.031	●	●	●	●	●	●	●	●	●	●	●	●			
	DCGT 21.501 FNAM3	DCGT 070200 FNAM3	1/4	.001	○		●	●	○	○	○							
	DCGT 21.504M FNAM3	DCGT 070201 MFNAM3	1/4	.003	○		●	●	○	○	○							
	DCGT 21.504 FNAM3	DCGT 070201 FNAM3	1/4	.004	○		●	●	○	○	○							
	DCGT 21.508M FNAM3	DCGT 070202 MFNAM3	1/4	.007	○		●	●	○	○	○							
	DCGT 21.508 FNAM3	DCGT 070202 FNAM3	1/4	.008	○		●	●	○	○	○							
	DCGT 21.51M FNAM3	DCGT 070204 MFNAM3	1/4	.015	○		●	●	○	○	○							
	DCGT 21.51 FNAM3	DCGT 070204 FNAM3	1/4	.016	○		●	●	○	○	○							
	DCGT 32.501 FNAM3	DCGT 11T300 FNAM3	3/8	.001	○		●	●	○	○	○	●						
	DCGT 32.504M FNAM3	DCGT 11T301 MFNAM3	3/8	.003	○		●	●	○	○	○	○						
	DCGT 32.508M FNAM3	DCGT 11T302 MFNAM3	3/8	.007	○		●	●	○	○	○	○						
	DCGT 32.508 FNAM3	DCGT 11T302 FNAM3	3/8	.008	○		●	●	○	○	○	○						
	DCGT 32.51M FNAM3	DCGT 11T304 MFNAM3	3/8	.015	○		●	●	○	○	○	○						
	DCGT 32.51 FNAM3	DCGT 11T304 FNAM3	3/8	.016	○		●	●	○	○	○	○						
	DCGT 32.52 FNAM3	DCGT 11T308 FNAM3	3/8	.031	○		●	●	○	○	○	○						
DCMT 21.508 FNAM3	DCMT 070202 FNAM3	1/4	.008		○											●		
DCMT 21.51 FNAM3	DCMT 070204 FNAM3	1/4	.016		○											●		
DCMT 32.504 FNAM3	DCMT 11T301 FNAM3	3/8	.004													●		
DCMT 32.508 FNAM3	DCMT 11T302 FNAM3	3/8	.008													●		
DCMT 32.51 FNAM3	DCMT 11T304 FNAM3	3/8	.016													●		
DCMT 32.52 FNAM3	DCMT 11T308 FNAM3	3/8	.031													●		
	DCGT 32.502 AM3-WP*	TFD 11FR05AM3	3/8	.002			●	○										
	DCGT 32.506 AM3-WP*	TFD 11FR15AM3	3/8	.006			●	○										
	DCGT 21.504M CL	DCGT 070201M CL	1/4	.003	○	○	●	○	○									
	DCGT 21.508M CL	DCGT 070202M CL	1/4	.007	○	○	●	○	○									
	DCGT 21.51M CL	DCGT 070204M CL	1/4	.015	○	○	●	○	○									
	DCGT 32.504M CL	DCGT 11T301M CL	3/8	.003	○	○	●	○	○									
	DCGT 32.508M CL	DCGT 11T302M CL	3/8	.007	○	○	●	○	○									
DCGT 32.51M CL	DCGT 11T304M CL	3/8	.015	○	○	●	○	○										
	DCGT 21.504M AMX	DCGT 070201M AMX	1/4	.003		○	○		●									
	DCGT 21.508M AMX	DCGT 070202M AMX	1/4	.007		○	○		●									
	DCGT 21.51M AMX	DCGT 070204M AMX	1/4	.015		○	○		●									
	DCGT 32.504M AMX	DCGT 11T301M AMX	3/8	.003		●	○		○									
	DCGT 32.508M AMX	DCGT 11T302M AMX	3/8	.007		●	○		○									
DCGT 32.51M AMX	DCGT 11T304M AMX	3/8	.015		●	○		○										
	DCGT 21.501 AZ7	DCGT 070200 AZ7	1/4	.001				○										
	DCGT 21.504M AZ7	DCGT 070201M AZ7	1/4	.003				○										
	DCGT 21.508M AZ7	DCGT 070202M AZ7	1/4	.007				○										
	DCGT 32.501 AZ7	DCGT 11T300 AZ7	3/8	.001			○	●	○		○							
	DCGT 32.504M AZ7	DCGT 11T301M AZ7	3/8	.003			○	●	○		○							
	DCGT 32.508M AZ7	DCGT 11T302M AZ7	3/8	.007			○	●	○		○							
	DCGT 32.51M AZ7	DCGT 11T304M AZ7	3/8	.015			○	●	○		○							
DCGT 32.52 AZ7	DCGT 11T308 AZ7	3/8	.031			○	●	○		○								

Holders → Q16 • Q17 • Q18 • Q19

● : 1st Choice ● : 2nd choice

				Steel	P												
				Stainless Steel	M												
				Cast Iron	K												
				Non-Ferrous Material	N												
				Heat Resistant Alloy	S												
				Hardened Material	H												
Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	
					PVD Coated												
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1			
	DCGT 21.501 $R\frac{1}{4}S$	DCGT 070200 $\frac{1}{4}S$	1/4	.001													
	DCGT 21.504M $R\frac{1}{4}S$	DCGT 070201M $\frac{1}{4}S$	1/4	.003													
	DCGT 21.504 $R\frac{1}{4}S$	DCGT 070201 $\frac{1}{4}S$	1/4	.004													
	DCGT 21.508M $R\frac{1}{4}S$	DCGT 070202M $\frac{1}{4}S$	1/4	.007													
	DCGT 21.508 $R\frac{1}{4}S$	DCGT 070202 $\frac{1}{4}S$	1/4	.008													
	DCGT 21.51 $R\frac{1}{4}S$	DCGT 070204 $\frac{1}{4}S$	1/4	.016													
	DCGT 32.501 $R\frac{3}{8}S$	DCGT 11T300 $\frac{3}{8}S$	3/8	.001													
	DCGT 32.504M $R\frac{3}{8}S$	DCGT 11T301M $\frac{3}{8}S$	3/8	.003													
	DCGT 32.504 $R\frac{3}{8}S$	DCGT 11T301 $\frac{3}{8}S$	3/8	.004													
	DCGT 32.508M $R\frac{3}{8}S$	DCGT 11T302M $\frac{3}{8}S$	3/8	.007													
	DCGT 32.508 $R\frac{3}{8}S$	DCGT 11T302 $\frac{3}{8}S$	3/8	.008													
	DCGT 32.51M $R\frac{3}{8}S$	DCGT 11T304M $\frac{3}{8}S$	3/8	.015													
DCGT 32.51 $R\frac{3}{8}S$	DCGT 11T304 $\frac{3}{8}S$	3/8	.016														
	DCGT 21.502 $R\frac{1}{4}S-WP*$	TFD 07F $\frac{1}{4}05$	1/4	.002													
	DCGT 21.506 $R\frac{1}{4}S-WP*$	TFD 07F $\frac{1}{4}15$	1/4	.006													
	DCGT 32.502 $R\frac{3}{8}S-WP*$	TFD 11F $\frac{3}{8}05$	3/8	.002													
	DCGT 32.506 $R\frac{3}{8}S-WP*$	TFD 11F $\frac{3}{8}15$	3/8	.006													
	DCGT 21.501 $R\frac{1}{4}U$	DCGT 070200 $\frac{1}{4}U$	1/4	.001													
	DCGT 21.504 $R\frac{1}{4}U$	DCGT 070201 $\frac{1}{4}U$	1/4	.004													
	DCGT 21.508 $R\frac{1}{4}U$	DCGT 070202 $\frac{1}{4}U$	1/4	.008													
	DCGT 32.501 $R\frac{3}{8}U1$	DCGT 11T300 $\frac{3}{8}U1$	3/8	.001													
	DCGT 32.504 $R\frac{3}{8}U1$	DCGT 11T301 $\frac{3}{8}U1$	3/8	.004													
	DCGT 32.508 $R\frac{3}{8}U1$	DCGT 11T302 $\frac{3}{8}U1$	3/8	.008													
	DCGT 21.502 $R\frac{1}{4}U-WP*$	TFD 07F $\frac{1}{4}05U$	1/4	.002													
	DCGT 21.506 $R\frac{1}{4}U-WP*$	TFD 07F $\frac{1}{4}15U$	1/4	.006													
	DCGT 32.502 $R\frac{3}{8}U1-WP*$	TFD 11F $\frac{3}{8}05U1$	3/8	.002													
	DCGT 32.506 $R\frac{3}{8}U1-WP*$	TFD 11F $\frac{3}{8}15U1$	3/8	.006													
	DCET 21.502 $R\frac{1}{4}KHG$	DCET 0702005 $\frac{1}{4}KHG$	1/4	.002													
	DCET 21.503 $R\frac{1}{4}KHG$	DCET 0702008 $\frac{1}{4}KHG$	1/4	.003													
	DCET 21.507 $R\frac{1}{4}KHG$	DCET 0702018 $\frac{1}{4}KHG$	1/4	.007													
	DCET 21.508 $R\frac{1}{4}KHG$	DCET 070202 $\frac{1}{4}KHG$	1/4	.008													
	DCET 32.502 $R\frac{3}{8}KHG$	DCET 11T3005 $\frac{3}{8}KHG$	3/8	.002													
	DCET 32.503 $R\frac{3}{8}KHG$	DCET 11T3008 $\frac{3}{8}KHG$	3/8	.003													
	DCET 21.503 UHG	DCET 0702008 $\frac{1}{4}UHG$	1/4	.003													
	DCET 32.503 UHG	DCET 11T3008 $\frac{3}{8}UHG$	3/8	.003													
	DCGW 21.500 V	DCGW 07020 V	1/4	.001													
	DCGW 21.501 FN	DCGW 070200 FN	1/4	.001													
	DCGW 21.501 H	DCGW 070200 H	1/4	.001													
	DCGW 21.504 FN	DCGW 070201 FN	1/4	.004													
	DCGW 21.504 H	DCGW 070201 H	1/4	.004													
	DCGW 21.508 H	DCGW 070202 H	1/4	.008													
	DCGW 32.500 V	DCGW 11T30 V	3/8	.001													
	DCGW 32.501 FN	DCGW 11T300 FN	3/8	.001													
	DCGW 32.501 H	DCGW 11T300 H	3/8	.001													
	DCGW 32.504 FN	DCGW 11T301 FN	3/8	.004													
	DCGW 21.502RH-WP* M	TFD 07FR05H	1/4	.002													
	DCGW 32.502RH-WP* M	TFD 11FR05H	3/8	.006													

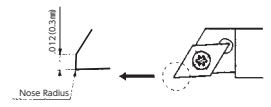


Insert Item List

[Carbide]

Holders → Q16 • Q17 • Q18 • Q19

*Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.3mm (.012") flat on the cutting edge when the insert is set into the toolholder.
The flat on the cutting edge ensures a superior surface when feed rates are increased.
WP style inserts can be used in toolholders: SDJC, CH-SDUL and DS-SDUL.



● : Stock ● : Stock (Newly added) ■ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) M : Mirror finish ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through (R)L : 1-2 week delivery (Right / Left-hand only) (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

55 degree Diamond Negative type (DN..)

(inch)	IC	T
DN..43	1/2	3/16

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating	Graph			
					PVD Coated																
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1							
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●			
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●			
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●			
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●			
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●			
	DNMG 431 G	DNMG 150404 G	1/2	.016	●	●	●	●	●	●	●	●	●	●	●	●	●				
	DNMG 432 G	DNMG 150408 G	1/2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●				
	DNMG 433 G	DNMG 150412 G	1/2	.047	●	●	●	●	●	●	●	●	●	●	●	●	●				
	DNMG 431 G	DNMG 150404 TNG	1/2	.016	●	●	●	○	●	●	●	●	●	●	●	●	●				
	DNMG 432 Z5	DNMG 150408 TNBZ5	1/2	.031	●	○	●	○	●	●	●	●	●	●	●	●	●				
	DNGG 431 FNZP	DNGG 150404 FNZP	1/2	.016	●	●	●	●	●	●	●	●	●	●	●	●	●				
	DNGG 432 FNZP	DNGG 150408 FNZP	1/2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●				

Holders → F8 • F9 • Q40

Boring bars → G5

Insert Item List

[Carbide]

75 degree Diamond Positive type (ER..)

(inch)	IC	T
ER..52	5/32	.063

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	
					PVD Coated												
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1			
	Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	ERGP 52Y F $\frac{R}{L}$ A2	ERGHT 30102 F $\frac{R}{L}$ A2	5/32	.008					R L	R L	R L						
	ERGP 521 F $\frac{R}{L}$ A2	ERGHT 30104 F $\frac{R}{L}$ A2	5/32	.016					R L		L						
	ERGP 5204 F $\frac{R}{L}$ F1	ERGHT 30101 F $\frac{R}{L}$ F1	5/32	.004	Ⓡ				R								
	ERGP 52Y F $\frac{R}{L}$ F1	ERGHT 30102 F $\frac{R}{L}$ F1	5/32	.008	Ⓡ				R								
	ERGP 521 F $\frac{R}{L}$ F1	ERGHT 30104 F $\frac{R}{L}$ F1	5/32	.016	Ⓡ				R								

Holders → V23

90 degree Square Negative type (SN..)

(inch)	IC	T
SN..43	1/2	3/16

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	
					PVD Coated												
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1			
	Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	SNMG 432 G	SNMG 120408 G	1/2	.031										○			
	SNMG 433 G	SNMG 120412 G	1/2	.047										●			
	SNMG 434 G	SNMG 120416 G	1/2	.063										○			
	SNMG 432 Z5	SNMG 120408 ENBZ5	1/2	.031		○		○									

Holders → F11

Boring bars → G6

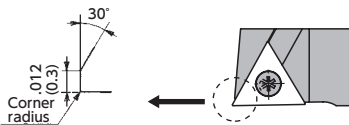
60 degree Triangle Positive type (TC..)

(inch)	IC	T
TC..21	1/4	3/32
TC..52	5/32	1/16
TC..73	7/32	3/32

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										Graph				
					PVD Coated											CVD	Diamond Coating		
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
					Steel	P	●	●	●	●	●	●	●	●	●	●	●		
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●		
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●		
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●		
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●		
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●		
	TCGT 7304 R ₁ /4 S	TCGT 090201 R ₁ /4 S	7/32	.004								(R/L)	(R)						
	TCGT 7308 R ₁ /4 S	TCGT 090202 R ₁ /4 S	7/32	.008									(R)						
	TCGT 21.504 R ₁ /4 S	TCGT 110201 R ₁ /4 S	1/4	.004								(R/L)	(R)						
	TCGT 7302 R ₁ /4 S-WP*	TFT 09F R ₁ /4 05	7/32	.002									(R)						
	TCGT 7306 R ₁ /4 S-WP*	TFT 09F R ₁ /4 15	7/32	.006									(R)						
	TCGT 21.502 R ₁ /4 S-WP*	TFT 11F R ₁ /4 05	1/4	.002									(R)						
	TCGT 21.506 R ₁ /4 S-WP*	TFT 11F R ₁ /4 15	1/4	.006									(R)						
	TCGT 7304 R ₁ /4 U	TCGT 090201 R ₁ /4 U	7/32	.004									(R)						
	TCGT 7308 R ₁ /4 U	TCGT 090202 R ₁ /4 U	7/32	.008									(R)						
	TCGT 7302 R ₁ /4 U-WP*	TFT 09F R ₁ /4 05 U	7/32	.002									(R)						
	TCGT 7306 R ₁ /4 U-WP*	TFT 09F R ₁ /4 15 U	7/32	.006									(R)						
	TCGT 21.502 R ₁ /4 U1-WP*	TFT 11F R ₁ /4 05 U1	1/4	.002									(R)						
	TCGT 21.506 R ₁ /4 U1-WP*	TFT 11F R ₁ /4 15 U1	1/4	.006									(R)						
	TCGH 5204 T R ₁ /4 B1	TCGH 060101 T R ₁ /4 B1	5/32	.004															
	TCGH 5208 F R ₁ /4 B1	TCGH 060102 F R ₁ /4 B1	5/32	.008						(L)			(L)						
	TCGH 5208 T R ₁ /4 B1	TCGH 060102 T R ₁ /4 B1	5/32	.008						(L)			(L)						
	TCGH 521 F R ₁ /4 B1	TCGH 060104 F R ₁ /4 B1	5/32	.016						(L)			(L)						
	TCGH 521 T R ₁ /4 B1	TCGH 060104 T R ₁ /4 B1	5/32	.016						(L)			(L)						
	TCGP 5204 F R ₁ /4 F05	TCGH 060101 F R ₁ /4 F05	5/32	.004	(R)					(R)	R								
	TCGP 5208 F R ₁ /4 F05	TCGH 060102 F R ₁ /4 F05	5/32	.008	(R)					(R)	R(L)	(R)	(R/L)						
	TCGP 521 F R ₁ /4 F05	TCGH 060104 F R ₁ /4 F05	5/32	.016	(R)					(R)	R	(R)	(R)						
	TCGH 5208 F R ₁ /4 K	TCGH 060102 F R ₁ /4 K	5/32	.008						(L)									
	TCGH 521 F R ₁ /4 K	TCGH 060104 F R ₁ /4 K	5/32	.016						(L)									
	TCGW 7301 FN	TCGW 090200 FN	7/32	.001															
	TCGW 7304 FN	TCGW 090201 FN	7/32	.004															
	TCGW 21.501 FN	TCGW 110200 FN	1/4	.001															
	TCGW 21.504 FN	TCGW 110201 FN	1/4	.004															

Holders (TC52) → V25



* Note: NTK WP style inserts have a wiper facet design.
 The insert has a 0.3mm (.012") flat on the cutting edge when the insert is set into the toolholder.
 The flat on the cutting edge ensures a superior surface when feed rates are increased.
 WP style inserts can be used in toolholders: STAC

60 degree Triangle Negative type (TN..)

(inch)	IC	T
TN..33	3/8	3/16

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide											Depth of cut (inch) Feed (IPR)					
					PVD Coated								CVD	Diamond Coating							
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1			CP1		UC1				
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●		
	TNEG 3308 F 3/4 D1	TNEG 160402 F 3/4 D1	3/8	.008						(R)L											
	TNEG 331 F 3/4 D1	TNEG 160404 F 3/4 D1	3/8	.016						(R)L											
	TNEG 332 F 3/4 D1	TNEG 160408 F 3/4 D1	3/8	.031						(R)L											
	TNGG 3308 F 3/4 C	TNGG 160402 F 3/4 C	3/8	.008							(R)										
	TNGG 3304 F 3/4 DA	TNGG 160401 F 3/4 DA	3/8	.004						(R)	(R)										
	TNGG 3304 F 3/4 U2	TNGG 160401 F 3/4 U2	3/8	.004						(R)	(R)										
	TNGG 3308 F 3/4 U2	TNGG 160402 F 3/4 U2	3/8	.008		(R)L					(R)L										
	TNGG 331 F 3/4 U2	TNGG 160404 F 3/4 U2	3/8	.016		(R)L					(R)L										
	TNGG 332 F 3/4 U2	TNGG 160408 F 3/4 U2	3/8	.031		(R)L					(R)L										
	TNGG 3304M FNUL	TNGG 160401M FNUL	3/8	.004																	
	TNGG 3308M FNUL	TNGG 160402M FNUL	3/8	.008																	
	TNGG 331M FNUL	TNGG 160404M FNUL	3/8	.016																	
	TNGG 332M FNUL	TNGG 160408M FNUL	3/8	.031																	
	TNGG 3308 FNZP	TNGG 160402 FNZP	3/8	.008																	
	TNGG 331 FNZP	TNGG 160404 FNZP	3/8	.016																	
	TNGG 332 FNZP	TNGG 160408 FNZP	3/8	.031																	
	TNMG 3308 FNZP	TNMG 160402 FNZP	3/8	.008														●			
	TNMG 331 FNZP	TNMG 160404 FNZP	3/8	.016														●			
	TNMG 332 FNZP	TNMG 160408 FNZP	3/8	.031														●			
	TNMG 332 G	TNMG 160408 G	3/8	.031														○			
	TNMG 333 G	TNMG 160412 G	3/8	.047														●			
	TNMG 331 Z5	TNMG 160404 TNBZ5	3/8	.016																	
	TNMG 332 Z5	TNMG 160408 TNBZ5	3/8	.031																	

Holders → F14 • Q34

Insert Item List

[Carbide]

60 degree Triangle Positive type (TP..)

(inch)	IC	T	(inch)	IC	T
TP..22	1/4	1/8	TP..63	3/16	3/32
			TP..73	7/32	3/32

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating	Graphs/Notes		
					PVD Coated							KM1	CP1	UC1						
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3									
	TPGH 6308 F $\frac{3}{8}$ B3	TPGH 08020 F $\frac{3}{8}$ B3	3/16	.008	●	●	●	●	●	●	●	●	●	●	●	●	●			
	TPGH 631 F $\frac{3}{8}$ B3	TPGH 080204 F $\frac{3}{8}$ B3	3/16	.016						●		●								
	TPGH 7308 F $\frac{3}{8}$ B2	TPGH 090202 F $\frac{3}{8}$ B2	7/32	.008						●		●								
	TPGH 731 F $\frac{3}{8}$ B2	TPGH 090204 F $\frac{3}{8}$ B2	7/32	.016						●		●								
	TPGH 732 $\frac{3}{8}$ B2	TPGH 090208 F $\frac{3}{8}$ B2	7/32	.031						●		●								
	TPGH 6308 F $\frac{3}{8}$ F1	TPGH 080202 F $\frac{3}{8}$ F1	3/16	.008						●		●							 	
	TPGH 631 F $\frac{3}{8}$ F1	TPGH 080204 F $\frac{3}{8}$ F1	3/16	.016						●		●								
	TPGH 7304 F $\frac{3}{8}$ F1	TPGH 090201 F $\frac{3}{8}$ F1	7/32	.004	●					●										
	TPGH 7308 F $\frac{3}{8}$ F1	TPGH 090202 F $\frac{3}{8}$ F1	7/32	.008	●					●										
	TPGH 731 F $\frac{3}{8}$ F1	TPGH 090204 F $\frac{3}{8}$ F1	7/32	.016	●					●										
	TPGH 732 F $\frac{3}{8}$ F1	TPGH 090208 F $\frac{3}{8}$ F1	7/32	.031	●					●										
	TPMH 2208 F $\frac{3}{8}$ F1	TPMH 110302 FRF1	1/4	.008													●			
	TPMH 221 F $\frac{3}{8}$ F1	TPMH 110304 FRF1	1/4	.016													●			
	TPGP 7308 $\frac{3}{8}$ FG	TPGH 090202 $\frac{3}{8}$ FG	7/32	.008	●					●									 	
	TPGP 731 $\frac{3}{8}$ FG	TPGH 090204 $\frac{3}{8}$ FG	7/32	.016	●					●										
	TPGH 2208 $\frac{3}{8}$ FG	TPGH 110302 $\frac{3}{8}$ FG	1/4	.008	●					●										
	TPGH 221 $\frac{3}{8}$ FG	TPGH 110304 $\frac{3}{8}$ FG	1/4	.016	●					●										
	TPGP 7308 F $\frac{3}{8}$ K	TPGH 090202 F $\frac{3}{8}$ K	1/4	.008						●									 	
	TPGP 7318 F $\frac{3}{8}$ K	TPGH 090204 F $\frac{3}{8}$ K	1/4	.016						●										
	TPGP 7328 F $\frac{3}{8}$ K	TPGH 090208 F $\frac{3}{8}$ K	1/4	.031						●										

Boring bars (TPGH73) → V26
 Boring bars (TPGH22) → V28

35 degree Diamond Positive type (VB..)

(inch)	IC	T
VB..33	3/8	3/16

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating	Graphs/Notes	
					PVD Coated							KM1	CP1	UC1					
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3								
	VBGT 3308 FNYL	VBGT 160402 FNYL	3/8	.008	○	●				○									
	VBGT 331 FNYL	VBGT 160404 FNYL	3/8	.016	○	●				○									
	VBGT 332 FNYL	VBGT 160408 FNYL	3/8	.031	○	●				○									

Holders (VBGW33) → Q23

Holders (VBGT22) → Q24 · Q25 · Q26

35 degree Diamond Positive type (VC..)

(inch)	IC	T
VC..21	1/4	3/32
VC..22	1/4	1/8

● : 1st Choice ● : 2nd choice

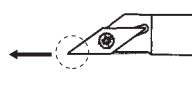
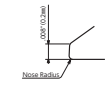
Shape	Item Number	ISO Item Number	IC	R	Carbide										Graph				
					PVD Coated											CVD	Diamond Coating		
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●		
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●		
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●		
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●		
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●		
		VCGT 21.508 MCL	VCGT 110202 MCL	1/4	.007		○	○	○	○									
		VCET 2203 3/4 UHG	VCET 1103008 3/4 UHG	1/4	.003						Ⓡ								
		VCGT 2204M YL	VCGT 110301M YL	1/4	.003	●	●	○	●	○									
		VCGT 2208M YL	VCGT 110302M YL	1/4	.007	●	●	○	●	○									
		VCGT 221M YL	VCGT 110304M YL	1/4	.015	●	●	○	●	○									
		VCGT 2204M CL	VCGT 110301M CL	1/4	.003	○	○	●	○	●									
		VCGT 2208M CL	VCGT 110302M CL	1/4	.007	○	○	●	○	●									
		VCGT 2201 FNAM3	VCGT 110300 FNAM3	1/4	.001			●	●	○	●	■							
		VCGT 2204M FNAM3	VCGT 110301M FNAM3	1/4	.003	○		●	●	○	●	○							
		VCGT 2204 FNAM3	VCGT 110301 FNAM3	1/4	.004			●	●	○	●	○							
		VCGT 2208M FNAM3	VCGT 110302M FNAM3	1/4	.007	○		●	●	○	●	○							
		VCGT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008			●	●	○	●	○							
		VCGT 221M FNAM3	VCGT 110304M FNAM3	1/4	.015	○		●	●	○	●	○							
		VCMT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008		○												
		VCMT 221 FNAM3	VCGT 110304 FNAM3	1/4	.016		○												
		VCGT 2201 AZ7	VCGT 110300 AZ7	1/4	.001			●	●	○	●	○							
		VCGT 2204M AZ7	VCGT 110301M AZ7	1/4	.003			●	●	○	●	○							
		VCGT 2208M AZ7	VCGT 110302M AZ7	1/4	.007			●	●	○	●	○							
		VCGT 221M AZ7	VCGT 110304M AZ7	1/4	.015			●	●	○	●	○							
		VCGT 2202 3/4 S-WP*	TFV 11F 3/4 05SX	1/4	.002						R	Ⓡ							
wiper insert		VCGT 2204 3/4 S-WP*	TFV 11F 3/4 10SX	1/4	.004						R	Ⓡ							
		VCGT 2201 3/4 U	VCGT 110300 3/4 U	1/4	.001						Ⓡ	Ⓡ							
		VCGT 2204M 3/4 U	VCGT 110301M 3/4 U	1/4	.003						Ⓡ	Ⓡ							
		VCGT 2204 3/4 U	VCGT 110301 3/4 U	1/4	.004						Ⓡ	Ⓡ							
		VCGT 2208M 3/4 U	VCGT 110302M 3/4 U	1/4	.007						Ⓡ	Ⓡ							
		VCGT 2208 3/4 U	VCGT 110302 3/4 U	1/4	.008						Ⓡ	Ⓡ							
		VCGT 2202 3/4 U-WP*	TFV 11F 3/4 05U	1/4	.002						Ⓡ	Ⓡ							
wiper insert		VCGT 2204 3/4 U-WP*	TFV 11F 3/4 10U	1/4	.004						Ⓡ	Ⓡ							
		VCGW 2201 H	VCGW 110300 H	1/4	.001								●						
		VCGW 2204 H	VCGW 110301 H	1/4	.004								●						
		VCGW 2208 H	VCGW 110302 H	1/4	.008								●						

*Note: NTK WP style inserts have a wiper facet design. The insert has a 0.2mm (.008") flat on the cutting edge when the insert is set into the toolholder. The flat on the cutting edge ensures a superior surface when feed rates are increased. WP style inserts can be used in toolholders: SVAC

HOLDERS → Q26 • Q27 • Q28

Insert Item List

[Carbide]



Carbide

35 degree Diamond type (VN.. / VP..)

(inch)	IC	T
VN..33	3/8	3/16
VP..08	3/16	3/32
VP..22	1/4	1/8

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide											Graph			
					PVD Coated									CVD	Diamond Coating				
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1				UC1		
	VN__		VP__	Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	
				Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	
				Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	
				Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	
				Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	
	VNMG 331	AM1	3/8	.016		○		○											
	VNMG 332	AM1	3/8	.031		○		○											
	VNMG 331	G	3/8	.016										○					
	VNMG 332	G	3/8	.031										○					
	VNMG 333	G	3/8	.047										○					
	VPET 080205	1/4 KHG	1/4	.002					Ⓡ	ⓇL									
	VPET 080208	1/4 KHG	1/4	.003					Ⓡ	ⓇL									
	VPET 0802018	1/4 KHG	1/4	.007					Ⓡ	ⓇL									
	VPET 080202	1/4 KHG	1/4	.008					Ⓡ	ⓇL									
	VPET 2202	1/4 KHG	1/4	.002					Ⓡ	ⓇL									
	VPET 2203	1/4 KHG	1/4	.003					Ⓡ	ⓇL									
	VPET 2207	1/4 KHG	1/4	.007					Ⓡ	ⓇL									
	VPET 2208	1/4 KHG	1/4	.008					Ⓡ	ⓇL									
	VPET 0802008	1/4 UHG	1/4	.003					ⓇL										
	VPGT 2201	1/4 FNAM3	1/4	.001					●	○									
	VPGT 2204M	1/4 FNAM3	1/4	.003					○	●									
	VPGT 2208M	1/4 FNAM3	1/4	.007					○	●									

Holders (VN) → F12 • F13 Holders (VP) → Q29 • Q30

80 degree Hexagon type (WN..)

(inch)	IC	T
WN..43	1/2	3/16

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide											Graph		
					PVD Coated									CVD	Diamond Coating			
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1				UC1	
	WNMG 432	G	1/2	.031														
	WNMG 433	G	1/2	.047														
	WNMG 432	Z5	1/2	.031		○		○										
	WNMG 433	Z5	1/2	.047		○		○										
	WNGG 431	FNZP	1/2	.016		●		●										
	WNGG 432	FNZP	1/2	.031		●		●										
	WNGG 431	FNUL	1/2	.016		●		○	○									
	WNGG 432	FNUL	1/2	.031		●		○	○									

Holders (WN) → F15 Boring bars (WN) → G6

Insert Item List

[Carbide]

F



General Turning Toolholders

- Holder Identification System..... F2
- Selection Guide F4
- For CN.. Inserts F6
- For DN.. Inserts F8
- For SN.. Inserts F10
- For VN.. Inserts F12
- For TN.. Inserts F14
- For WN.. Inserts..... F15
- For RN.. Inserts F16
- For CDH.. Inserts F17
- For RCGX / RPGX.. Inserts F18

General Turning Toolholders








Holder Identification System

1 Clamping System

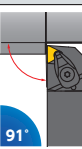

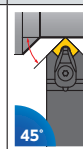

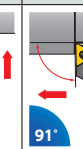
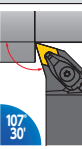


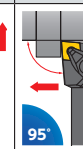


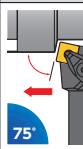
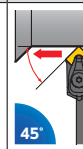
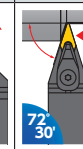
B) Clamp-on
 C)
 V)

W Multi-clamp
 P Lever-lock
 H Bolt-clamp
 S Screw-on

2 Insert Shape

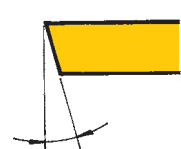
C  80° Diamond	D  55° Diamond	R  Round	S  Square
T  Triangular	V  35° Diamond	W  Trigon	

3 Approach Angle

A  91°	B  75°	D  45°	F  91°	G  91°
H  107°/30°	J  93°	K  75°	L  95°	N  62°/30°
P  117°/30°	R  75°	S  45°	V  72°/30°	X Special Design

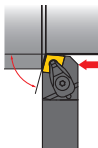
1 C **2** C **3** L **4** N **5** R **6** 16 - **7** 5 **8** D

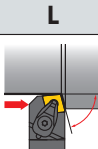
4 Insert Relief Angle

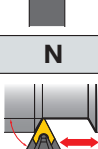


N : 0°
 B : 5°
 C : 7°
 P : 11°
 D : 15°
 E : 20°

5 Hand of Tool

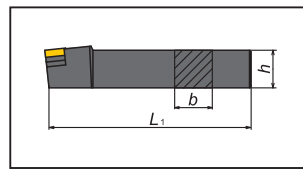
R


L


N








6 Shank Size [Height (h) and Width (b)] (inch)

	06	08	10	12	16	20	24	85
<i>h</i>	.375	.500	.625	.750	1.000	1.250	1.500	1.250
<i>b</i>	.375	.500	.625	.750	1.000	1.250	1.500	1.000



In case of $b = h$, the number will represent the number of sixteenths of b and h .
 In case of $b \neq h$, the first digit represents the number of eighths of b , and the second digit represents the number of quarters of h .

7 Insert Size

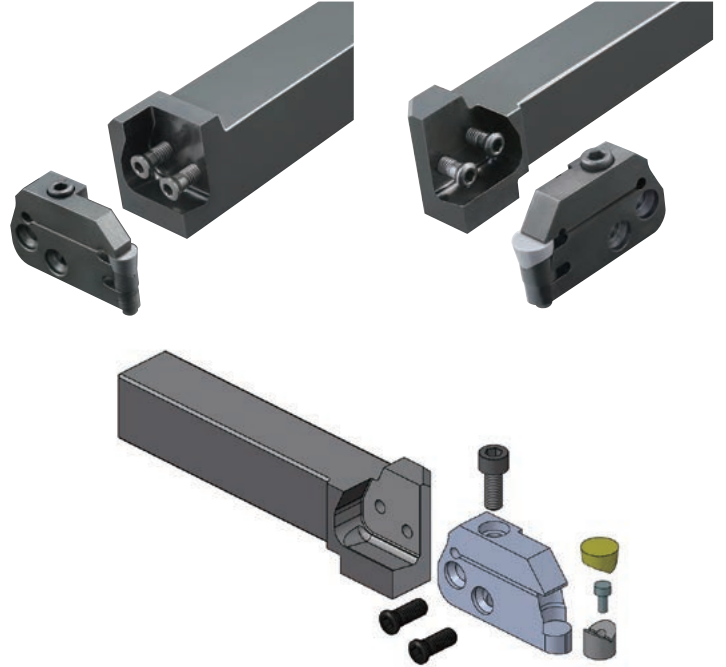
IC (inch)	1/4	3/8	1/2	5/8	3/4	1
	2	3	4	5	6	8
	2	3	4	5	6	8
	2	3	4	5	6	
80° 		3	4	5	6	8
55° 		3	4	5	6	8
35° 	2	3				

8 Length of toolholder (L_1) (inch)

B	C	D	E
4.500	5.000	6.000	7.000

General Turning Toolholders

GBR Modular System



Features

- *New Rigid design offers stable machining*
- *For RCGX and RPGX inserts*

Multi Clamp Toolholders

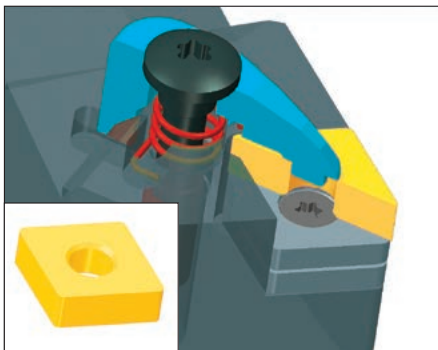


Features

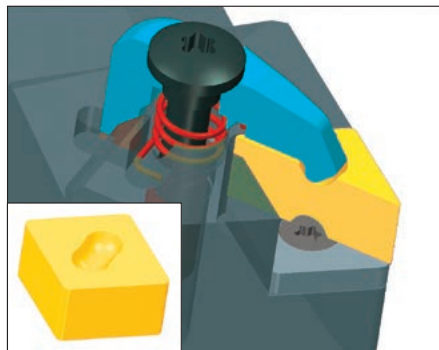
- *Three clamping configurations available with one toolholder just by changing a clamp*
- *Clamp screw also accessible from bottom of the toolholder Dramatically improved accessibility when using toolholder up-side down*



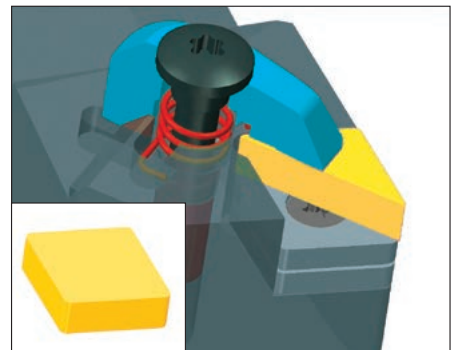
■ Double-clamp type



■ Dimple-clamp type



■ Clamp-on type



Selection Guide

For General Turning

Lead Angle		95°	75° (Using 100° Corner)	91°	91°	95°
Tooling						
Insert shape						
Perfect for Ceramic Insert	Multi Clamp	WCLN →F6	WCBN →F7	WTGN →F14	WTFN →F14	WWLN WWLN-2 →F15
	Clamp On	CCLN →F6				
For Insert in General	Lever Lock	PCLN →Q38				

Lead Angle		75°	75°	45°	45°
Tooling					
Insert shape					
Perfect for Ceramic Insert	Multi Clamp			WSSN →F11	WSDN →F11
	Clamp On	CSKN →F10	CSRN →F10	CSSN →F10	CSDN →F11

Lead Angle		93°	107° 30'	62° 30'	93°	117° 30'	72° 30'
Tooling							
Insert shape							
Perfect for Ceramic Insert	Multi Clamp	WDJN →F8	WDHN →F8	WDNN →F9	WVJN →F12	WVPN →F12	WVVN →F13

General Turning Toolholders

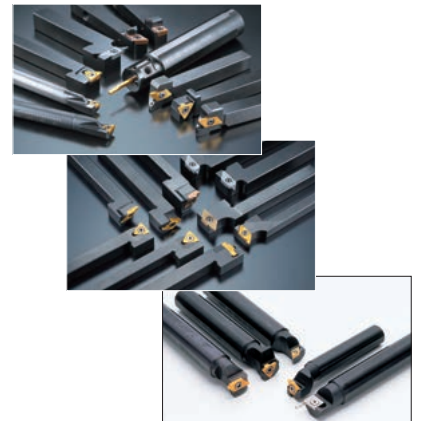
Lead Angle		-		-		-		-	
Tooling									
Insert shape		RNG		RCGX / RPGX		RCGX / RPGX		CDH	
Perfect for Ceramic Insert	Clamp On	CRGN	→F16	VRAO	→F21	VRAON	→F22		
	GBR			GBR	→F19				
	Screw On							HRCD	→F17

For Swiss-type Lathes (With no offset)

Lead Angle		95°	93°	62° 30'	91°	93°	72° 30'								
Tooling															
Insert shape		CC.T / CC.W		DC.T / DC.W		DC.T / DC.W		VC.T / VC.W		VB.T / VC.T / VC.W		VC.T / VC.W			
No offset	Screw On	SCLC	→Q10	SDJC	→Q16	SDNCN	→Q17	SVAC-N	→Q24	SVJC	→Q24	SVJB	→Q23	SVVCR-N	→Q25

Lead Angle		99°	91°	100°			
Tooling							
Insert shape		VP.T		TC.T / TC.W		TN..	
No offset	Screw On	SVXP-N	→Q30	STAC-N	→Q31	PTXN	→Q34
				STXN	→Q34		

● Coolant through, Y-axis and DS-holders are also available!

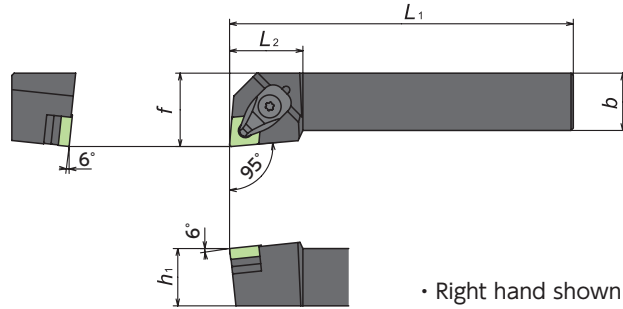
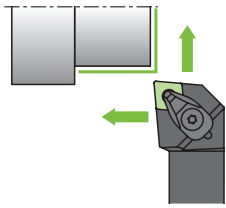


General Turning Toolholders

General Turning Toolholders


CN.. Inserts

WCLN











• Right hand shown

● Inch / Metric Holders

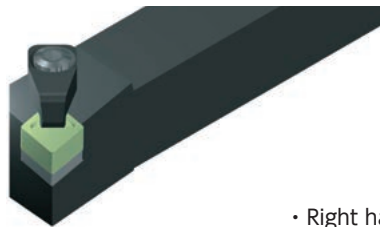
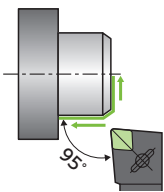
Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WCLN [®] 16-4D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.25	—	
WCLN [®] 20-4D	●	●	1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.25	—	
WCLN [®] 2525M12	○	○	—	25	—	25	—	150	—	25	—	32	—	32	
WCLN [®] 3225P12	○	○	—	32	—	25	—	170	—	32	—	32	—	32	

● Spare Parts

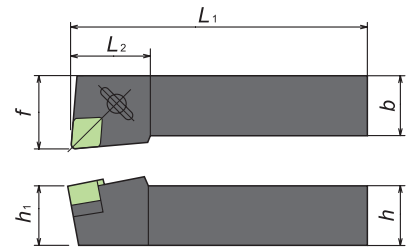
	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 CNGA 43 CNGA 45 CNG 43 CNG 45 CNGX 43 CNGX 45	 DC6CN TC6CN (OP) HC6CN (OP)	 ACN423×2 ACN423×1 ACN423×2 ACN423×1 ACN423×2 ACN423×1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

Inserts (CNG) → E3
 Inserts (CNGA) → E4 • E5 • E23 • E35
 Inserts (CNGX) → E6


CCLN









• Right hand shown



● Inch Holders

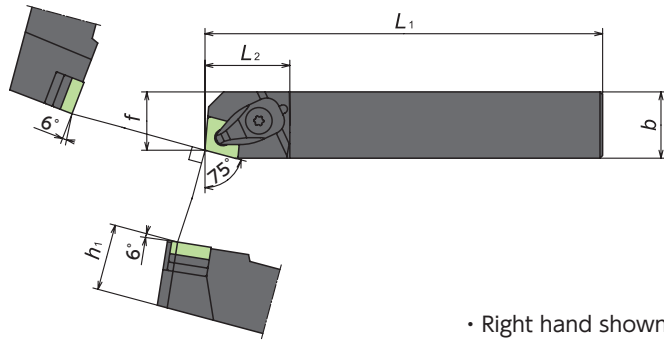
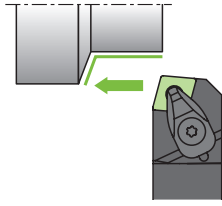
Item Number	Stock		Dimensions (inch)						Insert*
	R	L	h	b	L ₁	h ₁	f	L ₂	
CCLN [®] 164 CX	●	●	1.00	1.00	6.00	1.00	1.25	1.34	
CCLN [®] 204 CX	●	●	1.25	1.25	6.00	1.25	1.50	1.34	

● Spare Parts

	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	 CNGX 43 CNGX 45 CNG 43 CNG 45	 2415 2417 (OP)	 9414 (OP)	 ICSN454 (OP) ICSN434 ICSN454 (OP) ICSN434	 1160	 LW-4

Inserts (CNG) → E3
 Inserts (CNGX) → E6

WCBN



• Right hand shown

Inch / Metric Holders

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WCBN [®] 16-4D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	.88	—	1.25	—	
WCBN [®] 20-4D			1.25	—	1.25	—	6.00	—	1.25	—	1.13	—	1.25	—	
WCBN [®] 2525M12	○	○	—	25	—	25	—	150	—	25	—	22	—	32	

Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 CNGA 43 CNGA 45 CNG 43 CNG 45	 DC6CN TC6CN (OP)	 ACN423 × 2 ACN423 × 1 ACN423 × 2 ACN423 × 1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

Inserts (CNG) → E3
 Inserts (CNGA) → E4 • E5 • E23 • E35

* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish

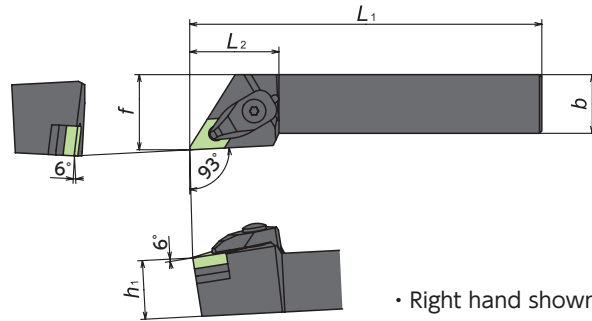
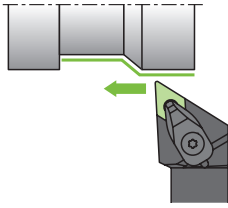
○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 🔵 : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
 Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

General Turning Toolholders

DN.. Inserts

WDJN



• Right hand shown

● Inch / Metric Holders

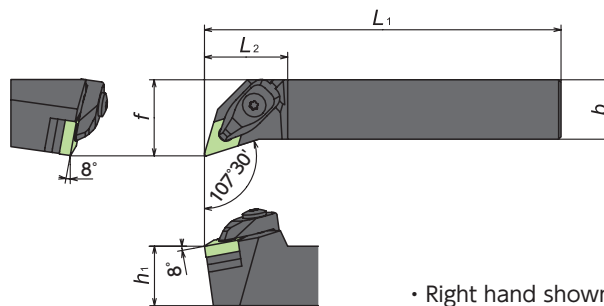
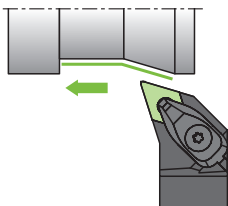
Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WDJN _{1/2} 16-4D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.50	—	 DNGA 43 (DNGA 45) (DNGX 45)
WDJN _{1/2} 20-4D	●	●	1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.50	—	
WDJN _{1/2} 2525M15	○	○	—	25	—	25	—	150	—	25	—	32	—	38	
WDJN _{1/2} 3225P15	○	○	—	32	—	25	—	170	—	32	—	32	—	38	

● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 DNGA 43 DNGA 45 DNGX 45	 DC6DN HC6DN (OP)	 ADN423×2 ADN423×1 ADN423×1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

Inserts (DNGA) → E7 • E25 • E38
Inserts (DNGX) → E8

WDHN



• Right hand shown

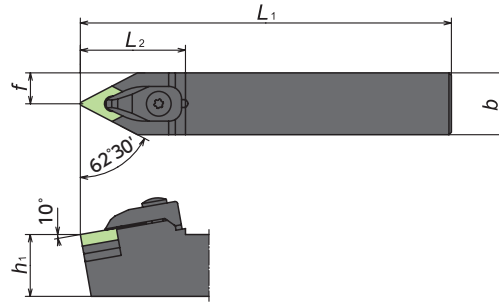
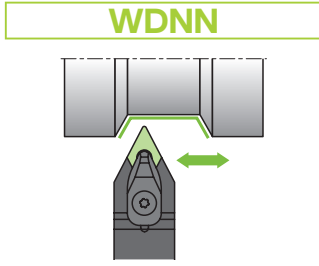
● Inch / Metric Holders

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WDHN _{1/2} 16-4D	●	●	1.00	—	1.25	—	6.00	—	1.00	—	1.25	—	1.38	—	 DNGA 43 (DNGA 45) (DNGX 45)
WDHN _{1/2} 20-4D			1.00	—	1.25	—	6.00	—	1.25	—	1.50	—	1.38	—	
WDHN _{1/2} 2525M15	○	○	—	25	—	25	—	150	—	25	—	32	—	35	

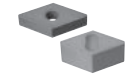
● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 DNGA 43 DNGA 45 DNGX 45	 DC6DN HC6DN (OP)	 ADN423×2 ADN423×1 ADN423×1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

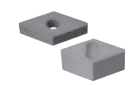

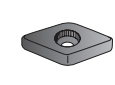



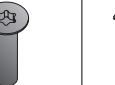

Inserts (DNGA) → E7 • E25 • E38
Inserts (DNGX) → E8



● Inch / Metric Holders

Item Number	Stock	h		b		L ₁		h ₁		f		L ₂		Insert*
		(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WDNN 16-4D	●	1.00	—	1.00	—	6.00	—	1.00	—	.500	—	1.67	—	DNGA 43 (DNGA 45) (DNGX 45) 
WDNN 20-4D		1.25	—	1.25	—	6.00	—	1.25	—	.625	—	1.67	—	
WDNN 2525M15	○	—	25	—	25	—	150	—	25	—	12.5	—	42.5	

● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
								
Standard	DNGA 43 DNGA 45 DNGX 45	DC6DN HC6DN (OP)	ADN423×2 ADN423×1 ADN423×1	AOS-6*30W	LLR-T20	FSS15-3.0*12	LLR-T10	ASGL6-D

Inserts (DNGA) → E7 • E25 • E38
 Inserts (DNGX) → E8

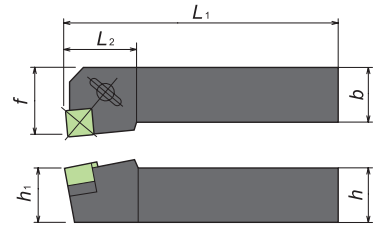
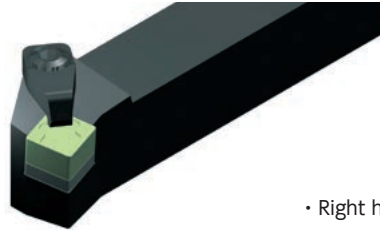
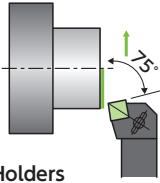
* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ⚙ : Coolant through
 (R/L) : 1-2 week delivery (Right / Left-hand only)
 (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

General Turning Toolholders

SN.. Inserts

CSKN

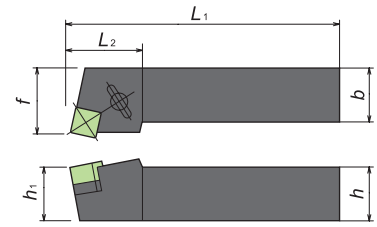
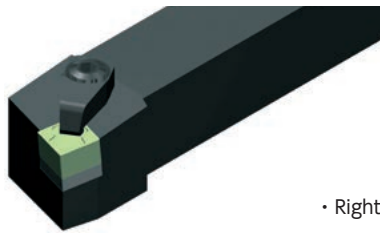
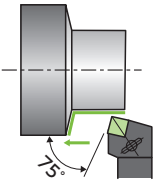


• Right hand shown

● Inch Holders

Item Number	Stock		Dimensions (inch)						Insert*
	R	L	h	b	L_1	h_1	f	L_2	
CSKN $\frac{R}{L}$ 164 CX	●	●	1.00	1.00	6.00	1.00	1.25	1.34	
CSKN $\frac{R}{L}$ 204 CX	●	●	1.25	1.25	6.00	1.25	1.50	1.34	
CSKN $\frac{R}{L}$ 165 CX	●	●	1.00	1.00	6.00	1.00	1.25	1.34	
CSKN $\frac{R}{L}$ 205 CX	●	●	1.25	1.25	6.00	1.25	1.50	1.34	

CSRN

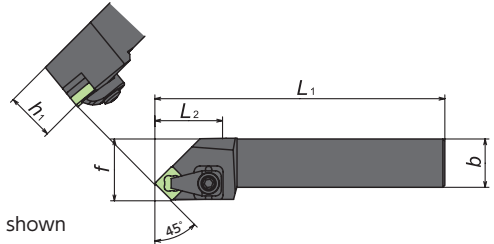
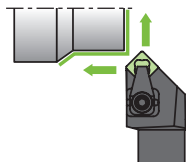


• Right hand shown

● Inch Holders

Item Number	Stock		Dimensions (inch)						Insert*
	R	L	h	b	L_1	h_1	f	L_2	
CSRN $\frac{R}{L}$ 164 CX	●	●	1.00	1.00	6.00	1.00	1.13	1.34	
CSRN $\frac{R}{L}$ 204 CX	●	●	1.25	1.25	6.00	1.25	1.38	1.34	
CSRN $\frac{R}{L}$ 165 CX	●	●	1.00	1.00	6.00	1.00	1.10	1.50	
CSRN $\frac{R}{L}$ 205 CX	●	●	1.25	1.25	6.00	1.25	1.35	1.50	
CSRN $\frac{R}{L}$ 245 CX	●	●	1.50	1.50	8.00	1.50	1.75	1.65	

CSSN



• Right hand shown

● Inch Holders

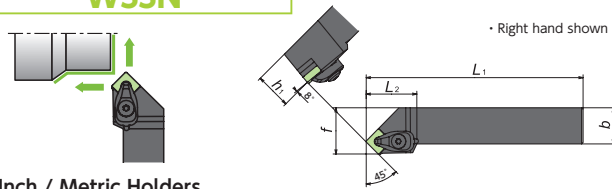
Item Number	Stock		Dimensions (inch)						Insert*
	R	L	h	b	L_1	h_1	L_2	f	
CSSN $\frac{R}{L}$ 245 CD	●	●	1.50	1.50	6.00	1.50	2.00	1.653	

● Spare Parts

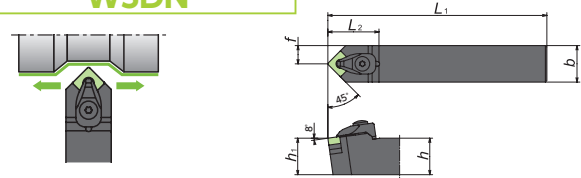
	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	SNGX 45 SNG 43 SNG 45	2415	— 9414 (OP)	ISSN 434 ISSN 454 (OP) ISSN 434	1160	LW-4
Standard	SNGX 55 SNG 55	2415 2417 (OP)	— 9414 (OP)	ISSN534	1180	

Inserts (SNG) → E13
Inserts (SNGX) → E15

WSSN



WSDN



Inch / Metric Holders

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WSSN _{R/L} 16-4D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.38	—	
WSSN _{R/L} 20-4D			1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.38	—	
WSSN _{R/L} 2525M12	●	○	—	25	—	25	—	150	—	25	—	32	—	35	

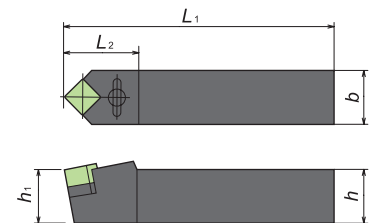
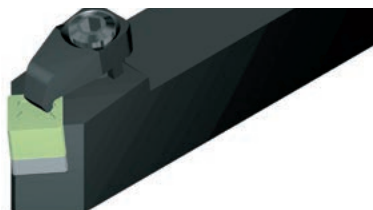
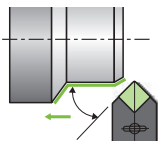
Item Number	Stock	h		b		L ₁		h ₁		f		L ₂		Insert*
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WSDNN 16-4D	●	1.00	—	1.00	—	6.00	—	1.00	—	.500	—	1.42	—	
WSDNN 20-4D		1.25	—	1.25	—	6.00	—	1.25	—	.625	—	1.42	—	
WSDNN 2525M12	○	—	25	—	25	—	150	—	25	—	12.5	—	35	
WSDNN 3225P12	○	—	32	—	25	—	170	—	32	—	12.5	—	35	

Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 SNGA 43 SNGA 45 SNG 43 SNG 45 SNGX 45	 DC6CN TC6CN (OP) HC6SN (OP)	 ASN423×2 ASN423×1 ASN423×2 ASN423×1 ASN423×1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

Inserts (SNG) → E13
 Inserts (SNGA) → E14 • E27 • E39
 Inserts (SNGX) → E15

CSDN



Inch Holders

Item Number	Stock	Dimensions (inch)					Insert*
		h	b	L ₁	h ₁	L ₂	
CSDNN 164 CX	●	1.00	1.00	6.00	1.00	1.65	
CSDNN 204 CX	●	1.25	1.25	6.00	1.25	1.65	
CSDNN 165 CX	●	1.00	1.00	6.00	1.00	1.65	
CSDNN 205 CX	●	1.25	1.25	6.00	1.25	1.65	

Spare Parts

	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	 SNGX 45 SNG 43 SNG 45	 2415 2417 (OP)	 — 9414 (OP)	 ISSN 434 ISSN 454 (OP) ISSN 434 ISSN534	 1160 1180	 LW-4

Inserts (SNG) → E13
 Inserts (SNGX) → E15

* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ □ □ □ : Mirror finish

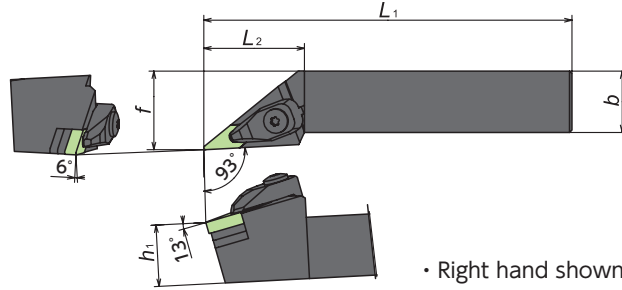
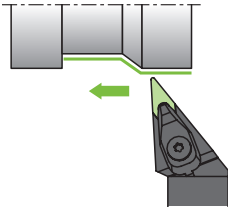
○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through

(R)(L) : 1-2 week delivery (Right / Left-hand only)
 (R)(L) : 1-2 week delivery (Right / Left-hand only, Newly added)

General Turning Toolholders


VN.. Inserts

WVJN

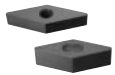









• Right hand shown

● Inch / Metric Holders

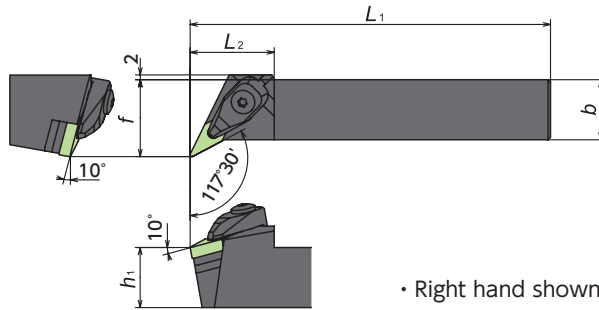
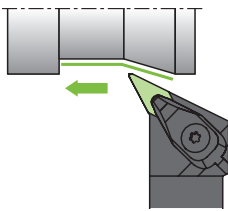
Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WVJN [®] / 16-3D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.61	—	VNGA 33 (VNGA 35) (VNGX 35) 
WVJN [®] / 20-3D	●	●	1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.61	—	
WVJN [®] / 2525M16	○	○	—	25	—	25	—	150	—	25	—	32	—	41	
WVJN [®] / 3225P16	○	○	—	32	—	25	—	170	—	32	—	32	—	41	

● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 VNGA 33 VNGA 35 VNGX 35	 DC6VN HC6VN (OP)	 AVN323×2 AVN323×1 AVN323×1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D


Inserts (VNGA) → E20 • E32 • E44

WVPN











• Right hand shown

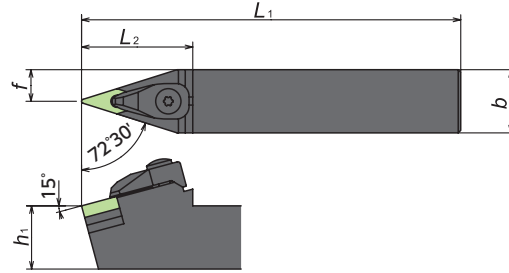
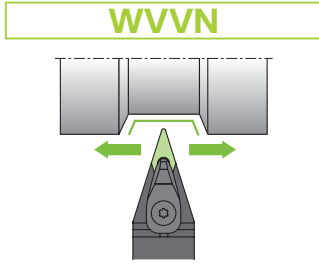
● Inch / Metric Holders

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WVPN [®] / 16-3D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.38	—	VNGA 33 (VNGA 35) (VNGX 35) 
WVPN [®] / 20-3D			1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.38	—	
WVPN [®] / 2525M16	○	○	—	25	—	25	—	150	—	25	—	32	—	35	

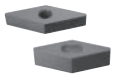
● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 VNGA 33 VNGA 35 VNGX 35	 DC6VN HC6VN (OP)	 AVN323×2 AVN323×1 AVN323×1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

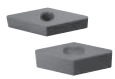







Inserts (VNGA) → E20 • E32 • E44



● Inch / Metric Holders

Item Number	Stock	h		b		L ₁		h ₁		f		L ₂		Insert*
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WVVNN 16-3D	●	1.00	—	1.00	—	6.00	—	1.00	—	.500	—	1.73	—	VNGA 33 (VNGA 35) (VNGX 35) 
WVVNN 20-3D		1.25	—	1.25	—	6.00	—	1.25	—	.625	—	1.73	—	
WVVNN 2525M16	○	—	25	—	25	—	150	—	25	—	12.5	—	44	

● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
								
Standard	VNGA 33 VNGA 35 VNGX 35	DC6VN HC6VN (OP)	AVN323×2 AVN323×1 AVN323×1	AOS-6*30W	LLR-T20	FSS15-3.0*12	LLR-T10	ASGL6-D

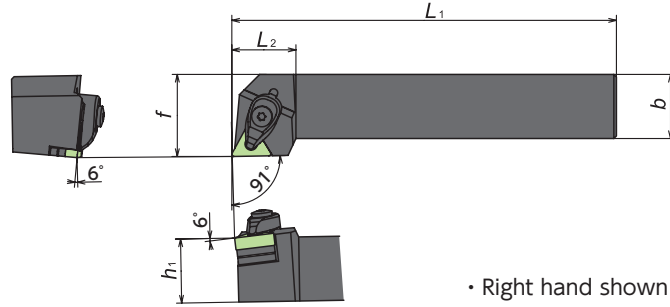
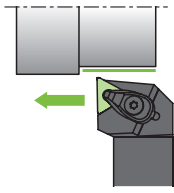
Inserts (VNGA) → E20 • E32 • E44

* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

General Turning Toolholders

TN.. Inserts

WTGN



• Right hand shown

● Inch / Metric Holders

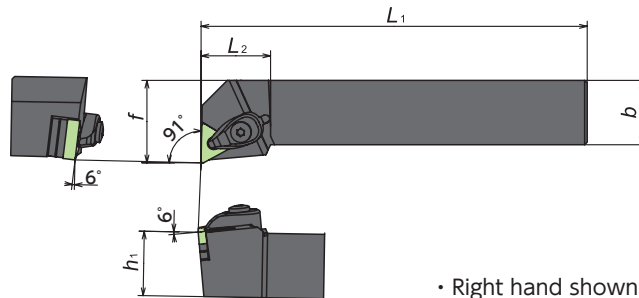
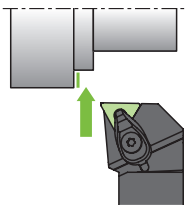
Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WTGN _{1/2} 16-3D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.00	—	TNGA 33 (TNGA 35) (TNG 33) (TNG 35)
WTGN _{1/2} 20-3D			1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.00	—	
WTGN _{1/2} 2525M16	●	○	—	25	—	25	—	150	—	25	—	32	—	25	

● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 TNGA 33 TNGA 35 TNG 33 TNG 35	 DC5TN TC5TN (OP)	 ATN323×2 ATN323×1 ATN323×2 ATN323×1	 AOS-5*26W	 LLR-T15	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

Inserts (TNG) → E16
 Inserts (TNGA) → E18 • E28 • E41

WTFN



• Right hand shown

● Inch / Metric Holders

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WTFN _{1/2} 16-3D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.06	—	TNGA 33 (TNGA 35) (TNG 33) (TNG 35)
WTFN _{1/2} 20-3D			1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.06	—	
WTFN _{1/2} 2525M16	○	○	—	25	—	25	—	150	—	25	—	32	—	27	

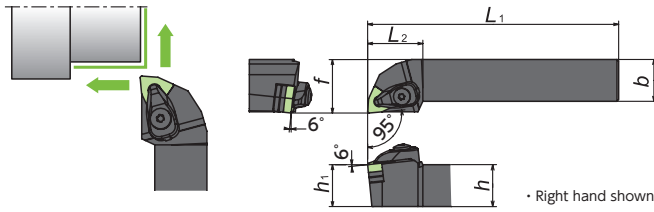
● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 TNGA 33 TNGA 35 TNG 33 TNG 35	 DC5TN TC5TN (OP)	 ATN323×2 ATN323×1 ATN323×2 ATN323×1	 AOS-5*26W	 LLR-T15	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

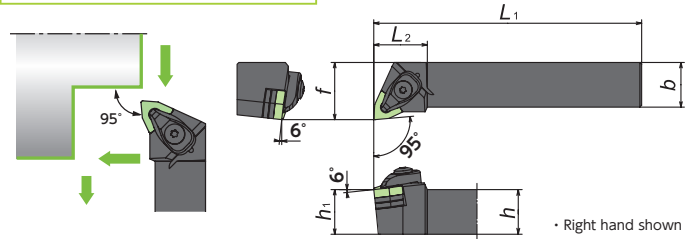
Inserts (TNG) → E16
 Inserts (TNGA) → E18 • E28 • E41

WN.. Inserts


WWLN




WWLN-2











● Inch / Metric Holders

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WWLN [®] 16-4D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.30	—	WNGA 43 (WNGA 45) 
WWLN [®] 20-4D			1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.30	—	
WWLN [®] 2525M08	○	●	—	25	—	25	—	150	—	25	—	32	—	33	

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WWLN [®] 16-4D-2	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.18	—	WNGA 43 (WNGA 45) 
WWLN [®] 20-4D-2			1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.18	—	
WWLN [®] 2525M08-2	○	○	—	25	—	25	—	150	—	25	—	32	—	30	

● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
								
Standard	WNGA 43 WNGA 45	DC6CN	AWN423-W×2 AWN423-W×1	AOS-6*30W	LLR-T20	FSS15-3.0*12	LLR-T10	ASGL6-D

Inserts → E21 • E44

General Turning
Toolholders

* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

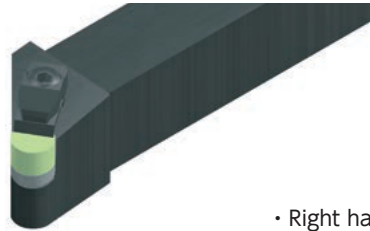
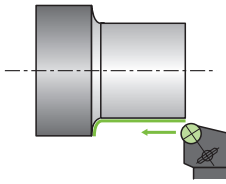
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
Ⓜ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

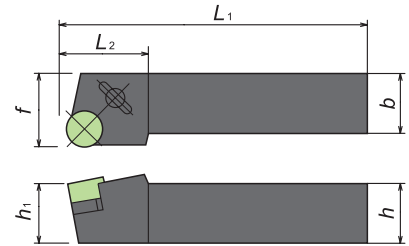
General Turning Toolholders

RN.. Inserts

CRGN



• Right hand shown



Inch Holders

Item Number	Stock		Dimensions (inch)						Insert*
	R	L	h	b	L_1	h_1	f	L_2	
CRGN $\frac{1}{4}$ 164 CD	●	●	1.00	1.00	6.00	1.00	1.25	1.34	RNG 45 (RNG 43)
CRGN $\frac{1}{4}$ 204 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.34	
CRGN $\frac{1}{4}$ 165 CD	●	●	1.00	1.00	6.00	1.00	1.25	1.34	RNG 55
CRGN $\frac{1}{4}$ 205 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.34	
CRGN $\frac{1}{4}$ 206 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.65	RNG 65

Spare Parts

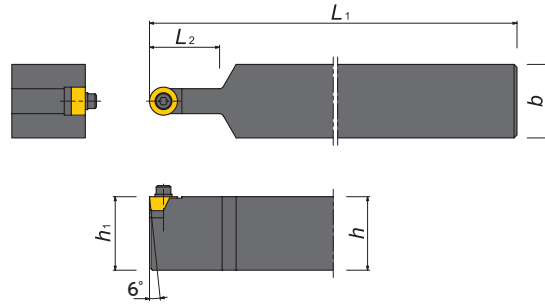
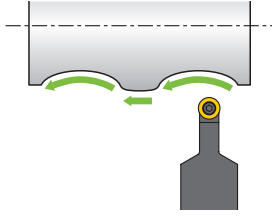
	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	RNG 45	2413	9414	IRSN 43	1160	LW-4
	RNG 43			IRSN 45 (OP)		
Standard	RNG 55	2417		IRSN 53	1180	
Standard	RNG 65			3919	1182	

Inserts → E10 • E26

General Turning Toolholders

CDH.. Inserts

HRCD



Inch Holders

Item Number	Stock	Dimensions (inch)					Insert
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>L</i> ₂	
HRCD-22-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 22
HRCD-33-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 33
HRCD-42-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 42
HRCD-43-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 43
HRCD-53-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 53 / CDH 515

Metric Holders

Item Number	Stock	Dimensions (mm)					Insert
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>L</i> ₂	
HRCD-22	○	50	50	300	50	30	CDH 22
HRCD-33	○	50	50	300	50	30	CDH 33
HRCD-42		50	50	300	50	30	CDH 42
HRCD-43		50	50	300	50	30	CDH 43
HRCD-53		50	50	300	50	30	CDH 53 / CDH 515

Spare Parts

Parts	Clamp Screw	Washer	Shim	Wrench
Toolholder				
HRCD-22-IN / HRCD-22	CS0316	W120	HACDH22	LW-2.5
HRCD-33-IN / HRCD-33	CS0625	W110	HACDH33	LW-5
HRCD-42-IN / HRCD-42	1/4-20UNC×1-1/4	W106	HACDH42	LWU-4
HRCD-43-IN / HRCD-43	1/4-20UNC×1-1/2		HACDH43	
HRCD-53-IN / HRCD-53	3/8-16UNC×1-1/2	W107	HACDH53 [CDH53] HACDH515 [CDH515] (OP)	LWU-5

Inserts → E2

* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

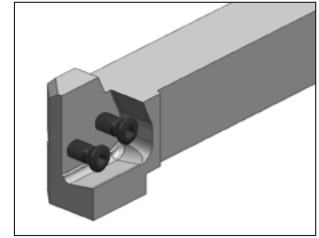
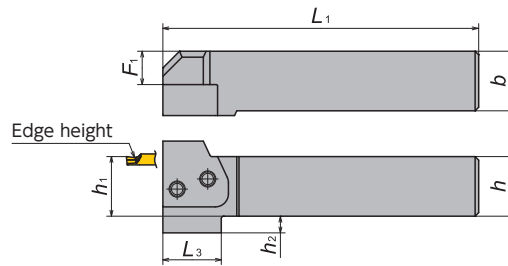
ⓂL : 1-2 week delivery (Right / Left-hand only)
ⓂL : 1-2 week delivery (Right / Left-hand only, Newly added)

General Turning Toolholders

RCGX/RPGX Inserts

GTWP-H

Straight style toolholder



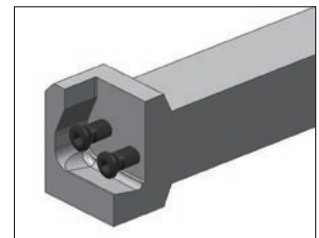
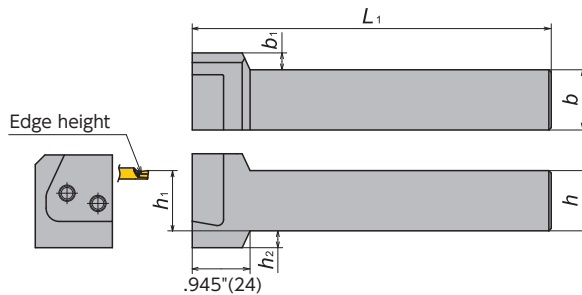
Right-Hand style shown

● Toolholder Body

Holder Number	Stock		Dimensions												Blade	Spare Parts			
			h		b		h ₁		L ₁		F ₁		h ₂			L ₃		Clamp Screw	Wrench
	R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
GTWP [®] 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.311	134.9	0.567	14.4	0.260	6.6	0.965	24.5	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.311	160.3	0.817	20.75	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 24-IN-H			1.500	—	1.500	—	1.500	—	6.311	160.3	1.067	27.1	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 32-IN-H			2.000	—	2.000	—	2.000	—	6.311	160.3	1.567	39.8	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.232	107.5	0.354	9	0.315	8	1.122	28.5	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.217	132.5	0.551	14	0.276	7	0.965	24.5	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.004	152.5	0.827	21	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4

GKWP-H

L-style toolholder



Right-Hand style shown
*Use opposite hand blade

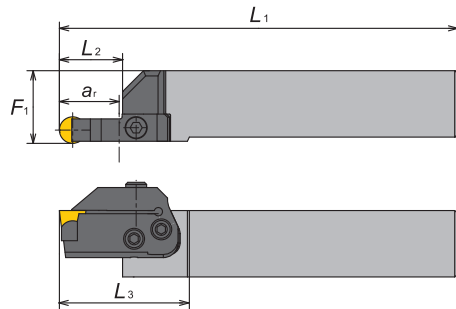
● Toolholder Body

Holder Number	Stock		Dimensions										Blade	Spare Parts			
			h		b		h ₁		L ₁		b ₁			h ₂		Clamp Screw	Wrench
	R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
GKWP [®] 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.961	151.4	0.260	6.6	0.260	6.6	GBRR/L	FS128-6.0×18	LW-4
GKWP [®] 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.961	176.8	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP [®] 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.882	124	0.472	12	0.315	8	GBRR/L	FS128-6.0×18	LW-4
GKWP [®] 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.866	149	0.276	7	0.276	7	GBRR/L	FS128-6.0×18	LW-4
GKWP [®] 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.654	169	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4

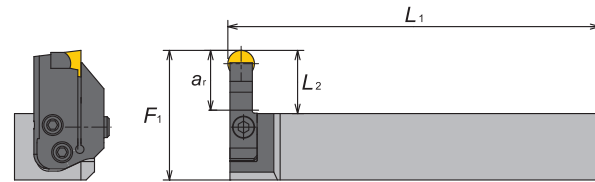
GBR

Blade

For GTWP



For GKWP



● Right hand

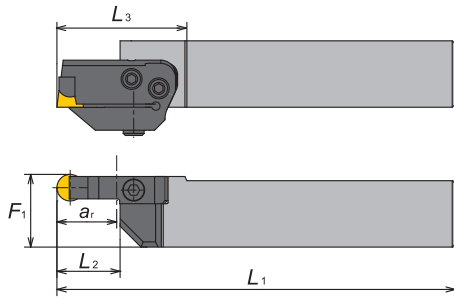
Hand	Blade number	Stock	Insert	Dimensions (Inch)		Holder	Dimensions (Inch)				
				ar	L ₂		GTWPR-H			GKWPL-H	
							L ₁	L ₃	F ₁	L ₁	F ₁
R	GBRR-R23-19	●	RCGX23 RPGX23	.750	.889	GTWPR16-IN-H	6.200	1.854	1.118	6.000	1.889
						GKWPL16-IN-H					
						GTWPR20-IN-H	7.200	—	1.368	7.000	2.139
						GKWPL20-IN-H					
						GTWPR2020-H	5.121	2.011	.906	4.921	1.676
						GKWPL2020-H					
	GTWPR2525-H	6.106	1.854	1.102	5.906	1.873					
	GKWPL2525-H										
	GTWPR3232-H	6.893	—	1.378	6.693	2.149					
	GKWPL3232-H										
	GBRR-R35-25	●	RCGX35 RPGX35 RCGX103	1.000	1.089	GTWPR16-IN-H	6.400	2.054	1.118	6.000	2.089
						GKWPL16-IN-H					
						GTWPR20-IN-H	7.400	—	1.368	7.000	2.339
						GKWPL20-IN-H					
						GTWPR2020-H	5.321	2.211	.906	4.921	1.876
						GKWPL2020-H					
	GTWPR2525-H	6.306	2.054	1.102	5.906	2.073					
	GKWPL2525-H										
GTWPR3232-H	7.093	—	1.378	6.693	2.349						
GKWPL3232-H											
GBRR-R45-28	●	RCGX45 RPGX45 RCGX104	1.125	1.189	GTWPR16-IN-H	6.500	2.154	1.118	6.000	2.189	
					GKWPL16-IN-H						
					GTWPR20-IN-H	7.500	—	1.368	7.000	2.439	
					GKWPL20-IN-H						
					GTWPR2020-H	5.421	2.311	.906	4.921	1.976	
					GKWPL2020-H						
GTWPR2525-H	6.406	2.154	1.102	5.906	2.173						
GKWPL2525-H											
GTWPR3232-H	7.193	—	1.378	6.693	2.449						
GKWPL3232-H											

Inserts (RCGX) → E9 • E26
Inserts (RPGX) → E11

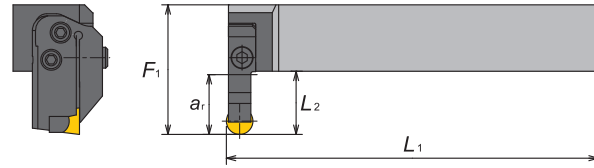
GBR

Blade

For GTWP



For GKWP



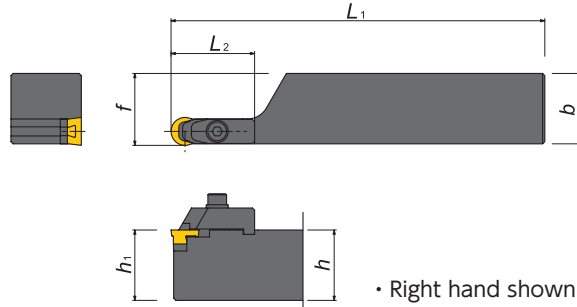
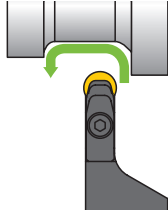
● Left hand

Hand	Blade number	Stock	Insert	Dimensions (Inch)		Holder	Dimensions (Inch)				
				a_r	L_2		GTWPL-H			GKWPL-H	
							L_1	L_3	F_1	L_1	F_1
L	GBRL-R23-19	●	RCGX23 RPGX23	.750	.889	GTWPL16-IN-H	6.200	1.854	1.118	6.000	1.889
						GKWPR16-IN-H					
						GTWPL20-IN-H	7.200	—	1.368	7.000	2.139
						GKWPR20-IN-H					
						GTWPL2020-H	5.121	2.011	.906	4.921	1.676
						GKWPR2020-H					
						GTWPL2525-H	6.106	1.854	1.102	5.906	1.873
						GKWPR2525-H					
	GTWPL3232-H	6.893	—	1.378	6.693	2.149					
	GKWPR3232-H										
	GTWPL16-IN-H	6.400	2.054	1.118	6.000	2.089					
	GKWPR16-IN-H										
	GTWPL20-IN-H	7.400	—	1.368	7.000	2.339					
	GKWPR20-IN-H										
	GTWPL2020-H	5.321	2.211	.906	4.921	1.876					
	GKWPR2020-H										
	GTWPL2525-H	6.306	2.054	1.102	5.906	2.073					
	GKWPR2525-H										
	GTWPL3232-H	7.093	—	1.378	6.693	2.349					
	GKWPR3232-H										
	GTWPL16-IN-H	6.500	2.154	1.118	6.000	2.189					
	GKWPR16-IN-H										
	GTWPL20-IN-H	7.500	—	1.368	7.000	2.439					
	GKWPR20-IN-H										
GTWPL2020-H	5.421	2.311	.906	4.921	1.976						
GKWPR2020-H											
GTWPL2525-H	6.406	2.154	1.102	5.906	2.173						
GKWPR2525-H											
GTWPL3232-H	7.193	—	1.378	6.693	2.449						
GKWPR3232-H											

Inserts (RCGX) → E9 • E26
Inserts (RPGX) → E11

RCGX / RPGX Inserts

VRAO^{R/L}



Inch Holders

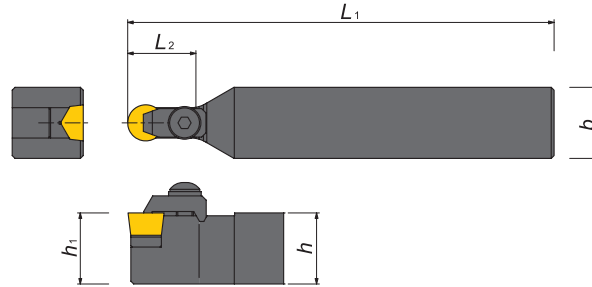
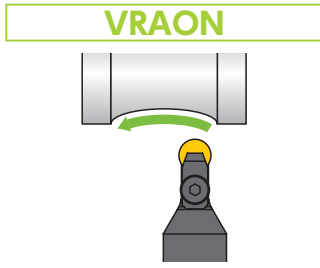
Item Number	Stock		Dimensions (inch)					Insert
	R	L	<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>L</i> ₂	
VRAO ^{R/L} 16-2D	●	●	1.00	1.00	6.00	1.00	1.00	RCGX 102 RCGX 23 RCGX 25 RPGX 23 RPGX 25
VRAO ^{R/L} 20-2D	●	●	1.25	1.25	6.00	1.25	1.00	
VRAO ^{R/L} 16-3D	●	●	1.00	1.00	6.00	1.00	1.25	RCGX 103 RCGX 35 RPGX 35
VRAO ^{R/L} 20-3D	●	●	1.25	1.25	6.00	1.25	1.25	
VRAO ^{R/L} 24-3E	●	●	1.50	1.50	7.00	1.50	1.25	
VRAO ^{R/L} 16-4D	●	●	1.00	1.00	6.00	1.00	1.50	RCGX 104 RCGX 45 RPGX 45
VRAO ^{R/L} 20-4D	●	●	1.25	1.25	6.00	1.25	1.50	
VRAO ^{R/L} 24-4E	●	●	1.50	1.50	7.00	1.50	1.50	

Spare Parts

Parts	Clamp	Clamp Screw	Shim	Shim Screw
Toolholder				
VRAO ^{R/L} 16-2D		CL2RVRL (comes with screw)	SM2RV (RCGX102 / R.GX25) SM2RVS (R.GX23) (OP)	SC02C-08
VRAO ^{R/L} 20-2D				SC05C-08
VRAO ^{R/L} 16-3D	CL3RV	SC10F-10	SM3RV	SC05C-10
VRAO ^{R/L} 20-3D				SC06C-08
VRAO ^{R/L} 24-3E				SC06C-10
VRAO ^{R/L} 16-4D	CL4RV	SC40F-12	SM4RV	SC06C-08
VRAO ^{R/L} 20-4D				SC06C-10
VRAO ^{R/L} 24-4E				

Inserts (RCGX) → E9 • E26
Inserts (RPGX) → E11

General Turning Toolholders



Inch Holders

Item Number	Stock	Dimensions (inch)				Insert
		h	b	L_1	L_2	
VRAON 16-2D	●	1.00	1.00	6.00	1.00	RCGX 102 RCGX 23 RCGX 25 RPGX 23 RPGX 25
VRAON 20-2D	●	1.25	1.25	6.00	1.00	
VRAON 16-3D	●	1.00	1.00	6.00	1.25	RCGX 103 RCGX 35 RPGX 35
VRAON 20-3D	●	1.25	1.25	6.00	1.25	
VRAON 24-3E	●	1.50	1.50	7.00	1.25	RCGX 104 RCGX 45 RPGX 45
VRAON 16-4D	●	1.00	1.00	6.00	1.50	
VRAON 20-4D	●	1.25	1.25	6.00	1.50	RCGX 105
VRAON 24-4E	●	1.50	1.50	7.00	1.50	
VRAON 20-5D	●	1.25	1.25	6.00	1.50	RCGX 106
VRAON 24-5E	●	1.50	1.50	7.00	1.50	
VRAON 20-6F	●	1.25	1.25	8.00	1.75	RCGX 108
VRAON 24-6F	●	1.50	1.50	8.00	1.75	
VRAON 20-8F	●	1.25	1.25	8.00	2.00	
VRAON 24-8F	●	1.50	1.50	8.00	2.00	

Spare Parts

Parts	Clamp	Shim	Clamp Screw	Shim Screw
Toolholder				
VRAON 16-2D	CL2RV	SM2RV(RCGX102 / R.GX25) SM2RVS (R.GX23) (OP)	SC40F-16	SC02C-08
VRAON 20-2D				SC05C-08
VRAON 16-3D	CL3RV	SM3RV	SC10F-10	SC05C-10
VRAON 20-3D				SC06C-08
VRAON 24-3E	CL4RV	SM4RV	SC40F-12	SC06C-10
VRAON 16-4D				SC08C-10
VRAON 20-4D	CL5RV	SM5RV	SC50F-16	SC10C-10
VRAON 24-4E				SC40C-10
VRAON 20-5D	CL6RV	SM6RV	SC50F-16	SC40C-10
VRAON 24-5E				SC60F-16
VRAON 20-6F	CL8RV	SM8RV	SC60F-16	SC40C-10
VRAON 24-6F				
VRAON 20-8F				
VRAON 24-8F				

Inserts (RCGX) → E9 • E26
Inserts (RPGX) → E11

G



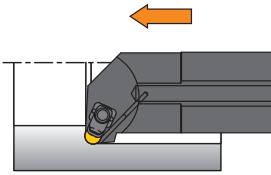
ID Tooling

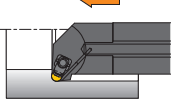
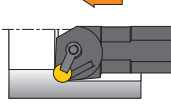
- **Product Lines G2**
- **For RN.. Inserts G4**
- **For RP.. Inserts G4**
- **For CN.. Inserts G5**
- **For DN.. Inserts G5**
- **For SN.. Inserts G6**
- **For WN.. Inserts G6**

NTK ID Tooling-Product Lines

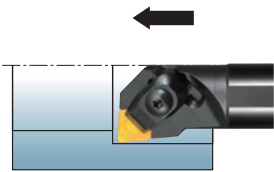
For Conventional Lathes

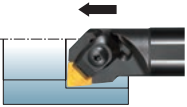
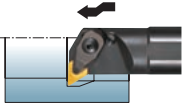
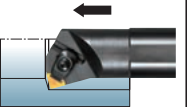
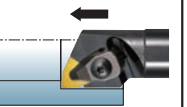
For round inserts



Insert	RN..	RP..
	S50-CRGN	S12-CRGP
Holder		
	→G4	→G4
Min. Bore Dia.	ϕ 3.0"	ϕ 1.25"

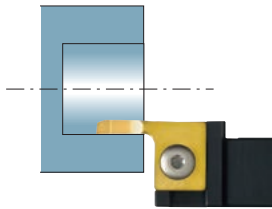
Multi-clamp series






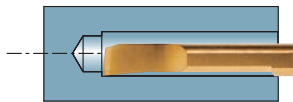
Insert	CN..	DN..	SN..	WN..
	S-WCLN	S-WDUN	S-WSKN	S-WWLN
Holder				
	→G5	→G5	→G6	→G6
Min. Bore Dia.	ϕ 1.299"~ (33mm~)	ϕ 1.654"~ (42mm~)	ϕ .969" (50mm)	ϕ 1.299"~ (33mm~)

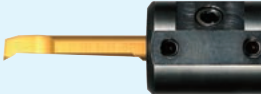


For Swiss Type Lathes

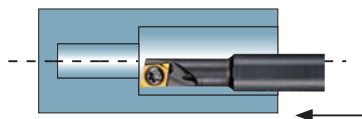
ID Boring







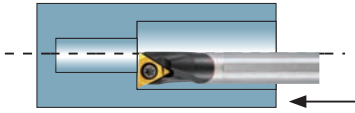
Insert	LBM		
	LBMA	DS-LBMB	CH-LBM
Holder			
	→V6	→V6	→V6
Min. Bore Dia.	ϕ .039" (1.0mm)		







Insert	SHFS • SHFB • SBFS • SBFB		
	HY-NBH-OH	HY-NBH	NBH
Holder			
	→V9 STICK DUO HYPER with Coolant through	→V11 STICK DUO HYPER	→V14
Min. Bore Dia.	ϕ .079" (2.0mm)		

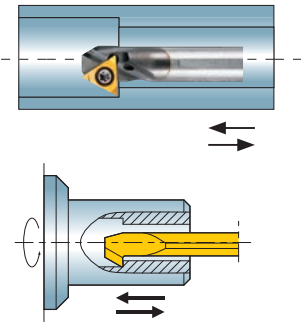





Insert	MBL		ERGP	
	C-MBR (Carbide shank)	S-MBR (Steel shank)	C-SEXR (Carbide shank)	S-SEXR (Steel shank)
Holder				
	→V22 Coolant through	→V22 Coolant through	→V23 Coolant through	→V23 Coolant through
Min. Bore Dia.	ϕ .197" (5.0mm)		ϕ .236" (6.0mm)	



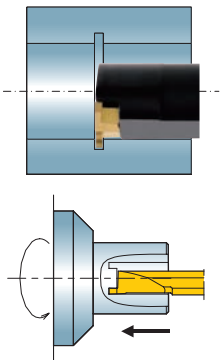
Insert	CC/CP →V24 · V30		TC/TP →V25·V26·V28	
	C-SCLC/P (Carbide shank)	S-SCLC/P (Steel shank)	C-STUC/P (Carbide shank)	S-STUC/P (Steel shank)
Holder				
	Coolant through →V24 · V30	Coolant through →V24 · V30	Coolant through →V25 · V26 · V28	Coolant through →V25 · V26 · V28
Min. Bore Dia.	φ .276" (7.0mm)		φ .315" (8.0mm)	





ID Back Turning



Insert	SBB →V17		TC/TP →V25·V26·V28
	HY-NBH-OH	NBH	C-STZP/C (Carbide shank)
Holder			
	→V9 Coolant through	→V14	→V25 · V26 · V28
Min. Bore Dia.	φ .118" (3.0mm)		φ .394" (10mm)




ID Grooving



Insert	SBG →V18		SFG →V18	GTG →V19
	HY-NBH-OH	NBH	NBH	S-BGR/BGR
Holder				
	→V9 Coolant through	→V14	→V14	→V19
Min. Bore Dia.	φ .118" (3.0mm)		φ .118" (3.0mm)	φ .394" (10mm)

ID Threading

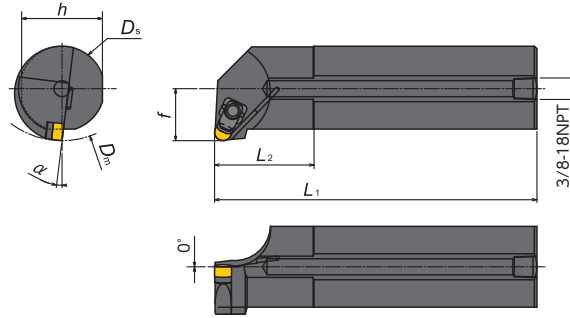
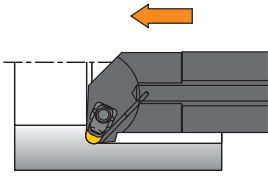


Insert	SBT →V20		TMN →V34
	HY-NBH-OH	NBH	TGC/HN
Holder			
	→V9 Coolant through	→V14	→V33
Min. Bore Dia.	φ .118" (3.0mm)		φ .315" (8.0mm)

RN.. Inserts

S-CRGN (Coolant through)

Min. Bore Diameter $\phi 3.0"$ -



Inch Holders

Item Number	Stock		Min. Bore Dia. D_m (inch)	Dimensions (inch)					Insert*	
	R	L		D_s	h	L_1	f	L_2		α
S50-CRGN $\frac{3}{8}$ -32-4	●		3.0	2.0	1.87	16.0	1.281	2.362	7	RNG 45 (RNG 43)
S50-CRGN $\frac{3}{8}$ -40-4	●		3.5	2.5	2.38	16.0	1.531	2.950	7	

Spare Parts

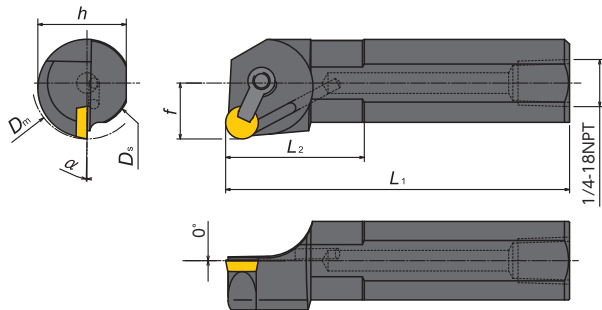
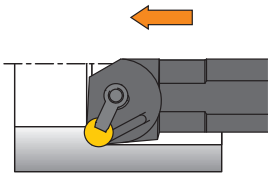
	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	RNG 45 RNG 43	2413	9414	IRSN 43 IRSN 45 (OP)	1161	5104

Inserts → E10 • E26

RP.. Inserts

S-CRGP (Coolant through)

Min. Bore Diameter $\phi 1.25"$ -



Inch Holders

Item Number	Stock		Min. Bore Dia. D_m (inch)	Dimensions (inch)					Insert	
	R	L		D_s	h	L_1	f	L_2		α
S12-CRGP $\frac{1}{4}$ -16-3	●		1.25	1.0	0.89	12.0	.640	1.574	1	RPG 32

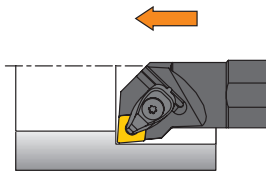
Spare Parts

	Insert	Clamp	Diff Screw	Wrench
Standard	RPG 32	CL-7	XNS-36	5124

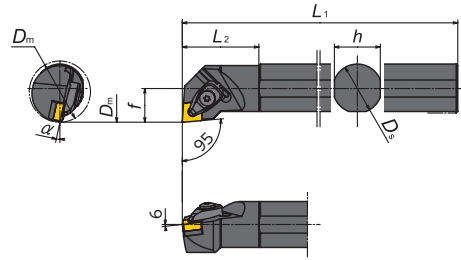
Inserts → E11

■ CN.. Inserts

S-WCLN




Min. Bore Diameter $\phi 1.299''$ -











• Right hand shown

● Metric Holders

Item Number	Stock		Min. Bore Dia. D_m (mm)	Dimensions (mm)					Insert*	
	R	L		D_s	h	L_1	f	L_2		α
S25R-WCLN $\frac{1}{2}$ 12	○	○	33	25	24	200	17	40	14	 CNGA 43 (CNGA 45) (CNG 43) (CNG 45) (CNGX 43) (CNGX 45)
S32S-WCLN $\frac{1}{2}$ 12	○	○	40	32	30	250	22	50	12	
S40T-WCLN $\frac{1}{2}$ 12	○	○	50	40	38	300	27	60	10	
S50U-WCLN $\frac{1}{2}$ 12	○	○	63	50	47	350	35	65	8	

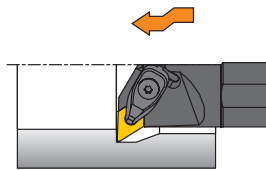
● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 CNGA 43 CNGA 45 CNG 43 CNG 45 CNGX 43 CNGX 45	 DC6CN TC6CN (OP) HC6CN (OP)	 ACN423×1 — ACN423×1 — ACN423×1 —	 AOS-6*26W (S25R-WCLN $\frac{1}{2}$ 12) AOS-6*30W (Others)	 LLR-T20	 FSS16-3.0*8 — FSS16-3.0*8 — FSS16-3.0*8 —	 LLR-T10 — LLR-T10 — LLR-T10 —	 ASGL6-D

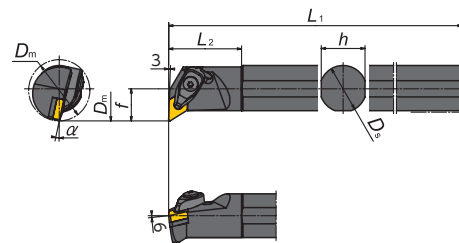
Inserts (CNG) → E3
 Inserts (CNGA) → E4 · E5 · E23 · E35
 Inserts (CNGX) → E6

■ DN.. Inserts

S-WDUN




Min. Bore Diameter $\phi 1.654''$ -











• Right hand shown

● Metric Holders

Item Number	Stock		Min. Bore Dia. D_m (mm)	Dimensions (mm)					Insert*	
	R	L		D_s	h	L_1	f	L_2		α
S32S-WDUN $\frac{1}{2}$ 15	○	○	42	32	30	250	22	50	12	 DNGA 43 (DNGA 45) (DNGX 45)
S40T-WDUN $\frac{1}{2}$ 15	○	○	50	40	38	300	27	60	10	

● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 DNGA 43 DNGA 45 DNGX 45	 DC6DN HC6DN (OP)	 ADN423×1 — —	 AOS-6*26W (S32S-WDUN $\frac{1}{2}$ 15) AOS-6*30W (S40T-WDUN $\frac{1}{2}$ 15)	 LLR-T20	 FSS16-3.0*8 — —	 LLR-T10 — —	 ASGL6-D

Inserts (DNGA) → E7 · E25 · E38
 Inserts (DNGX) → E8

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish

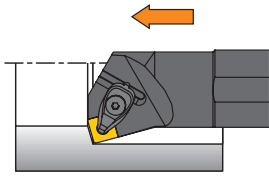
○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through

(R)L : 1-2 week delivery (Right / Left-hand only)
 (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

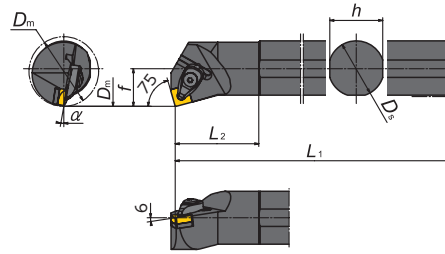
ID Tooling

SN.. Inserts

S-WSKN



Min. Bore Diameter ϕ 1.969" -



• Right hand shown

Metric Holder

Item Number	Stock		Min. Bore Dia. D_m (mm)	Dimensions (mm)					Insert*	
	R	L		D_s	h	L_1	f	L_2		α
S40T-WSKN $\frac{R}{L}$ 12	○	○	50	40	38	300	27	60	10	SNGA 43 (SNGA 45) (SNG 43) (SNG 45) (SNGX 45)

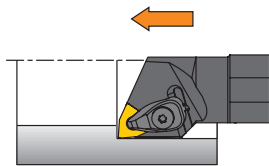
Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	SNGA 43 SNGA 45	DC6CN	ASN423×1	AOS-6*30W	LLR-T20	FSS16-3.0*8	LLR-T10	ASGL6-D
	SNG 43 SNG 45	TC6CN (OP)	ASN423×1			FSS16-3.0*8	LLR-T10	
	SNGX 45	HC6CN (OP)	—			—	—	

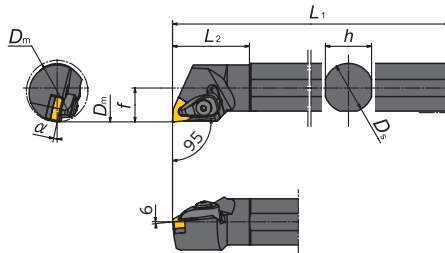
Inserts (SNG) → E13
 Inserts (SNGA) → E14 • E27 • E39
 Inserts (SNGX) → E15

WN.. Inserts

S-WWLN



Min. Bore Diameter ϕ 1.299" -



• Right hand shown

Metric Holders

Item Number	Stock		Min. Bore Dia. D_m (mm)	Dimensions (mm)					Insert	
	R	L		D_s	h	L_1	f	L_2		α
S25R-WWLN $\frac{R}{L}$ 08	○	○	33	25	24	200	17	40	14	WNGA 43 (WNGA 45)
S32S-WWLN $\frac{R}{L}$ 08	○	○	40	32	30	250	22	50	12	
S40T-WWLN $\frac{R}{L}$ 08	○	○	50	40	38	300	27	60	10	

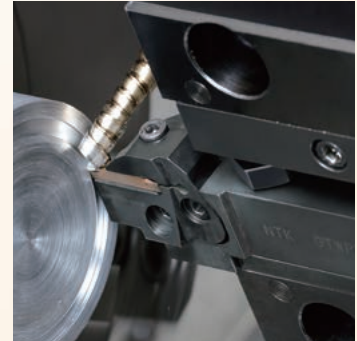
Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	WNGA 43 WNGA 45	DC6CN	AWN423-W×1	AOS-6*30W	LLR-T20	FSS16-3.0*8	LLR-T10	ASGL6-D

Inserts → E21 • E44

* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

H

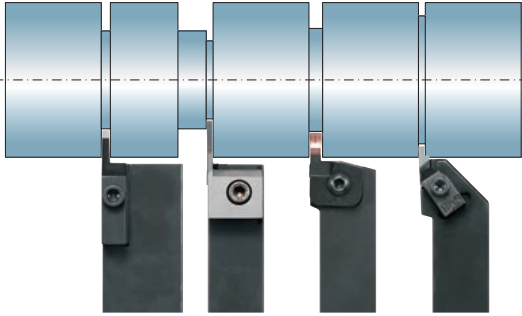


Grooving / Side Turning

- **Product Lines** H2
- **New Module Tooling** H3
- **Product Lines for
Swiss Style Lathes** H4
- **Guideline for Grooving
Heat Resistant Alloys** H6
- **For VGW Inserts** H7
- **For VDB Inserts** H17
- **For GKN / GKP / RKN Inserts** ... H19
- **Groove Duo** H20
- **Groove Duo Blade** H22
- **Poly-V grooving** H29

Grooving / Side Turning

OD Grooving

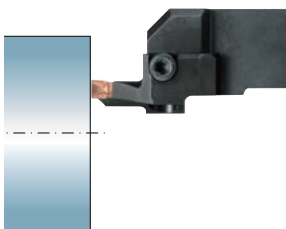


Insert	Ceramic insert
	PTM.. →H31
Holder	POLY-V
	→H31

Insert	Ceramic insert		
	VGW / VGW..R →H14	VDB / VDB..R →H18	
Holder	GBV-GT	GBV-GK	DB
	→H8	→H8	→H16
Blade width	.125" - .375"	.125" - .375"	.125" - .375"
Depth of cut	~1.125"	~1.125"	.750"

Insert	Ceramic / Carbide insert	Carbide insert	
	GKN / GKP / RKN →H19	GWPG / GWPM →H21	
Holder	NS	GTWP	GKWP
	→H19	→H20	→H20
Blade width	.031" - .189"	.118" - .236"	
Depth of cut	.210"	~.984"	

Face Grooving



Insert	Ceramic insert			Carbide insert	
	VGW →H14	VDB →H18		GWPFM →H24	
Holder	GBI/O-GT	GBI/O-GK	DB	GTWP-H	GKWP-H
	→H10	→H10	→H17	→H23	→H23
Blade width	.125" - .250"		.156" - .375"	.118" - .236"	
Depth of cut	.600"		.750"	~.591"	
Min diameter	4"		3"	1.142"	

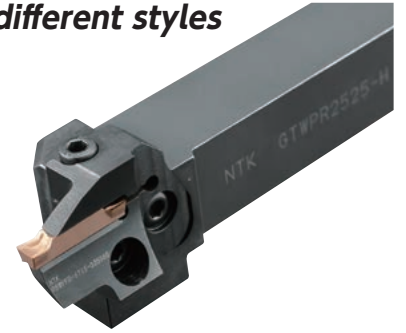
Grooving / Side Turning

New Modular Tooling

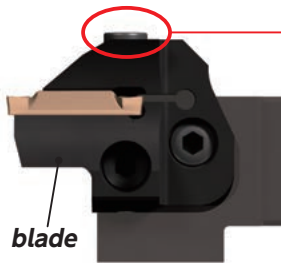


Features

- **The best rigidity**
- **Excellent chip control for face grooving**
- **Available in 3 different styles**



Most rigid blade type system



Position clamp bolt to the front side
Strong clamping prevents movement of insert

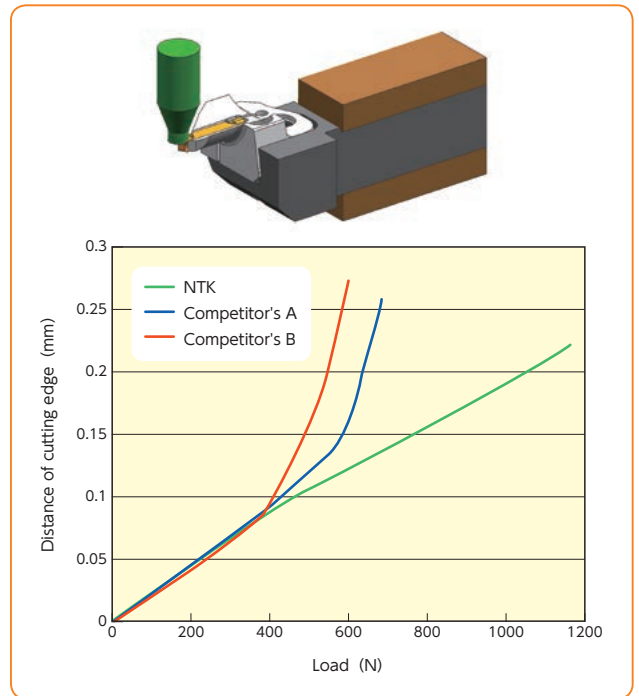
blade

Strong clamping by directly fastening the blades

Wedge style design



Tool rigidity comparison



Grooving / Side Turning

RCGX Style
RPGX Style



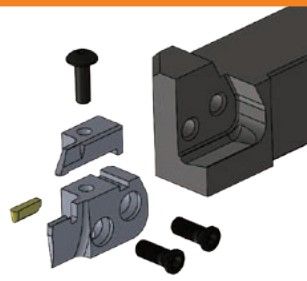
→F19

VGW Style



→H8

Face Grooving
— VGW Style —



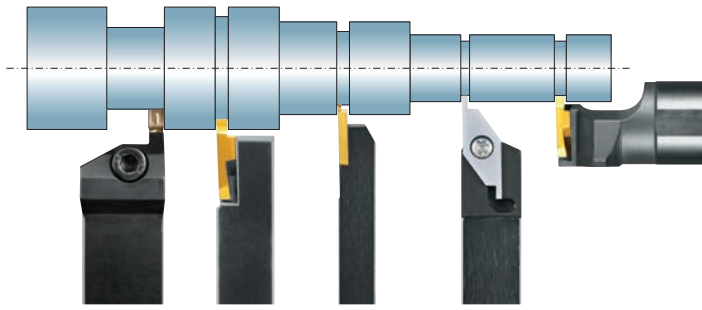
→H10




Face Grooving
— Groove Duo Blade —


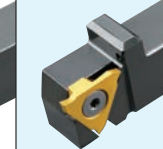
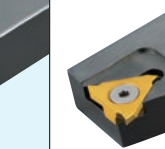
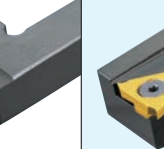
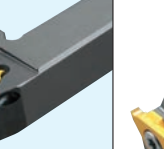




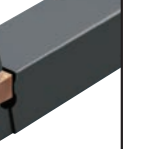


→H23

NTK Grooving / Side Turning Tools - Product Lines

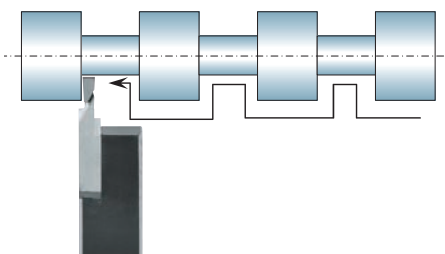




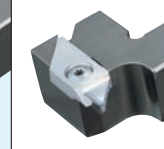
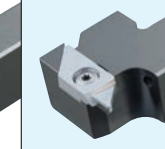
Insert	CSVG →T7		GTPS →T8
	CSV	DS-CSV	CTPS
Holder	 →T6	 →T6	 →T8
Blade width	.010" - .059" (0.25 - 1.50mm)		.030" - .079" (0.75 - 2.0mm)
Depth of cut	~.102" (~2.59mm)		~.098" (~2.50mm)

Insert	GTMH32 / GTMX32 / GTM32 / TMG32 →T12					
	GTT	GTT-OH2/OH	Y-GTT	Y-GTT-OH2/OH	DS-GTT	CH-GTT
Holder	 →T10	 →T10 Coolant through	 →T11 Y-axis	 →T11 Y-axis w/ Coolant through	 →T11	 →T10
Blade width	.012" - .118" (0.3 - 3.0mm)					
Depth of cut	~.106" (~2.69mm)					

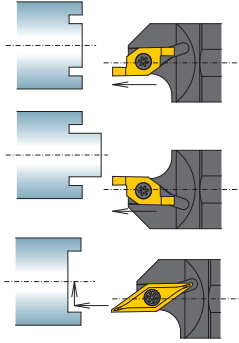
Insert	GWP →T9	GTM43 / GTMA43 / GTMT43 →T17		TWG →T16
	GTWP	NGTN	NGTB	TWG
Holder	 →T9	 →T17	 →T17	 →T16
Blade width	.118" - .236" (3.0 - 5.9mm)	.039" - .216" (1.0 - 5.49mm)		.079" - .118" (2.0 - 3.0mm)
Depth of cut	~.354" (~9.0mm)	.177" (4.50mm)		~.118" (~3.0mm)

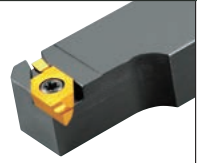


■ Multifunctional Grooving for non-ferrous material



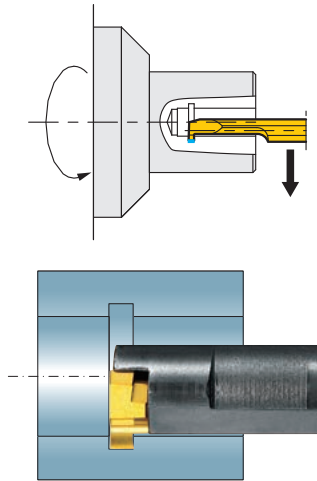
Insert	GTPA →T22			
	GTPA	GTPA-OH	Y-GTPA	Y-GTPA-OH
Holder	 →T22	 →T22 Coolant through	 →T22 Y-axis	 →T22 Y-axis w/ Coolant through
Blade width	.079" - .098" (2.0 - 2.50mm)			
Depth of cut	~.236" (~6.0mm)			



Face Grooving



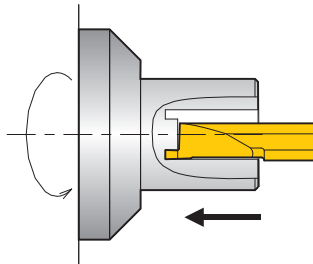
Insert	FGV →T21	FBV →T21	
Holder	FGV	DS-FGV	CH-FGV
			
	→T20	→T20	→T20
Blade width	.039" - .079" (1.0mm - 2.0mm)		
Depth of cut	~.118" (~3.0mm)	FGV: ~.118" (~3.0mm) FBV: ~.157" (~4.0mm)	


ID Grooving



Insert	SBG →V18	GTG →V19
Holder	NBH	S-BG / BG
		
	→V14	→V19
Blade width	.020" - .079" (0.5 - 2.0mm)	.020" - .079" (0.5 - 2.0mm)
Depth of cut	~.079" (~2.0mm)	~.118" (~3.0mm)

ID Face Grooving



Insert	SFG →V18
Holder	NBH
	
	→V14
Blade width	.039" - .118" (1.0 - 3.0mm)
Depth of cut	~.110" (~2.79mm)

Guideline for grooving HRSA materials

BIDEMICS / Ceramic grooving inserts provide high speed capability to your process. Whisker ceramic is the most versatile option in this category. NTK also offers BIDEMICS and SiALON grades for more productivity and stability.

	JX1	JX3	SX3	SX7	SX5	WA1
Speed		●		●	●	●
Feed			●	●	●	
Versatility	●		●	●		●
Toughness			●	●	●	
	Can run at up to 1500 SFM. Double the speed of whisker		Double the feed of whisker		Best for Scale and interruption	Versatile grade

● : 1st choice ● : 2nd choice

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	.100	
Grooving 	JX1 JX3	Overall	1200 (600-1600) SFM						.003 (.002-.004) IPR										WET
	SX5	Waspaloy	700 (600-800) SFM						.006 (.003-.007) IPR										
	SX3 SX7	Overall	750 (600-900) SFM						.0045 (.003-.006) IPR										
	WA1	Overall	800 (600-1100) SFM						.003 (.002-.004) IPR										

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

When applying JX1 / JX3, increase speed to over 1000 SFM
When applying SX3 / SX7 / SX5, increase feed rates 100% vs. Whisker Ceramics

Application Information

When machining a grooved area with multiple passes, the insert radius engages a potentially work hardened area during the last remaining plunge. This programming procedure sets up the potential of corner radius chipping or notching.

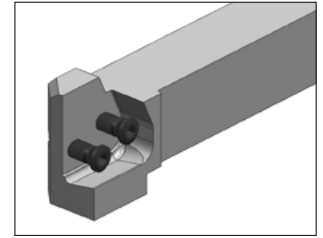
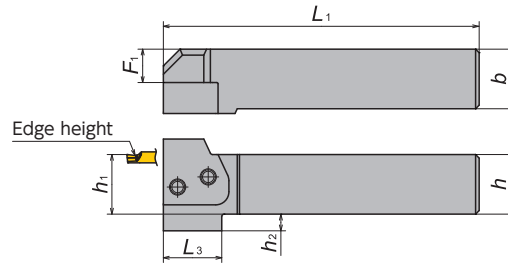
Change to

The grooving insert is plunged down both outside walls thus maintaining a good finish. The remaining material can be removed by using a stronger insert shape such as a RCGX style.

Groove DUO Blade

Straight style toolholder

GTWP-H



Right-Hand style shown

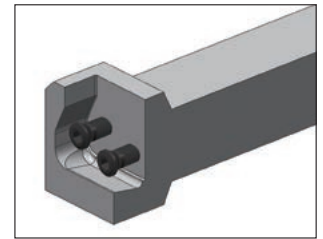
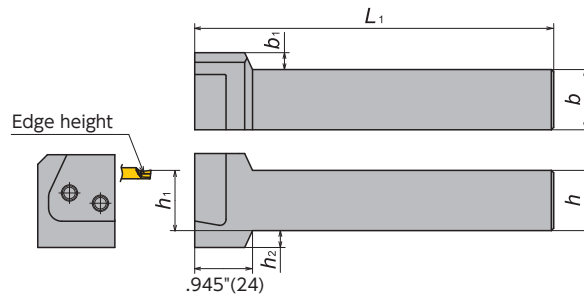
● Toolholder Body

Holder Number	Stock		Dimensions										Blade	Spare Parts					
			h		b		h ₁		L ₁		F ₁			h ₂		L ₃		Clamp Screw	Wrench
	R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)				
GTWP [®] 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.311	134.9	0.567	14.4	0.260	6.6	0.965	24.5	GBVR/L	FS128-6.0×18	LW-4
GTWP [®] 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.311	160.3	0.817	20.75	—	—	—	—	GBVR/L	FS128-6.0×18	LW-4
GTWP [®] 24-IN-H			1.500	—	1.500	—	1.500	—	6.311	160.3	1.067	27.1	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 32-IN-H			2.000	—	2.000	—	2.000	—	6.311	160.3	1.567	39.8	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP [®] 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.232	107.5	0.354	9	0.315	8	1.122	28.5	GBVR/L	FS128-6.0×18	LW-4
GTWP [®] 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.217	132.5	0.551	14	0.276	7	0.965	24.5	GBVR/L	FS128-6.0×18	LW-4
GTWP [®] 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.004	152.5	0.827	21	—	—	—	—	GBVR/L	FS128-6.0×18	LW-4

Groove DUO Blade

L-style toolholder

GKWP-H



Right-Hand style shown
* Use opposite hand blade

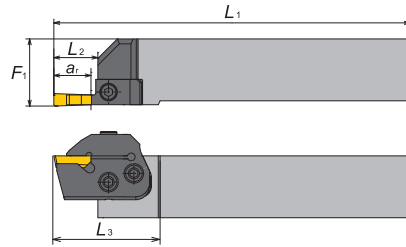
● Toolholder Body

Holder Number	Stock		Dimensions										Blade	Spare Parts			
			h		b		h ₁		L ₁		b ₁			h ₂		Clamp Screw	Wrench
	R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
GKWP [®] 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.961	151.4	0.260	6.6	0.260	6.6	GBVR/L	FS128-6.0×18	LW-4
GKWP [®] 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.961	176.8	—	—	—	—	GBVR/L	FS128-6.0×18	LW-4
GKWP [®] 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.882	124	0.472	12	0.315	8	GBVR/L	FS128-6.0×18	LW-4
GKWP [®] 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.866	149	0.276	7	0.276	7	GBVR/L	FS128-6.0×18	LW-4
GKWP [®] 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.654	169	—	—	—	—	GBVR/L	FS128-6.0×18	LW-4

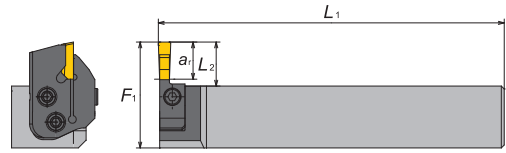
Blade for Straight Grooving

VGW

For GTWP



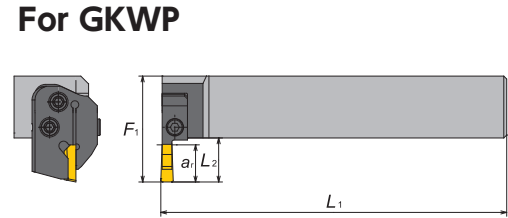
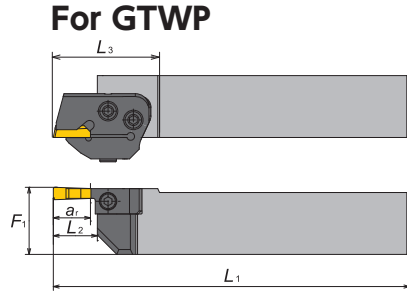
For GKWP



● Right hand

Hand	Blade number	Stock	Insert	Dimensions (inch)		Holder	Insert	Dimensions (inch)				
				a_r	L_2			GTWPR-H			GKWPL-H	
								L_1	L_3	F_1	L_1	F_1
R	GBVR-VGW4-3T09	●	VGW4125 VGW4156	.375	.441	GTWPR16-IN-H	VGW4125	5.750	1.404	1.090	5.972	1.439
						GKWPL16-IN-H	VGW4156			1.106	5.987	
						GTWPR20-IN-H	VGW4125	6.750	—	1.340	6.972	1.689
						GKWPL20-IN-H	VGW4156			1.356	6.987	
						GTWPR2020-H	VGW4125	4.671	1.561	0.878	4.893	1.226
						GKWPL2020-H	VGW4156			0.893	4.909	
						GTWPR2525-H	VGW4125	5.656	1.404	1.074	5.878	1.423
						GKWPL2525-H	VGW4156			1.090	5.893	
	GTWPR3232-H	VGW4125	6.443	—	1.350	6.665	1.699					
	GKWPL3232-H	VGW4156			1.365	6.680						
	GBVR-VGW4-4T14	●	VGW4156 VGW4187	.562	.689	GTWPR16-IN-H	VGW4156	6.000	1.654	1.094	5.976	1.689
						GKWPL16-IN-H	VGW4187			1.109	5.991	
						GTWPR20-IN-H	VGW4156	7.000	—	1.344	6.976	1.939
						GKWPL20-IN-H	VGW4187			1.359	6.991	
						GTWPR2020-H	VGW4156	4.921	1.811	0.881	4.897	1.476
						GKWPL2020-H	VGW4187			0.897	4.913	
						GTWPR2525-H	VGW4156	5.906	1.654	1.078	5.881	1.673
						GKWPL2525-H	VGW4187			1.094	5.897	
	GTWPR3232-H	VGW4156	6.693	—	1.354	6.669	1.949					
	GKWPL3232-H	VGW4187			1.369	6.684						
	GBVR-VGW6-6T14	●	VGW6218 VGW6250	.562	.689	GTWPR16-IN-H	VGW6218	6.000	1.654	1.109	5.991	1.689
						GKWPL16-IN-H	VGW6250			1.125	6.007	
						GTWPR20-IN-H	VGW6218	7.000	—	1.359	6.991	1.939
						GKWPL20-IN-H	VGW6250			1.375	7.007	
						GTWPR2020-H	VGW6218	4.921	1.811	0.897	4.913	1.476
						GKWPL2020-H	VGW6250			0.913	4.928	
						GTWPR2525-H	VGW6218	5.906	1.654	1.094	5.897	1.673
						GKWPL2525-H	VGW6250			1.109	5.913	
	GTWPR3232-H	VGW6218	6.693	—	1.369	6.684	1.949					
	GKWPL3232-H	VGW6250			1.385	6.700						
	GBVR-VGW6-6T19	●	VGW6250 VGW6281	.750	.890	GTWPR16-IN-H	VGW6250	6.200	1.854	1.106	5.987	1.889
						GKWPL16-IN-H	VGW6281			1.121	6.003	
						GTWPR20-IN-H	VGW6250	7.200	—	1.356	6.987	2.139
						GKWPL20-IN-H	VGW6281			1.371	7.003	
						GTWPR2020-H	VGW6250	5.121	2.011	0.893	4.909	1.676
						GKWPL2020-H	VGW6281			0.908	4.924	
GTWPR2525-H						VGW6250	6.106	1.854	1.090	5.893	1.873	
GKWPL2525-H						VGW6281			1.105	5.908		
GTWPR3232-H	VGW6250	6.893	—	1.365	6.680	2.149						
GKWPL3232-H	VGW6281			1.381	6.696							
GBVR-VGW8-8T19	●	VGW8312 VGW8344	.750	1.089	GTWPR16-IN-H	VGW8312	6.400	2.054	1.138	6.020	2.089	
					GKWPL16-IN-H	VGW8344			1.154	6.036		
					GTWPR20-IN-H	VGW8312	7.400	—	1.388	7.020	2.339	
					GKWPL20-IN-H	VGW8344			1.404	7.036		
					GTWPR2020-H	VGW8312	5.321	2.211	0.926	4.941	1.876	
					GKWPL2020-H	VGW8344			0.942	4.957		
					GTWPR2525-H	VGW8312	6.306	2.054	1.122	5.926	2.073	
					GKWPL2525-H	VGW8344			1.139	5.942		
GTWPR3232-H	VGW8312	7.093	—	1.398	6.713	2.349						
GKWPL3232-H	VGW8344			1.414	6.729							
GBVR-VGW8-8T28	●	VGW8344 VGW8375	1.125	1.189	GTWPR16-IN-H	VGW8344	6.500	2.154	1.133	6.015	2.189	
					GKWPL16-IN-H	VGW8375			1.148	6.030		
					GTWPR20-IN-H	VGW8344	7.500	—	1.383	7.015	2.439	
					GKWPL20-IN-H	VGW8375			1.398	7.030		
					GTWPR2020-H	VGW8344	5.421	2.311	0.920	4.936	1.976	
					GKWPL2020-H	VGW8375			0.935	4.951		
					GTWPR2525-H	VGW8344	6.406	2.154	1.117	5.920	2.173	
					GKWPL2525-H	VGW8375			1.132	5.935		
GTWPR3232-H	VGW8344	7.193	—	1.393	6.707	2.449						
GKWPL3232-H	VGW8375			1.408	6.723							

Grooving / Side Turning



● Left hand

Hand	Blade number	Stock	Insert	Dimensions (inch)		Holder	Insert	Dimensions (inch)				
				a ₁	L ₂			GTWPL-H			GKWPR-H	
								L ₁	L ₃	F ₁	L ₁	F ₁
L	GBVL-VGW4-3T09	●	VGW4125 VGW4156	.375	.441	GTWPL16-IN-H	VGW4125	5.750	1.404	1.090	5.972	1.439
						GKWPR16-IN-H	VGW4156			1.106	5.987	
						GTWPL20-IN-H	VGW4125	6.750	—	1.340	6.972	1.689
						GKWPR20-IN-H	VGW4156			1.356	6.987	
						GTWPL2020-H	VGW4125	4.671	1.561	0.878	4.893	1.226
						GKWPR2020-H	VGW4156			0.893	4.909	
						GTWPL2525-H	VGW4125	5.656	1.404	1.074	5.878	1.423
						GKWPR2525-H	VGW4156			1.090	5.893	
	GTWPL3232-H	VGW4125	6.443	—	1.350	6.665	1.699					
	GKWPR3232-H	VGW4156			1.365	6.680						
	GBVL-VGW4-4T14	●	VGW4156 VGW4187	.562	.689	GTWPL16-IN-H	VGW4156	6.000	1.654	1.094	5.976	1.689
						GKWPR16-IN-H	VGW4187			1.109	5.991	1.689
						GTWPL20-IN-H	VGW4156	7.000	—	1.344	6.976	1.939
						GKWPR20-IN-H	VGW4187			1.359	6.991	
						GTWPL2020-H	VGW4156	4.921	1.811	0.881	4.897	1.476
						GKWPR2020-H	VGW4187			0.897	4.913	
						GTWPL2525-H	VGW4156	5.906	1.654	1.078	5.881	1.673
						GKWPR2525-H	VGW4187			1.094	5.897	
	GTWPL3232-H	VGW4156	6.693	—	1.354	6.669	1.949					
	GKWPR3232-H	VGW4187			1.369	6.684						
	GBVL-VGW6-6T14	●	VGW6218 VGW6250	.562	.689	GTWPL16-IN-H	VGW6218	6.000	1.654	1.109	5.991	1.689
						GKWPR16-IN-H	VGW6250			1.125	6.007	1.689
						GTWPL20-IN-H	VGW6218	7.000	—	1.359	6.991	1.939
						GKWPR20-IN-H	VGW6250			1.375	7.007	
						GTWPL2020-H	VGW6218	4.921	1.811	0.897	4.913	1.476
						GKWPR2020-H	VGW6250			0.913	4.928	
						GTWPL2525-H	VGW6218	5.906	1.654	1.094	5.897	1.673
						GKWPR2525-H	VGW6250			1.109	5.913	
	GTWPL3232-H	VGW6218	6.693	—	1.369	6.684	1.949					
	GKWPR3232-H	VGW6250			1.385	6.700						
	GBVL-VGW6-6T19	●	VGW6250 VGW6281	.750	.890	GTWPL16-IN-H	VGW6250	6.200	1.854	1.106	5.987	1.889
						GKWPR16-IN-H	VGW6281			1.121	6.003	1.889
						GTWPL20-IN-H	VGW6250	7.200	—	1.356	6.987	2.139
						GKWPR20-IN-H	VGW6281			1.371	7.003	
						GTWPL2020-H	VGW6250	5.121	2.011	0.893	4.909	1.676
						GKWPR2020-H	VGW6281			0.908	4.924	
						GTWPL2525-H	VGW6250	6.106	1.854	1.090	5.893	1.873
						GKWPR2525-H	VGW6281			1.105	5.908	
	GTWPL3232-H	VGW6250	6.893	—	1.365	6.680	2.149					
	GKWPR3232-H	VGW6281			1.381	6.696						
	GBVL-VGW8-8T19	●	VGW8312 VGW8344	.750	1.089	GTWPL16-IN-H	VGW8312	6.400	2.054	1.138	6.020	2.089
						GKWPR16-IN-H	VGW8344			1.154	6.036	2.089
						GTWPL20-IN-H	VGW8312	7.400	—	1.388	7.020	2.339
						GKWPR20-IN-H	VGW8344			1.404	7.036	
						GTWPL2020-H	VGW8312	5.321	2.211	0.926	4.941	1.876
						GKWPR2020-H	VGW8344			0.942	4.957	
						GTWPL2525-H	VGW8312	6.306	2.054	1.122	5.926	2.073
						GKWPR2525-H	VGW8344			1.139	5.942	
GTWPL3232-H	VGW8312	7.093	—	1.398	6.713	2.349						
GKWPR3232-H	VGW8344			1.414	6.729							
GBVL-VGW8-8T28	●	VGW8344 VGW8375	1.125	1.189	GTWPL16-IN-H	VGW8344	6.500	2.154	1.133	6.015	2.189	
					GKWPR16-IN-H	VGW8375			1.148	6.030	2.189	
					GTWPL20-IN-H	VGW8344	7.500	—	1.383	7.015	2.439	
					GKWPR20-IN-H	VGW8375			1.398	7.030		
					GTWPL2020-H	VGW8344	5.421	2.311	0.920	4.936	1.976	
					GKWPR2020-H	VGW8375			0.935	4.951		
					GTWPL2525-H	VGW8344	6.406	2.154	1.117	5.920	2.173	
					GKWPR2525-H	VGW8375			1.132	5.935		
GTWPL3232-H	VGW8344	7.193	—	1.393	6.707	2.449						
GKWPR3232-H	VGW8375			1.408	6.723							

Inserts → H10

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ : Mirror finish

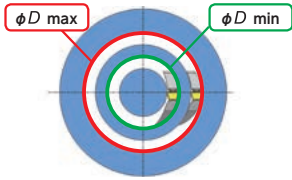
○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
 Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

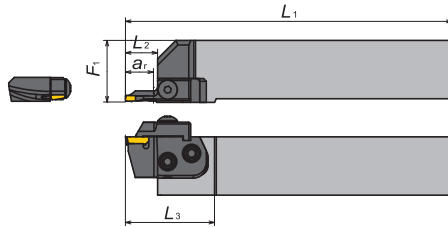
Grooving / Side Turning

Blade for Face Grooving

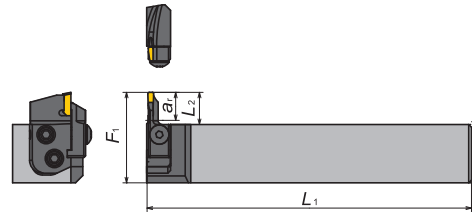
VGW



For GTWP



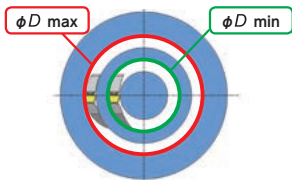
For GKWP



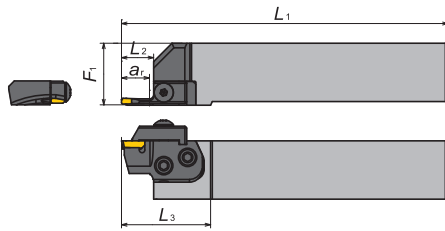
● Right hand

Curve	Blade number	Stock	Insert	O.D. range	Dimensions (inch)		Holder	Insert	Dimensions (inch)				
					ar	L ₂			GTWPR-H			GKWPL-H	
									L ₁	L ₃	F ₁	L ₁	F ₁
in	GBI-VGW4R3T15-101177	●	VGW4125 VGW4156	4"-7"	.600	.829	GTWPR16-IN-H	VGW4125	6.000	1.909	1.055	5.937	1.949
							GKWPL16-IN-H	VGW4156			1.070	5.952	
							GTWPR20-IN-H	VGW4125	7.000	1.909	1.305	6.937	1.939
							GKWPL20-IN-H	VGW4156			1.320	6.952	
							GTWPR2020-H	VGW4125	4.921	1.909	0.842	4.858	1.949
							GKWPL2020-H	VGW4156			0.857	4.873	
	GTWPR2525-H	VGW4125	5.906	1.909	1.039	5.842	1.949						
	GKWPL2525-H	VGW4156			1.054	5.857							
	GTWPR3232-H	VGW4125	6.693	1.909	1.315	6.630	1.949						
	GKWPL3232-H	VGW4156			1.330	6.645							
	GTWPR16-IN-H	VGW4125	6.000	1.909	1.055	5.937	1.949						
	GKWPL16-IN-H	VGW4156			1.070	5.952							
	GTWPR20-IN-H	VGW4125	7.000	1.909	1.305	6.937	1.939						
	GKWPL20-IN-H	VGW4156			1.320	6.952							
	GTWPR2020-H	VGW4125	4.921	1.909	0.842	4.858	1.949						
	GKWPL2020-H	VGW4156			0.857	4.873							
	GTWPR2525-H	VGW4125	5.906	1.909	1.039	5.842	1.949						
	GKWPL2525-H	VGW4156			1.054	5.857							
	GTWPR3232-H	VGW4125	6.693	1.909	1.315	6.630	1.949						
	GKWPL3232-H	VGW4156			1.330	6.645							
	GTWPR16-IN-H	VGW4156	6.000	1.909	1.058	5.940	1.949						
	GKWPL16-IN-H	VGW4187			1.074	5.956							
	GTWPR20-IN-H	VGW4156	7.000	1.909	1.308	6.940	1.939						
	GKWPL20-IN-H	VGW4187			1.324	6.956							
GTWPR2020-H	VGW4156	4.921	1.909	0.846	4.861	1.949							
GKWPL2020-H	VGW4187			0.861	4.877								
GTWPR2525-H	VGW4156	5.906	1.909	1.043	5.846	1.949							
GKWPL2525-H	VGW4187			1.058	5.861								
GTWPR3232-H	VGW4156	6.693	1.909	1.318	6.633	1.949							
GKWPL3232-H	VGW4187			1.334	6.649								
GTWPR16-IN-H	VGW4156	6.000	1.909	1.058	5.940	1.949							
GKWPL16-IN-H	VGW4187			1.074	5.956								
GTWPR20-IN-H	VGW4156	7.000	1.909	1.308	6.940	1.939							
GKWPL20-IN-H	VGW4187			1.324	6.956								
GTWPR2020-H	VGW4156	4.921	1.909	0.846	4.861	1.949							
GKWPL2020-H	VGW4187			0.861	4.877								
GTWPR2525-H	VGW4156	5.906	1.909	1.043	5.846	1.949							
GKWPL2525-H	VGW4187			1.058	5.861								
GTWPR3232-H	VGW4156	6.693	1.909	1.318	6.633	1.949							
GKWPL3232-H	VGW4187			1.334	6.649								
GTWPR16-IN-H	VGW6218	6.000	1.909	1.078	5.960	1.949							
GKWPL16-IN-H	VGW6250			1.094	5.976								
GTWPR20-IN-H	VGW6218	7.000	1.909	1.328	6.960	1.939							
GKWPL20-IN-H	VGW6250			1.344	6.976								
GTWPR2020-H	VGW6218	4.921	1.909	0.865	4.881	1.949							
GKWPL2020-H	VGW6250			0.881	4.897								
GTWPR2525-H	VGW6218	5.906	1.909	1.062	5.865	1.949							
GKWPL2525-H	VGW6250			1.078	5.881								
GTWPR3232-H	VGW6218	6.693	1.909	1.338	6.653	1.949							
GKWPL3232-H	VGW6250			1.354	6.669								
GTWPR16-IN-H	VGW6218	6.000	1.909	1.082	5.964	1.949							
GKWPL16-IN-H	VGW6250			1.098	5.980								
GTWPR20-IN-H	VGW6218	7.000	1.909	1.332	6.964	1.939							
GKWPL20-IN-H	VGW6250			1.348	6.980								
GTWPR2020-H	VGW6218	4.921	1.909	0.869	4.885	1.949							
GKWPL2020-H	VGW6250			0.885	4.901								
GTWPR2525-H	VGW6218	5.906	1.909	1.066	5.869	1.949							
GKWPL2525-H	VGW6250			1.082	5.885								
GTWPR3232-H	VGW6218	6.693	1.909	1.342	6.657	1.949							
GKWPL3232-H	VGW6250			1.357	6.672								

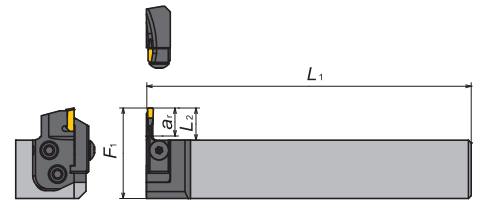
Grooving / Side Turning



For GTWP



For GKWP



● Right hand

Curve	Blade number	Stock	Insert	O.D. range	Dimensions (inch)		Holder	Insert	Dimensions (inch)				
					ar	L2			GTWPL-H		GKWPR-H		
									L1	L3	F1	L1	F1
out	GBO-VGW4R3T15-101177	●	VGW4125 VGW4156	4"-7"	.600	.829	GTWPR16-IN-H	VGW4125	6.000	1.909	1.055	5.937	1.949
							GKWPL16-IN-H	VGW4156	1.070	5.952			
							GTWPR20-IN-H	VGW4125	7.000	1.909	1.305	6.937	1.939
							GKWPL20-IN-H	VGW4156	1.320	6.952			
							GTWPR2020-H	VGW4125	4.921	1.909	0.842	4.858	1.949
							GKWPL2020-H	VGW4156	0.857	4.873			
	GTWPR2525-H	VGW4125	5.906	1.909	1.039	5.842	1.949						
	GKWPL2525-H	VGW4156	1.054	5.857									
	GTWPR3232-H	VGW4125	6.693	1.909	1.315	6.630	1.949						
	GKWPL3232-H	VGW4156	1.330	6.645									
	GBO-VGW4R3T15-177999	●	VGW4125 VGW4156	7" and over	.600	.829	GTWPR16-IN-H	VGW4125	6.000	1.909	1.094	5.976	1.949
							GKWPL16-IN-H	VGW4156	1.109	5.991			
							GTWPR20-IN-H	VGW4125	7.000	1.909	1.344	6.976	1.939
							GKWPL20-IN-H	VGW4156	1.359	6.991			
							GTWPR2020-H	VGW4125	4.921	1.909	0.881	4.897	1.949
							GKWPL2020-H	VGW4156	0.897	4.913			
	GTWPR2525-H	VGW4125	5.906	1.909	1.078	5.881	1.949						
	GKWPL2525-H	VGW4156	1.094	5.897									
	GTWPR3232-H	VGW4125	6.693	1.909	1.354	6.669	1.949						
	GKWPL3232-H	VGW4156	1.369	6.684									
	GBO-VGW4R4T15-101177	●	VGW4156 VGW4187	4"-7"	.600	.829	GTWPR16-IN-H	VGW4156	6.000	1.909	1.058	5.940	1.949
							GKWPL16-IN-H	VGW4187	1.074	5.956			
							GTWPR20-IN-H	VGW4156	7.000	1.909	1.308	6.940	1.939
							GKWPL20-IN-H	VGW4187	1.324	6.956			
GTWPR2020-H							VGW4156	4.921	1.909	0.846	4.861	1.949	
GKWPL2020-H							VGW4187	0.861	4.877				
GTWPR2525-H	VGW4156	5.906	1.909	1.043	5.846	1.949							
GKWPL2525-H	VGW4187	1.058	5.861										
GTWPR3232-H	VGW4156	6.693	1.909	1.318	6.633	1.949							
GKWPL3232-H	VGW4187	1.334	6.649										
GBO-VGW4R4T15-177999	●	VGW4156 VGW4187	7" and over	.600	.829	GTWPR16-IN-H	VGW4156	6.000	1.909	1.094	5.976	1.949	
						GKWPL16-IN-H	VGW4187	1.109	5.991				
						GTWPR20-IN-H	VGW4156	7.000	1.909	1.344	6.976	1.939	
						GKWPL20-IN-H	VGW4187	1.359	6.991				
						GTWPR2020-H	VGW4156	4.921	1.909	0.881	4.897	1.949	
						GKWPL2020-H	VGW4187	0.897	4.916				
GTWPR2525-H	VGW4156	5.906	1.909	1.078	5.881	1.949							
GKWPL2525-H	VGW4187	1.094	5.897										
GTWPR3232-H	VGW4156	6.693	1.909	1.354	6.669	1.949							
GKWPL3232-H	VGW4187	1.369	6.684										
GBO-VGW6R6T15-101177	●	VGW6218 VGW6250	4"-7"	.600	.829	GTWPR16-IN-H	VGW6218	6.000	1.909	1.078	5.960	1.949	
						GKWPL16-IN-H	VGW6250	1.094	5.976				
						GTWPR20-IN-H	VGW6218	7.000	1.909	1.328	6.960	1.939	
						GKWPL20-IN-H	VGW6250	1.344	6.976				
						GTWPR2020-H	VGW6218	4.921	1.909	0.865	4.881	1.949	
						GKWPL2020-H	VGW6250	0.881	4.897				
GTWPR2525-H	VGW6218	5.906	1.909	1.062	5.865	1.949							
GKWPL2525-H	VGW6250	1.078	5.881										
GTWPR3232-H	VGW6218	6.693	1.909	1.338	6.653	1.949							
GKWPL3232-H	VGW6250	1.354	6.669										
GBO-VGW6R6T15-177999	●	VGW6218 VGW6250	7" and over	.600	.829	GTWPR16-IN-H	VGW6218	6.000	1.909	1.082	5.964	1.949	
						GKWPL16-IN-H	VGW6250	1.098	5.980				
						GTWPR20-IN-H	VGW6218	7.000	1.909	1.332	6.964	1.939	
						GKWPL20-IN-H	VGW6250	1.348	6.980				
						GTWPR2020-H	VGW6218	4.921	1.909	0.869	4.885	1.949	
						GKWPL2020-H	VGW6250	0.885	4.901				
GTWPR2525-H	VGW6218	5.906	1.909	1.066	5.869	1.949							
GKWPL2525-H	VGW6250	1.082	5.885										
GTWPR3232-H	VGW6218	6.693	1.909	1.342	6.657	1.949							
GKWPL3232-H	VGW6250	1.357	6.672										

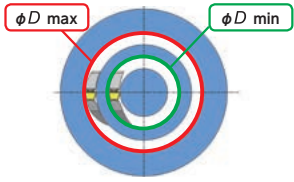
Inserts → H10

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ □ □ □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R) L : 1-2 week delivery (Right / Left-hand only)
 (R) L : 1-2 week delivery (Right / Left-hand only, Newly added)

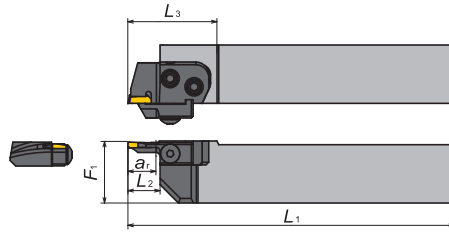
Grooving / Side Turning

Blade for Face Grooving

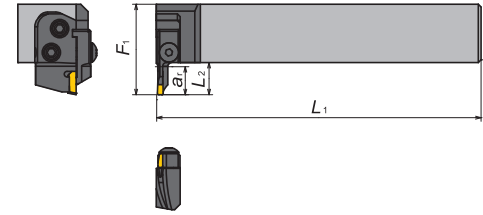
VGW



For GTWP



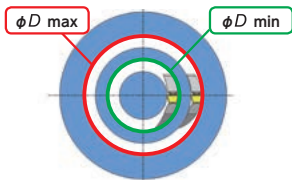
For GKWP



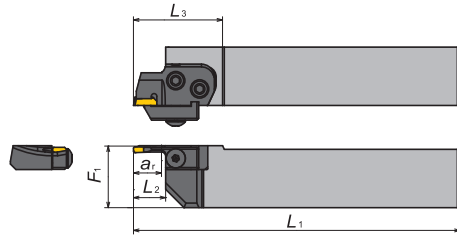
● Left hand

Curve	Blade number	Stock	Insert	O.D. range	Dimensions (inch)		Holder	Insert	Dimensions (inch)				
					a _r	L ₂			GTWPR-H			GKWPL-H	
									L ₁	L ₃	F ₁	L ₁	F ₁
in	GBI-VGW4L3T15-101177	●	VGW4125 VGW4156	4"-7"	.600	.829	GTWPR16-IN-H	VGW4125	6.000	1.909	1.055	5.937	1.949
							GKWPL16-IN-H	VGW4156			1.070	5.952	
							GTWPR20-IN-H	VGW4125	7.000	1.909	1.305	6.937	1.939
							GKWPL20-IN-H	VGW4156			1.320	6.952	
							GTWPR2020-H	VGW4125	4.921	1.909	0.842	4.858	1.949
							GKWPL2020-H	VGW4156			0.857	4.873	
							GTWPR2525-H	VGW4125	5.906	1.909	1.039	5.842	1.949
							GKWPL2525-H	VGW4156			1.054	5.857	
	GTWPR3232-H	VGW4125	6.693	1.909	1.315	6.630	1.949						
	GKWPL3232-H	VGW4156			1.330	6.645							
	GBI-VGW4L3T15-177999	●	VGW4125 VGW4156	7" and over	.600	.829	GTWPR16-IN-H	VGW4125	6.000	1.909	1.055	5.933	1.949
							GKWPL16-IN-H	VGW4156			1.070	5.952	
							GTWPR20-IN-H	VGW4125	7.000	1.909	1.305	6.937	1.939
							GKWPL20-IN-H	VGW4156			1.320	6.952	
							GTWPR2020-H	VGW4125	4.921	1.909	0.842	4.858	1.949
							GKWPL2020-H	VGW4156			0.857	4.873	
							GTWPR2525-H	VGW4125	5.906	1.909	1.039	5.842	1.949
							GKWPL2525-H	VGW4156			1.054	5.857	
	GTWPR3232-H	VGW4125	6.693	1.909	1.315	6.630	1.949						
	GKWPL3232-H	VGW4156			1.330	6.645							
	GBI-VGW4L4T15-101177	●	VGW4156 VGW4187	4"-7"	.600	.829	GTWPR16-IN-H	VGW4156	6.000	1.909	1.058	5.940	1.949
							GKWPL16-IN-H	VGW4187			1.074	5.956	
							GTWPR20-IN-H	VGW4156	7.000	1.909	1.308	6.940	1.939
							GKWPL20-IN-H	VGW4187			1.324	6.956	
GTWPR2020-H							VGW4156	4.921	1.909	0.846	4.861	1.949	
GKWPL2020-H							VGW4187			0.861	4.877		
GTWPR2525-H							VGW4156	5.906	1.909	1.043	5.846	1.949	
GKWPL2525-H							VGW4187			1.058	5.861		
GTWPR3232-H	VGW4156	6.693	1.909	1.318	6.633	1.949							
GKWPL3232-H	VGW4187			1.334	6.649								
GBI-VGW4L4T15-177999	●	VGW4156 VGW4187	7" and over	.600	.829	GTWPR16-IN-H	VGW4156	6.000	1.909	1.058	5.940	1.949	
						GKWPL16-IN-H	VGW4187			1.074	5.956		
						GTWPR20-IN-H	VGW4156	7.000	1.909	1.308	6.940	1.939	
						GKWPL20-IN-H	VGW4187			1.324	6.956		
						GTWPR2020-H	VGW4156	4.921	1.909	0.846	4.861	1.949	
						GKWPL2020-H	VGW4187			0.861	4.877		
						GTWPR2525-H	VGW4156	5.906	1.909	1.043	5.846	1.949	
						GKWPL2525-H	VGW4187			1.058	5.861		
GTWPR3232-H	VGW4156	6.693	1.909	1.318	6.633	1.949							
GKWPL3232-H	VGW4187			1.334	6.649								
GBI-VGW6L6T15-101177	●	VGW6218 VGW6250	4"-7"	.600	.829	GTWPR16-IN-H	VGW6218	6.000	1.909	1.078	5.960	1.949	
						GKWPL16-IN-H	VGW6250			1.094	5.976		
						GTWPR20-IN-H	VGW6218	7.000	1.909	1.328	6.960	1.939	
						GKWPL20-IN-H	VGW6250			1.344	6.976		
						GTWPR2020-H	VGW6218	4.921	1.909	0.865	4.881	1.949	
						GKWPL2020-H	VGW6250			0.881	4.897		
						GTWPR2525-H	VGW6218	5.906	1.909	1.062	5.865	1.949	
						GKWPL2525-H	VGW6250			1.078	5.881		
GTWPR3232-H	VGW6218	6.693	1.909	1.338	6.653	1.949							
GKWPL3232-H	VGW6250			1.354	6.669								
GBI-VGW6L6T15-177999	●	VGW6218 VGW6250	7" and over	.600	.829	GTWPR16-IN-H	VGW6218	6.000	1.909	1.082	5.964	1.949	
						GKWPL16-IN-H	VGW6250			1.098	5.980		
						GTWPR20-IN-H	VGW6218	7.000	1.909	1.332	6.964	1.939	
						GKWPL20-IN-H	VGW6250			1.348	6.980		
						GTWPR2020-H	VGW6218	4.921	1.909	0.869	4.885	1.949	
						GKWPL2020-H	VGW6250			0.885	4.901		
						GTWPR2525-H	VGW6218	5.906	1.909	1.066	5.869	1.949	
						GKWPL2525-H	VGW6250			1.082	5.885		
GTWPR3232-H	VGW6218	6.693	1.909	1.342	6.657	1.949							
GKWPL3232-H	VGW6250			1.357	6.672								

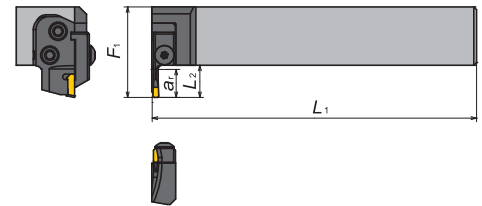
Grooving / Side Turning



For GTWP



For GKWP



● Left hand

Curve	Blade number	Stock	Insert	O.D. range	Dimensions (inch)		Holder	Insert	Dimensions (inch)				
					ar	L ₂			GTWPL-H		GKWPR-H		
									L ₁	L ₃	F ₁	L ₁	F ₁
out	GBO-VGW4L3T15-101177	●	VGW4125 VGW4156	4"-7"	.600	.829	GTWPR16-IN-H	VGW4125	6.000	1.909	1.055	5.937	1.949
							GKWPL16-IN-H	VGW4156			1.070	5.952	
							GTWPR20-IN-H	VGW4125	7.000	1.909	1.305	6.937	1.939
							GKWPL20-IN-H	VGW4156			1.320	6.952	
							GTWPR2020-H	VGW4125	4.921	1.909	0.842	4.858	1.949
							GKWPL2020-H	VGW4156			0.857	4.873	
							GTWPR2525-H	VGW4125	5.906	1.909	1.039	5.842	1.949
							GKWPL2525-H	VGW4156			1.054	5.857	
	GBO-VGW4L3T15-177999	●	VGW4125 VGW4156	7" and over	.600	.829	GTWPR16-IN-H	VGW4125	6.000	1.909	1.094	5.976	1.949
							GKWPL16-IN-H	VGW4156			1.109	5.991	
							GTWPR20-IN-H	VGW4125	7.000	1.909	1.344	6.976	1.939
							GKWPL20-IN-H	VGW4156			1.359	6.991	
							GTWPR2020-H	VGW4125	4.921	1.909	0.881	4.897	1.949
							GKWPL2020-H	VGW4156			0.897	4.913	
							GTWPR2525-H	VGW4125	5.906	1.909	1.078	5.881	1.949
							GKWPL2525-H	VGW4156			1.094	5.897	
	GBO-VGW4L4T15-101177	●	VGW4156 VGW4187	4"-7"	.600	.829	GTWPR16-IN-H	VGW4156	6.000	1.909	1.058	5.940	1.949
							GKWPL16-IN-H	VGW4187			1.074	5.956	
							GTWPR20-IN-H	VGW4156	7.000	1.909	1.308	6.940	1.939
							GKWPL20-IN-H	VGW4187			1.324	6.956	
							GTWPR2020-H	VGW4156	4.921	1.909	0.846	4.861	1.949
							GKWPL2020-H	VGW4187			0.861	4.877	
							GTWPR2525-H	VGW4156	5.906	1.909	1.043	5.846	1.949
							GKWPL2525-H	VGW4187			1.058	5.861	
GBO-VGW4L4T15-177999	●	VGW4156 VGW4187	7" and over	.600	.829	GTWPR16-IN-H	VGW4156	6.000	1.909	1.094	5.976	1.949	
						GKWPL16-IN-H	VGW4187			1.109	5.991		
						GTWPR20-IN-H	VGW4156	7.000	1.909	1.344	6.976	1.939	
						GKWPL20-IN-H	VGW4187			1.359	6.991		
						GTWPR2020-H	VGW4156	4.921	1.909	0.881	4.897	1.949	
						GKWPL2020-H	VGW4187			0.897	4.916		
						GTWPR2525-H	VGW4156	5.906	1.909	1.078	5.881	1.949	
						GKWPL2525-H	VGW4187			1.094	5.897		
GBO-VGW6L6T15-101177	●	VGW6218 VGW6250	4"-7"	.600	.829	GTWPR16-IN-H	VGW6218	6.000	1.909	1.078	5.960	1.949	
						GKWPL16-IN-H	VGW6250			1.094	5.976		
						GTWPR20-IN-H	VGW6218	7.000	1.909	1.328	6.960	1.939	
						GKWPL20-IN-H	VGW6250			1.344	6.976		
						GTWPR2020-H	VGW6218	4.921	1.909	0.865	4.881	1.949	
						GKWPL2020-H	VGW6250			0.881	4.897		
						GTWPR2525-H	VGW6218	5.906	1.909	1.062	5.865	1.949	
						GKWPL2525-H	VGW6250			1.078	5.881		
GBO-VGW6L6T15-177999	●	VGW6218 VGW6250	7" and over	.600	.829	GTWPR16-IN-H	VGW6218	6.000	1.909	1.082	5.964	1.949	
						GKWPL16-IN-H	VGW6250			1.098	5.980		
						GTWPR20-IN-H	VGW6218	7.000	1.909	1.332	6.964	1.939	
						GKWPL20-IN-H	VGW6250			1.348	6.980		
						GTWPR2020-H	VGW6218	4.921	1.909	0.869	4.885	1.949	
						GKWPL2020-H	VGW6250			0.885	4.901		
						GTWPR2525-H	VGW6218	5.906	1.909	1.066	5.869	1.949	
						GKWPL2525-H	VGW6250			1.082	5.885		
GTWPR3232-H	VGW6218	6.693	1.909	1.342	6.657	1.949							
GKWPL3232-H	VGW6250			1.357	6.672								

Inserts → H10

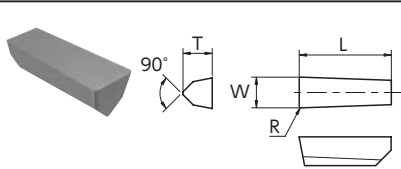
● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ □ □ □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R) L : 1-2 week delivery (Right / Left-hand only)
 (R) L : 1-2 week delivery (Right / Left-hand only, Newly added)

Grooving / Side Turning

Grooving / Side Turning

VGW

● : 1st Choice ● : 2nd choice



Steel	P									
Stainless Steel	M									
Cast Iron	K					●	●	●	●	●
Non-Ferrous Material	N									
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●
Hardened Material	H									●

Item Number	W	R	T	L	BIDEMICS		SiALON			Whisker
					JX1	JX3	SX7	SX3	SX5	WA1
VGW 41251 E02	.125	.015	.187	.500	●	●				
VGW 41251 EX001	.125	.015	.187	.500						●
VGW 41251 T0220	.125	.015	.187	.500			●	●		
VGW 41252 E02	.125	.031	.187	.500	●	●				
VGW 41252 EX001	.125	.031	.187	.500						●
VGW 41252 T0220	.125	.031	.187	.500			●	●		
VGW 41561 E02	.156	.015	.187	.500	●	●				
VGW 41561 EX001	.156	.015	.187	.500						●
VGW 41561 T0220	.156	.015	.187	.500			●	●		
VGW 41562 E02	.156	.031	.187	.500	●	●				
VGW 41562 EX001	.156	.031	.187	.500						●
VGW 41562 T0220	.156	.031	.187	.500			●	●		
VGW 41871 E02	.187	.015	.187	.500	●	●				
VGW 41871 EX001	.187	.015	.187	.500						●
VGW 41871 T0220	.187	.015	.187	.500			●	●	●	
VGW 41872 E02	.187	.031	.187	.500	●	●				
VGW 41872 EX001	.187	.031	.187	.500						●
VGW 41872 T0220	.187	.031	.187	.500			●	●	●	
VGW 62501 E02	.250	.015	.250	.750	●	●				
VGW 62501 T0220	.250	.015	.250	.750			●	●		●
VGW 62501 T0420	.250	.015	.250	.750						●
VGW 62501 Z0420	.250	.015	.250	.750						●
VGW 62502 E02	.250	.031	.250	.750	●	●				
VGW 62502 EX001	.250	.031	.250	.750						●
VGW 62502 T0220	.250	.031	.250	.750			●	●	●	
VGW 62503 E02	.250	.046	.250	.750	●	●				
VGW 62503 T0220	.250	.046	.250	.750			●	●	●	
VGW 62814 E02	.281	.062	.250	.750	●	●				
VGW 62814 T0220	.281	.062	.250	.750			●	●		
VGW 83122 E02	.312	.031	.337	1.000	●	●				
VGW 83122 EX001	.312	.031	.337	1.000						●
VGW 83122 T0220	.312	.031	.337	1.000			●	●		
VGW 83124 E02	.312	.062	.337	1.000	●	●				
VGW 83124 EX001	.312	.062	.337	1.000						●
VGW 83124 T0220	.312	.062	.337	1.000			●	●	●	
VGW 83752 E02	.375	.031	.337	1.000	●	●				
VGW 83752 EX001	.375	.031	.337	1.000						●
VGW 83752 T0220	.375	.031	.337	1.000			●	●	●	
VGW 83754 E02	.375	.062	.337	1.000	●	●				
VGW 83754 EX001	.375	.062	.337	1.000						●
VGW 83754 T0220	.375	.062	.337	1.000			●	●	●	●

Grooving / Side Turning

VGW..R

● : 1st Choice ● : 2nd choice

Item Number	W	R	T	L	BIDEMICS		SiALON			Whisker	
					JX1	JX3	SX7	SX3	SX5	WA1	
					Steel	P					
					Stainless Steel	M					
					Cast Iron	K		●	●	●	●
					Non-Ferrous Material	N					
					Heat Resistant Alloy	S	●	●	●	●	●
					Hardened Material	H					●
VGW 4125R E02	.125	.063	.187	.500	●	●					
VGW 4125R EX001	.125	.063	.187	.500							●
VGW 4125R T0220	.125	.063	.187	.500			●	●			
VGW 4156R E02	.156	.078	.187	.500	●	●					
VGW 4156R EX001	.156	.078	.187	.500							●
VGW 4156R T0220	.156	.078	.187	.500			●	●			●
VGW 4156R Z0820	.156	.078	.187	.500							●
VGW 4187R E02	.187	.094	.187	.500	●	●					
VGW 4187R EX001	.187	.094	.187	.500							●
VGW 4187R T0220	.187	.094	.187	.500			●	●	●		
VGW 6218R E02	.218	.109	.250	.750	●	●					
VGW 6218R EX001	.218	.109	.250	.750							●
VGW 6218R T0220	.218	.109	.250	.750			●	●			
VGW 6250R E02	.250	.125	.250	.750	●	●					
VGW 6250R EX001	.250	.125	.250	.750							●
VGW 6250R T0220	.250	.125	.250	.750			●	●	●		
VGW 6281R EX001	.281	.141	.250	.750							●
VGW 8312R E02	.312	.156	.337	1.000	●	●					
VGW 8312R EX001	.312	.156	.337	1.000							●
VGW 8312R T0220	.312	.156	.337	1.000			●	●	●		
VGW 8344R EX001	.344	.172	.337	1.000							●
VGW 8375R E02	.375	.188	.337	1.000	●	●					
VGW 8375R EX001	.375	.188	.337	1.000							●
VGW 8375R T0220	.375	.188	.337	1.000			●	●	●		

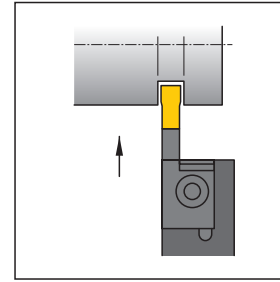
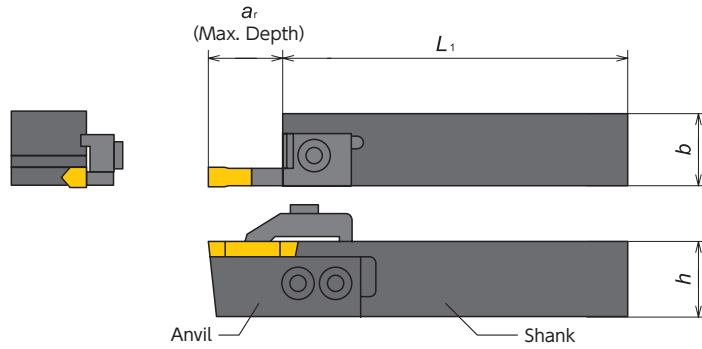
Holders → H8 • H9 • H10 • H11 • H12 • H13

Grooving /
Side Turning

Grooving / Side Turning

DB

Straight OD turning



• Right-hand shown

● Toolholder Body

Item Number	Stock		Dimensions (inch)				Insert	Anvil Screw	Stock	Clamp Screw	Stock
	R	L	h	b	L_1	a_r					
DB1-1-16 $\frac{1}{4}$	●	●	1.00	1.00	6.00	.750		DAS41	●	SC40F10	●
DB1-1-20 $\frac{1}{4}$	●	●	1.25	1.25	7.00	.750					

Note: Toolholder body comes with anvil screw and clamp screw. Anvils and Clamps are sold separately

● Anvils and Clamps

Insert	DB-1-16R (Right hand)				DB-1-16L (Left hand)			
	Anvil	Stock	Clamp	Stock	Anvil	Stock	Clamp	Stock
VDB125	R1E04	●	CR1-1-E04	●	L1E04	●	CL1-1-E04	●
VDB156	R1E05	●	CR1-1-E06	●	L1E05	●	CL1-1-E06	●
VDB188 / VDB218	R1E06	●	CR1-1-E06	●	L1E06	●	CL1-1-E06	●
VDB250	R1E07	●	CR1-1-E07	●	L1E07	●	CL1-1-E07	●
VDB281 / VDB312	R1E09	●	CR1-1-E09	●	L1E09	●	CL1-1-E09	●
VDB344 / VDB375	R1E11	●	CR1-1-E11	●	L1E11	●	CL1-1-E11	●

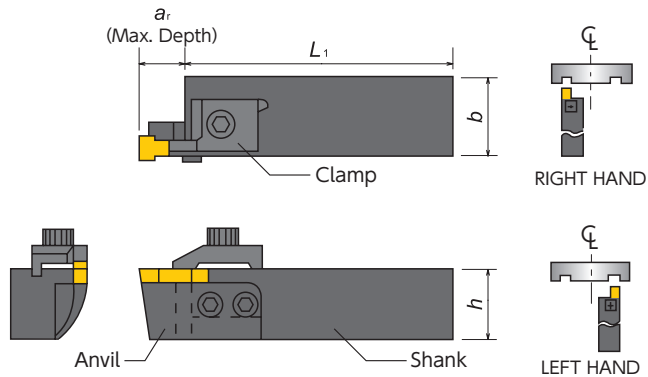
Insert	DB-1-20R (Right hand)				DB-1-20L (Left hand)			
	Anvil	Stock	Clamp	Stock	Anvil	Stock	Clamp	Stock
VDB125	R2E04	●	CR1-1-E04	●	L2E04	●	CL1-1-E04	●
VDB156	R2E05	●	CR1-1-E06	●	L2E05	○	CL1-1-E06	●
VDB188 / VDB218	R2E06	●	CR1-1-E06	●	L2E06	●	CL1-1-E06	●
VDB250	R2E07	●	CR1-1-E07	●	L2E07	●	CL1-1-E07	●
VDB281 / VDB312	R2E09	●	CR1-1-E09	●	L2E09	●	CL1-1-E09	●
VDB344 / VDB375	R2E11	●	CR1-1-E11	●	L2E11	●	CL1-1-E11	●

Inserts → H18

DB

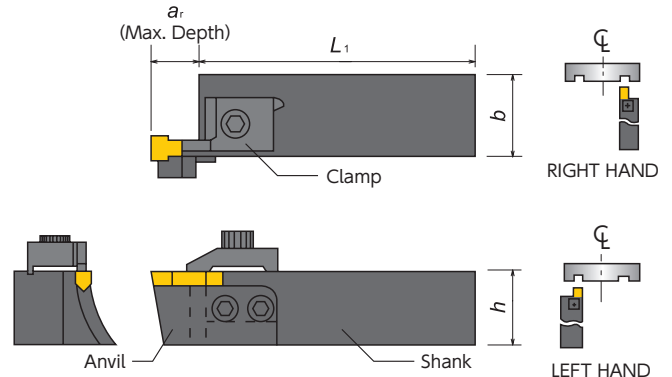
Face Grooving

Curve In



• Right-hand shown

Curve Out



• Right-hand shown

Toolholder Body

Item Number	Stock		Dimensions (inch)				Insert	Anvil Screw	Stock	Clamp Screw	Stock
	R	L	h	b	L ₁	a _r					
DB7-1-7-16 ^{R/L}	○	●	1.00	1.00	6.00	.750	 VDB VDB..R	DAS41	●	SC40F10	●
DB7-1-7-20 ^{R/L}	●	●	1.25	1.25	7.00	.750					

Note: Toolholder body comes with anvil screw and clamp screw. Anvils and Clamps are sold separately

Anvils and Clamps

Curve In

Shank	Insert	O.D. range				Clamp	Stock
		3" - 4 1/2"	4 1/2" - 7"	7" - 14"	14" and over		
DB7-1-7-16R DB7-1-7-20R	VDB156 / VDB188	DBA-3305 ○	DBA-3405 ○	DBA-3505 ○	DBA-3605 ○	CR1-1-E06A	○
	VDB250	DBA-3307 ○	DBA-3407 ○	DBA-3507 ○	DBA-3607 ○	CR1-1-E07A	●
DB7-1-7-16L DB7-1-7-20L	VDB281 / VDB312	DBA-3309 ○	DBA-3309 ○	DBA-3509 ○	DBA-3509 ○	CR1-1-E09A	○
	VDB344 / VDB375	DBA-3311 ○	DBA-3311 ○	DBA-3511 ○	DBA-3511 ○	CR1-1-E11A	●

Curve Out

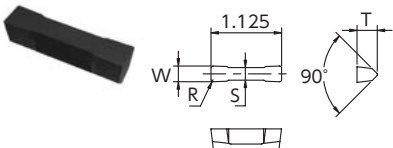
Shank	Insert	O.D. range				Clamp	Stock
		3" - 4 1/2"	4 1/2" - 7"	7" - 14"	14" and over		
DB7-1-7-16R DB7-1-7-20R	VDB156 / VDB188	DBA-4305 ○	DBA-4405 ○	DBA-4505 ○	DBA-4605 ○	CR1-1-E06A	○
	VDB250	DBA-4307 ○	DBA-4407 ○	DBA-4507 ○	DBA-4607 ○	CR1-1-E07A	●
DB7-1-7-16L DB7-1-7-20L	VDB281 / VDB312	DBA-4309 ○	DBA-4309 ○	DBA-4509 ○	DBA-4509 ○	CR1-1-E09A	○
	VDB344 / VDB375	DBA-4311 ○	DBA-4311 ○	DBA-4511 ○	DBA-4511 ○	CR1-1-E11A	●

Inserts → H18

Grooving / Side Turning

VDB

● : 1st Choice ● : 2nd choice

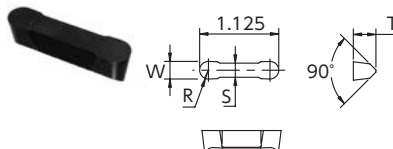


Item Number	W	R	S	T	SIALON		Whisker	Alumina - TiC
					SX9	SX5	WA1	HC2
VDB 125 A015 T0225	.125	.015	.106	.250				●
VDB 156 A015 T0225	.156	.015	.106	.250				●
VDB 188 A015 T0225	.188	.015	.144	.250				●
VDB 218 A015 T0225	.218	.015	.144	.250				●
VDB 250 B015 T0225	.250	.015	.202	.337				●
VDB 250 B031 T0220	.250	.031	.202	.337	●	●	●	
VDB 250 B062 T0220	.250	.062	.202	.337	●			
VDB 281 B015 T0225	.281	.015	.202	.337				●
VDB 312 B015 T0225	.312	.015	.202	.337				●
VDB 312 B031 EX001	.312	.031	.202	.337			●	
VDB 312 B031 T0220	.312	.031	.202	.337		●		
VDB 312 B062 EX001	.312	.062	.202	.337			●	
VDB 312 B062 T0220	.312	.062	.202	.337		●		
VDB 344 B015 T0225	.344	.015	.275	.337				●
VDB 375 B015 T0225	.375	.015	.275	.337				●
VDB 375 B031 EX001	.375	.031	.275	.337			●	
VDB 375 B031 T0220	.375	.031	.275	.337		●		
VDB 375 B046 E02	.375	.046	.275	.337	●			
VDB 375 B046 T0220	.375	.046	.275	.337	●			
VDB 375 B062 E02	.375	.062	.275	.337	●			
VDB 375 B062 T0220	.375	.062	.275	.337	●	●		

Holders → H16 • H17

VDB..R

● : 1st Choice ● : 2nd choice

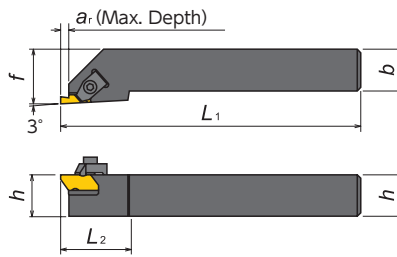


Item Number	W	R	S	T	SIALON		Whisker	Alumina - TiC
					SX9	SX5	WA1	HC2
VDB 125 RA T0225	.125	.063	.106	.250				●
VDB 156 RA T0225	.156	.078	.106	.250				●
VDB 188 RA T0225	.188	.094	.144	.250				●
VDB 218 RA T0225	.218	.109	.144	.250				●
VDB 250 RB T0220	.250	.125	.202	.337		●	●	
VDB 250 RB T0225	.250	.125	.202	.337				●
VDB 281 RB T0225	.281	.141	.202	.337				●
VDB 312 RB T0225	.312	.156	.202	.337				●
VDB 344 RB T0225	.344	.172	.275	.337				●
VDB 375 RB T0225	.375	.188	.275	.337				●

Holders → H16 • H17

Grooving / Side Turning

NS



● Toolholders

Item Number	Stock	Dimensions (inch)						Insert	Clamp	Stock	Clamp Screw	Stock
		h	b	L ₁	L ₂	f	a _r					
NSR16-3D	●	1.00	1.00	6.00	1.25	1.25	0.210	GKN3..R RKN3..R GKP3..R	CM-72		S-412	
NSL16-3D	●	1.00	1.00	6.00	1.25	1.25	0.210	GKN3..L RKN3..L GKP3..L	CM-73		S-412	

GKN / GKP

● : 1st Choice ● : 2nd choice

Item Number	W	R	D	Alumina - TiC		PVD-Carbide
				HC2	ZC4	QM3
				Steel	P	
Stainless Steel	M				●	
Cast Iron	K	●		●		
Non-Ferrous Material	N					
Heat Resistant Alloy	S				●	
Hardened Material	H	●		●	●	

Item Number	W	R	D	HC2	ZC4	QM3
GKP 3031 ^{R/L}	.031	.004	.050			R L
GKP 3047 ^{R/L}	.047	.008	.075			
GKN 3062 ^{R/L}	.062	.008	.094	R L	R L	
GKP 3062 ^{R/L}	.062	.008	.094			R L
GKP 3088 ^{R/L}	.088	.008	.094			
GKN 3094 ^{R/L}	.094	.008	.150	R L	R L	
GKP 3094 ^{R/L}	.094	.008	.150			R L
GKN 3125 ^{R/L}	.125	.012	.150	R L	R L	
GKP 3125 ^{R/L}	.125	.008	.150			R L
GKN 3156 ^{R/L}	.156	.012	.150	R L		
GKP 3156 ^{R/L}	.156	.008	.150			R L
GKN 3189 ^{R/L}	.189	.012	.150	R L		
GKP 3189 ^{R/L}	.189	.012	.150			R L

Grooving / Side Turning

RKN

● : 1st Choice ● : 2nd choice

Item Number	W	R	D	Alumina - TiC		PVD-Carbide
				HC2	ZC4	QM3
				Steel	P	
Stainless Steel	M				●	
Cast Iron	K	●		●		
Non-Ferrous Material	N					
Heat Resistant Alloy	S				●	
Hardened Material	H	●		●	●	

Item Number	W	R	D	HC2	ZC4	QM3
RKN 3078 ^{R/L}	.078	.039	.150		R L	
RKN 3094 ^{R/L}	.094	.047	.150		R L	
RKN 3125 ^{R/L}	.125	.063	.150		R L	
RKN 3156 ^{R/L}	.156	.078	.150		R L	
RKN 3189 ^{R/L}	.189	.095	.150		R	

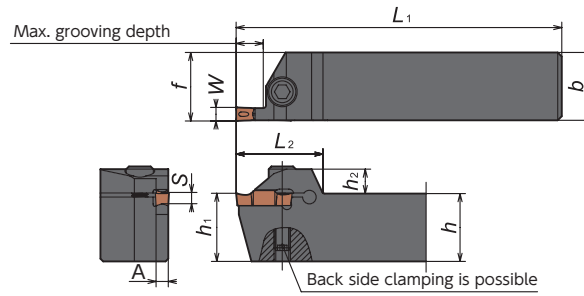
* Inserts with special width and R in both GKN and GKP are available upon requests.

Grooving / Side Turning

Groove DUO

Mono-shank style

GTWP



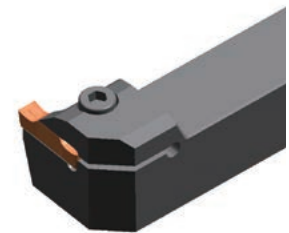
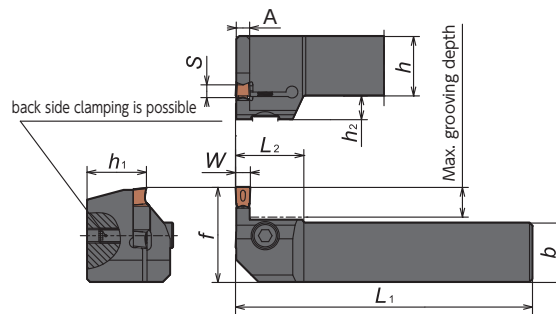
Recommended tightening torque 7.0[N · m]

• Right-hand shown

Toolholder Body

Holder Number	Stock		Width w		Max. Grooving Depth a_r	Dimensions											Seat Size S	Applicable Insert	Spare Parts	
	R	L	(Inch)	(mm)		h	b	h_1	h_2	f	L_1	L_2	A	Bolt	Wrench					
GTWP $\frac{1}{2}$ 2020K-3D10	○	○	.118	3	.394 10	.787 20	.787 20	.787 20	.315 8	.795 20.2	4.921 125	1.142 29	.102 2.6	D	GWP \circ 300	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-3D10	○	○	.118	3	.394 10	.984 25	.984 25	.984 25	.354 9	.992 25.2	5.906 150	1.260 32	.102 2.6	D	GWP \circ 300	CS0625W	LW-5			
GTWP $\frac{1}{2}$ 2020K-3D20	○	○	.118	3	.787 20	.787 20	.787 20	.787 20	.315 8	.795 20.2	4.921 125	1.614 41	.102 2.6	D	GWP \circ 300	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-3D20	○	○	.118	3	.787 20	.984 25	.984 25	.984 25	.354 9	.992 25.2	5.906 150	1.732 44	.102 2.6	D	GWP \circ 300	CS0625W	LW-5			
GTWP $\frac{1}{2}$ 2020K-4E10	○	○	.157	4	.394 10	.787 20	.787 20	.787 20	.315 8	.799 20.3	4.921 125	1.142 29	.138 3.5	E	GWP \circ 400	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-4E10	○	○	.157	4	.394 10	.984 25	.984 25	.984 25	.354 9	.996 25.3	5.906 150	1.260 32	.138 3.5	E	GWP \circ 400	CS0625W	LW-5			
GTWP $\frac{1}{2}$ 2020K-4E20	○	○	.157	4	.787 20	.787 20	.787 20	.787 20	.315 8	.799 20.3	4.921 125	1.614 41	.138 3.5	E	GWP \circ 400	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-4E20	○	○	.157	4	.787 20	.984 25	.984 25	.984 25	.354 9	.996 25.3	5.906 150	1.732 44	.138 3.5	E	GWP \circ 400	CS0625W	LW-5			
GTWP $\frac{1}{2}$ 2020K-5F10	○	○	.197	5	.394 10	.787 20	.787 20	.787 20	.315 8	.799 20.3	4.921 125	1.142 29	.177 4.5	F	GWP \circ 500	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-5F10	○	○	.197	5	.394 10	.984 25	.984 25	.984 25	.354 9	.996 25.3	5.906 150	1.260 32	.177 4.5	F	GWP \circ 500	CS0625W	LW-5			
GTWP $\frac{1}{2}$ 2020K-5F20	○	○	.197	5	.787 20	.787 20	.787 20	.787 20	.315 8	.799 20.3	4.921 125	1.614 41	.177 4.5	F	GWP \circ 500	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-5F20	○	○	.197	5	.787 20	.984 25	.984 25	.984 25	.354 9	.996 25.3	5.906 150	1.732 44	.177 4.5	F	GWP \circ 500	CS0625W	LW-5			
GTWP $\frac{1}{2}$ 2020K-6G12	○	○	.236	6	.472 12	.787 20	.787 20	.787 20	.315 8	.801 20.35	4.921 125	1.339 34	.209 5.3	G	GWP \circ 600	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-6G12	○	○	.236	6	.472 12	.984 25	.984 25	.984 25	.354 9	.998 25.35	5.906 150	1.457 37	.209 5.3	G	GWP \circ 600	CS0625W	LW-5			
GTWP $\frac{1}{2}$ 2020K-6G25	○	○	.236	6	.984 25	.787 20	.787 20	.787 20	.315 8	.801 20.35	4.921 125	1.929 49	.209 5.3	G	GWP \circ 600	CS0520W	LW-4			
GTWP $\frac{1}{2}$ 2525M-6G25	○	○	.236	6	.984 25	.984 25	.984 25	.984 25	.354 9	.998 25.35	5.906 150	2.047 52	.209 5.3	G	GWP \circ 600	CS0625W	LW-5			

GKWP



Recommended tightening torque 7.0[N · m]

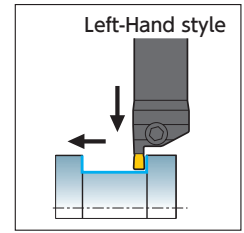
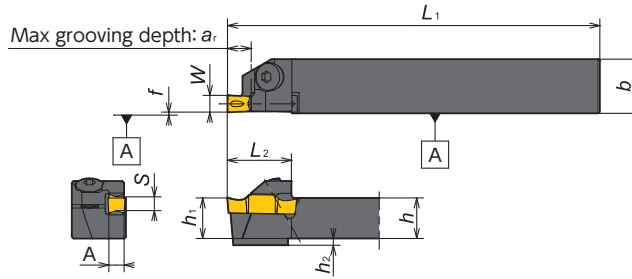
• L-hand shown

Holder Number	Stock		Width w		Max. Grooving Depth a_r	Dimensions											Seat Size S	Applicable Insert	Spare Parts	
	R	L	(Inch)	(mm)		h	b	h_1	h_2	f	L_1	L_2	A	Bolt	Wrench					
GKWP $\frac{1}{2}$ 2020K-3D10	○	○	.118	3	.394 10	.787 20	.787 20	.787 20	.315 8	1.260 32	4.921 125	.906 23	.102 2.6	D	GWP \circ 300	CS0520W	LW-4			
GKWP $\frac{1}{2}$ 2020K-4E10	○	○	.157	4	.394 10	.787 20	.787 20	.787 20	.315 8	1.260 32	4.921 125	.906 23	.138 3.5	E	GWP \circ 400	CS0520W	LW-4			
GKWP $\frac{1}{2}$ 2020K-5F10	○	○	.197	5	.394 10	.787 20	.787 20	.787 20	.315 8	1.260 32	4.921 125	.906 23	.177 4.5	F	GWP \circ 500	CS0520W	LW-4			
GKWP $\frac{1}{2}$ 2020K-6G12	○	○	.236	6	.472 12	.787 20	.787 20	.787 20	.315 8	1.339 34	4.921 125	.906 23	.209 5.3	G	GWP \circ 600	CS0520W	LW-4			

Groove DUO

GTWP

For Swiss Style Machine



Right-Hand style shown

● Toolholder

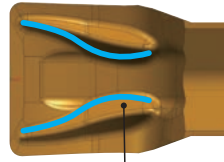
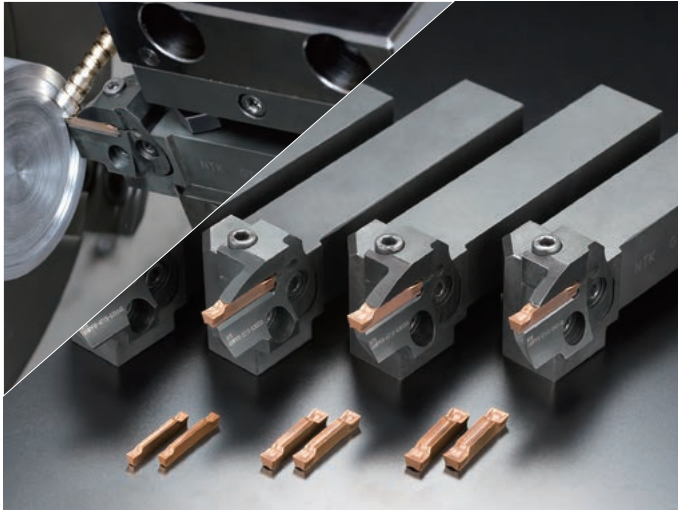
Gage Insert	Item Number	Figure	Stock		Groove Width W (Inch) (mm)	ar (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	h ₂ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	A (Inch) (mm)	Seat Size S	Clamp Screw	Wrench
			R	L													
GWP ○ 300	GTWP [®] 08-IN3D07	1	●		.118 3	.275 7	1/2	.630 16	1/2	4.724 120	0 0	.012 0.3	.748 19	.102 2.6	D	AOB-5 × 14	LW-3S
	GTWP [®] 10-IN3D09	1	●		.118 3	.354 9	5/8	.630 16	5/8	4.724 120	0 0	.012 0.3	.866 22	.102 2.6	D	AOB-5 × 16	LW-3S
	GTWP [®] 1016-3D07	1	○		.118 3	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.102 2.6	D	AOB-5 × 14	LW-3S
	GTWP [®] 1216-3D07	1	●		.118 3	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.102 2.6	D	AOB-5 × 16	LW-3S
	GTWP [®] 1616-3D09	1	○		.118 3	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.102 2.6	D	AOB-5 × 16	LW-3S
GWP ○ 400	GTWP [®] 08-IN4E07	1	●		.157 4	.275 7	1/2	.630 16	1/2	4.724 120	0 0	.012 0.3	.748 19	.138 3.5	E	AOB-5 × 14	LW-3S
	GTWP [®] 10-IN4E09	1	●		.157 4	.354 9	5/8	.630 16	5/8	4.724 120	0 0	.012 0.3	.866 22	.138 3.5	E	AOB-5 × 16	LW-3S
	GTWP [®] 1016-4E07	1	○		.157 4	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.138 3.5	E	AOB-5 × 14	LW-3S
	GTWP [®] 1216-4E07	1	●		.157 4	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.138 3.5	E	AOB-5 × 16	LW-3S
	GTWP [®] 1616-4E09	1	○		.157 4	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.138 3.5	E	AOB-5 × 16	LW-3S
GWP ○ 500	GTWP [®] 1016-5F07	1	○		.197 5	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.177 4.5	F	AOB-5 × 14	LW-3S
	GTWP [®] 1216-5F07	1	○		.197 5	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.177 4.5	F	AOB-5 × 16	LW-3S
	GTWP [®] 1616-5F09	1	○		.197 5	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.177 4.5	F	AOB-5 × 16	LW-3S
GWP ○ 600	GTWP [®] 1020-6G07	1	○		.236 6	.275 7	.394 10	.787 20	.394 10	4.724 120	.079 2	.012 0.3	.866 22	.209 5.3	G	AOB-5 × 14	LW-3S
	GTWP [®] 1220-6G07	1	○		.236 6	.275 7	.472 12	.787 20	.472 12	4.724 120	0 0	.012 0.3	.886 22.5	.209 5.3	G	AOB-5 × 16	LW-3S
	GTWP [®] 1620-6G09	1	○		.236 6	.354 9	.630 16	.787 20	.630 16	4.724 120	0 0	.012 0.3	.984 25	.209 5.3	G	AOB-5 × 16	LW-3S

Groove DUO Series - Inserts

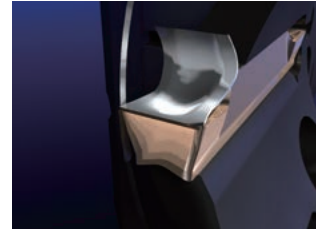
Shape	Item Number	W				r _e	M	L	Seat Size S	Coated Carbide
		Groove Width		Width Tolerance						DM4
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	
<p>GWPG: Outside ground GWPM: Full-molded ● Excellent chip control ● Best for side turning</p>	GWPG300N02D-GW	.118	3.0	.001	± 0.025	.008 0.2	.098 2.5	.811 20.6	D	●
	GWPG300N04D-GW	.118	3.0	.001	± 0.025	.016 0.4	.098 2.5	.811 20.6	D	●
	GWPG400N02E-GW	.157	4.0	.001	± 0.025	.008 0.2	.134 3.4	.811 20.6	E	●
	GWPG400N04E-GW	.157	4.0	.001	± 0.025	.016 0.4	.134 3.4	.811 20.6	E	●
	GWPG400N08E-GW	.157	4.0	.001	± 0.025	.031 0.8	.134 3.4	.811 20.6	E	●
	GWPG500N02F-GW	.197	5.0	.001	± 0.025	.008 0.2	.169 4.3	.811 20.6	F	○
	GWPG500N04F-GW	.197	5.0	.001	± 0.025	.016 0.4	.169 4.3	.811 20.6	F	○
	GWPG500N08F-GW	.197	5.0	.001	± 0.025	.031 0.8	.169 4.3	.811 20.6	F	○
	GWPG600N02G-GW	.236	6.0	.001	± 0.025	.008 0.2	.205 5.2	1.008 25.6	G	○
	GWPG600N04G-GW	.236	6.0	.001	± 0.025	.016 0.4	.205 5.2	1.008 25.6	G	○
GWPG600N08G-GW	.236	6.0	.001	± 0.025	.031 0.8	.205 5.2	1.008 25.6	G	○	
<p>● Less tool pressure design</p>	GWPM300N04D-GW	.118	3.0	.002	± 0.05	.016 0.4	.098 2.5	.811 20.6	D	○
	GWPM400N04E-GW	.157	4.0	.002	± 0.05	.016 0.4	.134 3.4	.811 20.6	E	○
	GWPM500N04F-GW	.197	5.0	.002	± 0.05	.016 0.4	.169 4.3	.811 20.6	F	○
	GWPM600N04G-GW	.236	6.0	.002	± 0.05	.016 0.4	.205 5.2	1.008 25.6	G	○
	GWPG300N02D-GV	.118	3.0	.001	± 0.025	.008 0.2	.205 2.5	.811 20.6	D	●
	GWPG300N04D-GV	.118	3.0	.001	± 0.025	.016 0.4	.205 2.5	.811 20.6	D	●
	GWPG400N02E-GV	.157	4.0	.001	± 0.025	.008 0.2	.169 4.3	.811 20.6	E	●
	GWPG400N04E-GV	.157	4.0	.001	± 0.025	.016 0.4	.169 4.3	.811 20.6	E	●
	GWPG500N02F-GV	.197	5.0	.001	± 0.025	.008 0.2	.169 4.3	.811 20.6	F	○
	GWPG500N04F-GV	.197	5.0	.001	± 0.025	.016 0.4	.169 4.3	.811 20.6	F	○
GWPG600N02G-GV	.236	6.0	.001	± 0.025	.008 0.2	.169 4.3	1.008 25.6	G	○	
GWPG600N04G-GV	.236	6.0	.001	± 0.025	.016 0.4	.169 4.3	1.008 25.6	G	○	

● : Stock
 ● : Stock (Newly added)
 ■ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R)(L) : 1-2 week delivery (Right / Left-hand only)
 (R)(L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Groove Duo Blade - Carbide Face Grooving Tool -



Unique S-shape design

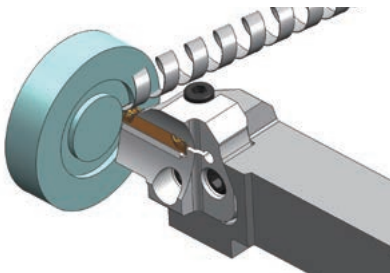


Features

- **New GT Chipbreaker designed for face-grooving**
- **The best rigidity in a Modular system**
- **Excellent chip-control and great finish**

Excellent Chip Control

Grooving

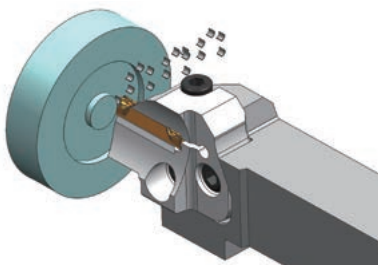


- Excellent chip control and superior surface finish
- Good chip control without a peck cycle

	NTK:GT chipbreaker	Competitor
Chip		Tangled chips during deep grooving
Surface finish		Scratches inside bottom

Material : 4130, 450SFM, .004IPR, 2" diameter, .040 depth, No step feed, WET
 Insert : GWPFM500N04-GT DM4 Holder : GBWPFPR-5T15-050120

Side-turning



- Excellent chip control for side-turning process
- Shiny surface finish

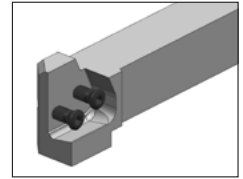
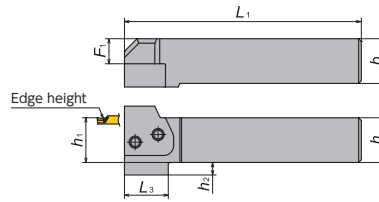
		IPR		
		.002	.004	.008
D.O.C (inch)	.118			
	.039			
	.008			

Material : 4130, 450SFM, WET
 Insert : GWPFM500N04-GT DM4 Holder : GBWPFPR-5T15-050120

Groove DUO Blade

Straight style toolholder

GTWP-H



Right-Hand style shown

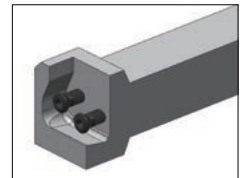
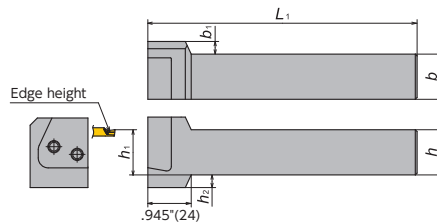
● Toolholder Body

Holder Number	Stock		Dimensions										Blade	Spare Parts							
	R	L	h		b		h ₁		L ₁		F ₁			h ₂		L ₃		Clamp Screw	Wrench		
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	(Inch)	(mm)				
GTWP%16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.311	134.9	0.567	14.4	0.260	6.6	0.965	24.5	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GTWP%20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.311	160.3	0.817	20.75	—	—	—	—	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GTWP%24-IN-H	●	●	1.500	—	1.500	—	1.500	—	6.311	160.3	1.067	27.1	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP%32-IN-H	●	●	2.000	—	2.000	—	2.000	—	6.311	160.3	1.567	39.8	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP%2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.232	107.5	0.354	9	0.315	8	1.122	28.5	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GTWP%2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.217	132.5	0.551	14	0.276	7	0.965	24.5	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GTWP%3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.004	152.5	0.827	21	—	—	—	—	—	—	GBWPF/R/L	FS128-6.0×18	LW-4

Groove DUO Blade

L-style toolholder

GKWP-H

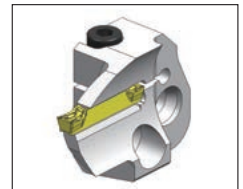
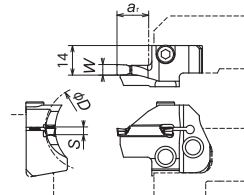
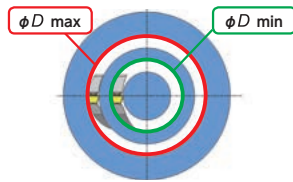


Right-Hand style shown
* Use opposite hand blade

● Toolholder Body

Holder Number	Stock		Dimensions										Blade	Spare Parts					
	R	L	h		b		h ₁		L ₁		b ₁			h ₂		Clamp Screw	Wrench		
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)				
GKWP%16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.961	151.4	0.260	6.6	0.260	6.6	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GKWP%20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.961	176.8	—	—	—	—	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GKWP%2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.882	124	0.472	12	0.315	8	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GKWP%2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.866	149	0.276	7	0.276	7	—	—	GBWPF/R/L	FS128-6.0×18	LW-4
GKWP%3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.654	169	—	—	—	—	—	—	GBWPF/R/L	FS128-6.0×18	LW-4

GBWPF



Right-Hand style shown

● Blade

Blade Number	Stock		Width W		Face grooving OD				Max. grooving depth a _r	Applicable insert	Height S	Tightening screw
	R	L	(Inch)	(mm)	φ D min		φ D max					
					(Inch)	(mm)	(Inch)	(mm)				
GBWPF%3T13-029035	●	●	.118	3	1.142	29	1.378	35	.512	13	C	CS0515
GBWPF%3T13-035045	●	●			1.378	35	1.772	45	.512	13		
GBWPF%3T15-045060	●	●			1.772	45	2.362	60	.591	15		
GBWPF%3T15-060100	●	●			2.362	60	3.937	100	.591	15		
GBWPF%3T15-100250	●	●			3.937	100	9.843	250	.591	15		
GBWPF%4T15-030040	●	●	.157	4	1.181	30	1.575	40	.591	15	C	CS0515
GBWPF%4T15-040060	●	●			1.575	40	2.362	60	.591	15		
GBWPF%4T15-060120	●	●			2.362	60	4.724	120	.591	15		
GBWPF%4T15-120300	●	●			4.724	120	11.81	300	.591	15		
GBWPF%5T15-030050	●	●	.197	5	1.181	30	1.969	50	.591	15	C	CS0515
GBWPF%5T15-050120	●	●			1.969	50	4.724	120	.591	15		
GBWPF%5T15-120999	●	●			4.724	120	∞	∞	.591	15		
GBWPF%6T15-035080	●	●	.236	6	1.378	35	3.150	80	.591	15	C	CS0515
GBWPF%6T15-080999	●	●			3.150	80	∞	∞	.591	15		

● : Stock

○ : 1-2 week delivery

Grooving / Side Turning

Grooving / Side Turning

Combination of toolholder and blade for Face Grooving

GTWP-H

Straight style toolholder

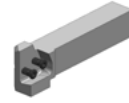
Right-hand system



Clockwise rotation (M4 command)



Toolholder

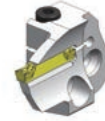


GTWP R-H

* Right-hand toolholder takes Right-hand blade.



Blade

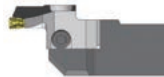


GBWPF R

Left-hand system



Counter clockwise rotation (M3 command)



Toolholder



GTWP L-H

* Left-hand toolholder takes Left-hand blade.



Blade



GBWPF L

GKWP-H

L-style toolholder

Right-hand system



Counter clockwise rotation (M3 command)



Toolholder



GKWP R-H

* Right-hand toolholder takes Left-hand blade.

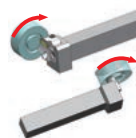


Blade



GBWPF L

Left-hand system



Clockwise rotation (M4 command)



Toolholder

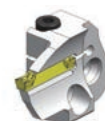


GKWP L-H

* Left-hand toolholder takes Right-hand blade.



Blade



GBWPF R

Groove DUO Series - Inserts

Face Grooving Insert

Shape	Item Number	W		r_e	M	L	Seat Size S	Coated Carbide
		Groove Width (Inch) (mm)	Width Tolerance (Inch) (mm)					DM4
	GWPFM300N02-GT	.118 3.0	± .002 ± 0.05	.008 0.2	0.087 2.2	.965 24.5	C	●
	GWPFM300N04-GT	.118 3.0	± .002 ± 0.05	.016 0.4	0.087 2.2	.965 24.5	C	●
	GWPFM400N04-GT	.157 4.0	± .002 ± 0.05	.016 0.4	0.126 3.2	1.043 26.5	C	●
	GWPFM400N08-GT	.157 4.0	± .002 ± 0.05	.031 0.8	0.126 3.2	1.043 26.5	C	●
	GWPFM500N04-GT	.197 5.0	± .002 ± 0.05	.016 0.4	0.146 3.7	1.043 26.5	C	●
	GWPFM500N08-GT	.197 5.0	± .002 ± 0.05	.031 0.8	0.146 3.7	1.043 26.5	C	●
	GWPFM600N04-GT	.236 6.0	± .002 ± 0.05	.016 0.4	0.185 4.7	1.043 26.5	C	●
	GWPFM600N08-GT	.236 6.0	± .002 ± 0.05	.031 0.8	0.185 4.7	1.043 26.5	C	●

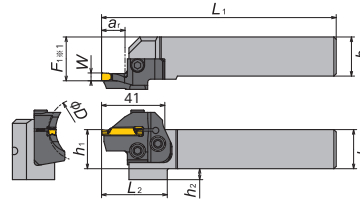
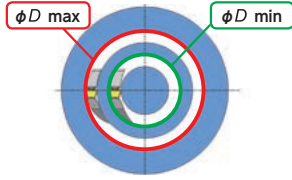
● : Stock

○ : 1-2 week delivery

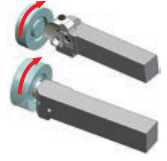
Groove DUO Blade

0° Straight type holder

GTWPR



Clockwise rotation (M4 command)



Right-hand shown

Right-hand toolholder takes Right-hand blade.

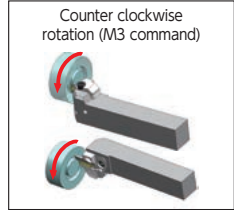
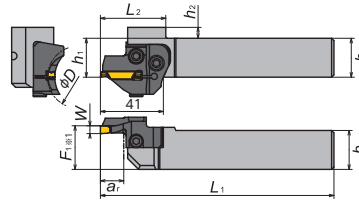
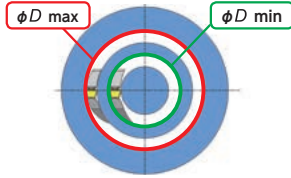
Hand (R/L)	Width W (mm) (inch) (mm)	Face grooving OD		Max.grooving depth a _r (inch) (mm)	Holder number	Blade number	Dimensions - inch (mm)							Applicable insert
		φ D min (inch) (mm)	φ D max (inch) (mm)				h	b	L ₁	h ₁	F ₁	L ₂	h ₂	
R	.118 3	1.142 29	1.378 35	.512 13	GTWPR16-IN-H	GBWPFR-3T13-029035	1" (25.4)	1" (25.4)	6" (152.4)	1" (25.4)	1.102" (28)	1.654" (42)	—	GWPFM300
		1.378 35	1.772 45			GBWPFR-3T13-035045								
		1.772 45	2.362 60	.591 15		GBWPFR-3T15-045060								
		2.362 60	3.937 100			GBWPFR-3T15-060100								
		3.937 100	9.843 250	GTWPR20-IN-H		GBWPFR-3T15-100250								
		1.181 30	1.575 40			.512 13									GBWPFR-4T15-030040
	1.575 40	2.362 60	.591 15		GBWPFR-4T15-040060									
	2.362 60	4.724 120			.591 15	GBWPFR-4T15-060120								
	4.724 120	11.811 300	GTWPR2020-H			GBWPFR-4T15-120300								
	1.181 30	1.969 50			.512 13	GBWPFR-5T15-030050								
	1.969 50	4.724 120		.591 15		GBWPFR-5T15-050120								
	4.724 120	∞ ∞			.591 15	GBWPFR-5T15-120999								
	1.378 35	3.150 80		GTWPR2525-H		GBWPFR-6T15-035080								
	3.150 80	∞ ∞			.512 13	GBWPFR-6T15-080999								
	1.142 29	1.378 35	.591 15			GBWPFR-3T13-029035								
	1.378 35	1.772 45			.591 15	GBWPFR-3T13-035045								
	1.772 45	2.362 60	.591 15			GBWPFR-3T15-045060								
	2.362 60	3.937 100			.591 15	GBWPFR-3T15-060100								
	3.937 100	9.843 250	GTWPR3232-H	GBWPFR-3T15-100250										
	1.181 30	1.575 40		.512 13	GBWPFR-4T15-030040									
	1.575 40	2.362 60			.591 15	GBWPFR-4T15-040060								
	2.362 60	4.724 120		.591 15		GBWPFR-4T15-060120								
	4.724 120	11.811 300			GTWPR3232-H	GBWPFR-4T15-120300								
	1.181 30	1.969 50		.512 13		GBWPFR-5T15-030050								
1.969 50	4.724 120	.591 15	GBWPFR-5T15-050120											
4.724 120	∞ ∞		.591 15	GBWPFR-5T15-120999										
1.378 35	3.150 80	GTWPR3232-H		GBWPFR-6T15-035080										
3.150 80	∞ ∞		.512 13	GBWPFR-6T15-080999										
1.142 29	1.378 35			.591 15	GBWPFR-3T13-029035									
1.378 35	1.772 45		.591 15		GBWPFR-3T13-035045									
1.772 45	2.362 60			.591 15	GBWPFR-3T15-045060									
2.362 60	3.937 100		.591 15		GBWPFR-3T15-060100									
3.937 100	9.843 250	GTWPR3232-H		GBWPFR-3T15-100250										
1.181 30	1.575 40		.512 13	GBWPFR-4T15-030040										
1.575 40	2.362 60			.591 15	GBWPFR-4T15-040060									
2.362 60	4.724 120		.591 15		GBWPFR-4T15-060120									
4.724 120	11.811 300			GTWPR3232-H	GBWPFR-4T15-120300									
1.181 30	1.969 50		.512 13		GBWPFR-5T15-030050									
1.969 50	4.724 120	.591 15			GBWPFR-5T15-050120									
4.724 120	∞ ∞		.591 15		GBWPFR-5T15-120999									
1.378 35	3.150 80	GTWPR3232-H			GBWPFR-6T15-035080									
3.150 80	∞ ∞		.512 13		GBWPFR-6T15-080999									

Grooving / Side Turning

Groove DUO Blade

0° Straight type holder

GTWPL



Left-hand toolholder takes Left-hand blade.

Left-hand shown

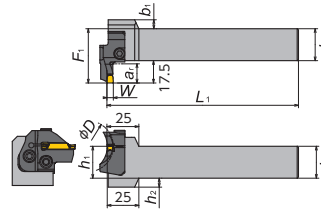
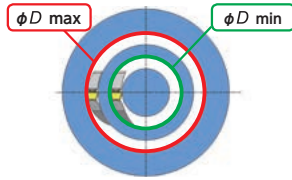
Hand (R/L)	Width W (mm) (inch) (mm)	Face grooving OD		Max.grooving depth a ₁ (inch) (mm)	Holder number	Blade number	Dimensions - inch (mm)							Applicable insert									
		ϕ D min (inch) (mm)	ϕ D max (inch) (mm)				h	b	L ₁	h ₁	F ₁	L ₂	h ₂										
L	.118 3	1.142 29	1.378 35	.512 13	GTWPL16-IN-H	GBWPFL-3T13-029035	1" (25.4)	1" (25.4)	6" (152.4)	1" (25.4)	1.102" (28)	1.654" (42)	—	GWPFM300									
		1.378 35	1.772 45			GBWPFL-3T13-035045																	
		1.772 45	2.362 60	GBWPFL-3T15-045060																			
		2.362 60	3.937 100	GBWPFL-3T15-060100																			
		3.937 100	9.843 250	GBWPFL-3T15-100250																			
		1.181 30	1.575 40	GBWPFL-4T15-030040																			
	.157 4	1.575 40	2.362 60	.591 15		GBWPFL-4T15-040060																	
		2.362 60	4.724 120			GBWPFL-4T15-060120																	
		4.724 120	11.811 300	GBWPFL-4T15-120300																			
		1.181 30	1.969 50	GBWPFL-5T15-030050																			
		1.969 50	4.724 120	GBWPFL-5T15-050120																			
		4.724 120	∞ ∞	GBWPFL-5T15-120999																			
	.197 5	1.181 30	1.969 50	.591 15	GTWPL20-IN-H	GBWPFL-6T15-035080	1.25" (31.75)	1.25" (31.75)	7" (177.8)	1.25" (31.75)	1.378" (35)	—	—	GWPFM400									
		3.150 80	∞ ∞			GBWPFL-6T15-080999																	
		1.142 29	1.378 35	.512 13		GTWPL2020-H									GBWPFL-3T13-029035	.787" (20)	.787" (20)	4.921" (125)	.787" (20)	.906" (23)	1.81" (46)	.315" (8)	GWPFM300
		1.378 35	1.772 45												GBWPFL-3T13-035045								
		1.772 45	2.362 60	GBWPFL-3T15-045060																			
		2.362 60	3.937 100	GBWPFL-3T15-060100																			
	3.937 100	9.843 250	GBWPFL-3T15-100250																				
	1.181 30	1.575 40	GBWPFL-4T15-030040																				
	.157 4	1.575 40	2.362 60	.591 15											GBWPFL-4T15-040060								
		2.362 60	4.724 120												GBWPFL-4T15-060120								
		4.724 120	11.811 300	GBWPFL-4T15-120300																			
		1.181 30	1.969 50	GBWPFL-5T15-030050																			
1.969 50		4.724 120	GBWPFL-5T15-050120																				
4.724 120		∞ ∞	GBWPFL-5T15-120999																				
.236 6	1.378 35	3.150 80	.591 15	GTWPL2525-H	GBWPFL-6T15-035080	.984" (25)	.984" (25)	5.906" (150)	.984" (25)	1.102" (28)	1.654" (42)	.276" (7)	GWPFM300										
	3.150 80	∞ ∞			GBWPFL-6T15-080999																		
	1.142 29	1.378 35	.512 13		GTWPL3232-H									GBWPFL-3T13-029035	1.260" (32)	1.260" (32)	6.693" (170)	1.260" (32)	1.378" (35)	—	—	GWPFM400	
	1.378 35	1.772 45												GBWPFL-3T13-035045									
	1.772 45	2.362 60	GBWPFL-3T15-045060																				
	2.362 60	3.937 100	GBWPFL-3T15-060100																				
3.937 100	9.843 250	GBWPFL-3T15-100250																					
1.181 30	1.575 40	GBWPFL-4T15-030040																					
.157 4	1.575 40	2.362 60	.591 15											GBWPFL-4T15-040060									
	2.362 60	4.724 120												GBWPFL-4T15-060120									
	4.724 120	11.811 300	GBWPFL-4T15-120300																				
	1.181 30	1.969 50	GBWPFL-5T15-030050																				
	1.969 50	4.724 120	GBWPFL-5T15-050120																				
	4.724 120	∞ ∞	GBWPFL-5T15-120999																				
.197 5	1.378 35	3.150 80	.591 15	GTWPL3232-H	GBWPFL-6T15-035080	1.260" (32)	1.260" (32)	6.693" (170)	1.260" (32)	1.378" (35)	—	—	GWPFM400										
	3.150 80	∞ ∞			GBWPFL-6T15-080999																		
	1.142 29	1.378 35	.512 13		GTWPL3232-H									GBWPFL-3T13-029035	1.260" (32)	1.260" (32)	6.693" (170)	1.260" (32)	1.378" (35)	—	—	GWPFM300	
	1.378 35	1.772 45												GBWPFL-3T13-035045									
	1.772 45	2.362 60	GBWPFL-3T15-045060																				
	2.362 60	3.937 100	GBWPFL-3T15-060100																				
3.937 100	9.843 250	GBWPFL-3T15-100250																					
1.181 30	1.575 40	GBWPFL-4T15-030040																					
.157 4	1.575 40	2.362 60	.591 15											GBWPFL-4T15-040060									
	2.362 60	4.724 120												GBWPFL-4T15-060120									
	4.724 120	11.811 300	GBWPFL-4T15-120300																				
	1.181 30	1.969 50	GBWPFL-5T15-030050																				
	1.969 50	4.724 120	GBWPFL-5T15-050120																				
	4.724 120	∞ ∞	GBWPFL-5T15-120999																				
.236 6	1.378 35	3.150 80	.591 15	GTWPL3232-H	GBWPFL-6T15-035080	1.260" (32)	1.260" (32)	6.693" (170)	1.260" (32)	1.378" (35)	—	—	GWPFM400										
	3.150 80	∞ ∞			GBWPFL-6T15-080999																		

Grooving / Side Turning

Groove DUO Blade

90° L style holders

GKWPR



Counter clockwise rotation (M3 command)



Right-hand shown

Right-hand toolholder takes Left-hand blade.

Hand (R/L)	Width W (mm) (inch) (mm)	Face grooving OD		Max.grooving depth a (inch) (mm)	Holder number	Blade number	Dimensions - inch (mm)							Applicable insert
		phi D min (inch) (mm)	phi D max (inch) (mm)				h	b	L1	h1	F1	b1	h2	
R	.118 3	1.142 29	1.378 35	.512 13	GKWPR16-IN-H	GBWPFL-3T13-029035	1" (25.4)	1" (25.4)	6" (152.4)	1" (25.4)	1.689" (42.9)	.260" (6.6)	.260" (6.6)	GWPFM300
		1.378 35	1.772 45			GBWPFL-3T13-035045								
		1.772 45	2.362 60			GBWPFL-3T15-045060								
		2.362 60	3.937 100			GBWPFL-3T15-060100								
		3.937 100	9.843 250			GBWPFL-3T15-100250								
		1.181 30	1.575 40			GBWPFL-4T15-030040								
		1.575 40	2.362 60			GBWPFL-4T15-040060								
		2.362 60	4.724 120			GBWPFL-4T15-060120								
		4.724 120	11.811 300			GBWPFL-4T15-120300								
		1.181 30	1.969 50			GBWPFL-5T15-030050								
		1.969 50	4.724 120			GBWPFL-5T15-050120								
		4.724 120	∞ ∞			GBWPFL-5T15-120999								
	.157 4	1.181 30	1.575 40	.591 15	GKWPR20-IN-H	GBWPFL-3T13-029035	1.25" (31.75)	1.25" (31.75)	7" (177.8)	1.25" (31.75)	1.939" (49.25)	—	—	GWPFM400
		1.575 40	2.362 60			GBWPFL-3T13-035045								
		2.362 60	4.724 120			GBWPFL-3T15-045060								
		4.724 120	11.811 300			GBWPFL-3T15-060100								
		1.181 30	1.575 40			GBWPFL-3T15-100250								
		1.181 30	1.969 50			GBWPFL-4T15-030040								
		1.969 50	4.724 120			GBWPFL-4T15-040060								
		4.724 120	∞ ∞			GBWPFL-4T15-060120								
		1.181 30	1.969 50			GBWPFL-5T15-030050								
		1.969 50	4.724 120			GBWPFL-5T15-050120								
		4.724 120	∞ ∞			GBWPFL-5T15-120999								
		.197 5	1.378 35			3.150 80								
	3.150 80		∞ ∞	GBWPFL-3T13-035045										
	1.142 29		1.378 35	GBWPFL-3T15-045060										
	1.378 35		1.772 45	GBWPFL-3T15-060100										
	1.772 45		2.362 60	GBWPFL-3T15-100250										
	2.362 60		3.937 100	GBWPFL-3T15-100250										
	3.937 100		9.843 250	GBWPFL-4T15-030040										
	1.181 30		1.575 40	GBWPFL-4T15-040060										
	1.575 40		2.362 60	GBWPFL-4T15-060120										
	2.362 60		4.724 120	GBWPFL-4T15-120300										
	4.724 120		11.811 300	GBWPFL-5T15-030050										
	.236 6		1.181 30	1.969 50	.591 15	GKWPR2525-H	GBWPFL-5T15-050120	.984" (25)	.984" (25)	5.906" (150)	.984" (25)	1.673" (42.5)	.276" (7)	.276" (7)			GWPFM400
		1.969 50	4.724 120	GBWPFL-5T15-120999										
		4.724 120	∞ ∞	GBWPFL-6T15-035080										
		1.378 35	3.150 80	GBWPFL-6T15-035080										
		3.150 80	∞ ∞	GBWPFL-6T15-080999										
		1.142 29	1.378 35	GBWPFL-3T13-029035										
		1.378 35	1.772 45	GBWPFL-3T13-035045										
		1.772 45	2.362 60	GBWPFL-3T13-035045										
		2.362 60	3.937 100	GBWPFL-3T15-045060										
		3.937 100	9.843 250	GBWPFL-3T15-060100										
		9.843 250	∞ ∞	GBWPFL-3T15-100250										
		.118 3	1.181 30	1.575 40			.512 13							
	1.575 40		2.362 60	GBWPFL-4T15-030040										
	2.362 60		4.724 120	GBWPFL-4T15-040060										
4.724 120	11.811 300		GBWPFL-4T15-060120											
1.181 30	1.969 50		GBWPFL-5T15-030050											
1.969 50	4.724 120		GBWPFL-5T15-050120											
4.724 120	∞ ∞		GBWPFL-5T15-120999											
1.378 35	3.150 80		GBWPFL-6T15-035080											
3.150 80	∞ ∞		GBWPFL-6T15-035080											
1.142 29	1.378 35		GBWPFL-6T15-080999											
1.378 35	1.772 45		GBWPFL-6T15-080999											
1.772 45	2.362 60		GBWPFL-6T15-080999											

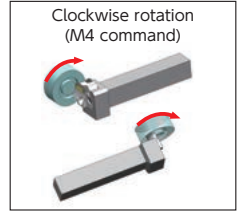
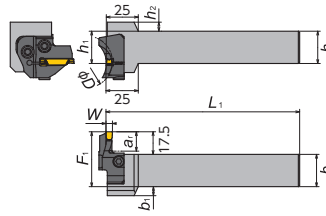
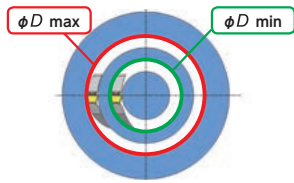
Grooving / Side Turning

Grooving / Side Turning

Groove DUO Blade

90° L style holders

GKWPL



Left-hand shown

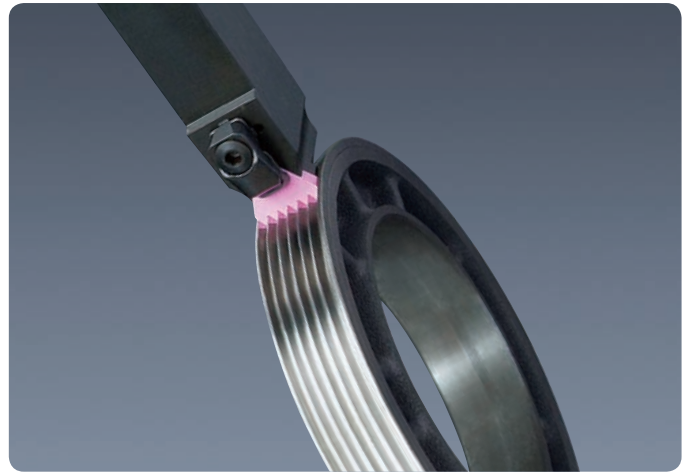
Left-hand toolholder takes Right-hand blade.

Hand (R/L)	Width W (mm) (inch) (mm)	Face grooving OD		Max.grooving depth a _r (inch) (mm)	Holder number	Blade number	Dimensions - inch (mm)							Applicable insert
		φ D min (inch) (mm)	φ D max (inch) (mm)				h	b	L ₁	h ₁	F ₁	b ₁	h ₂	
L	.118 3	1.142 29	1.378 35	.512 13	GKWPL16-IN-H	GBWPFR-3T13-029035	1" (25.4)	1" (25.4)	6" (152.4)	1" (25.4)	1.689" (42.9)	.260" (6.6)	.260" (6.6)	GWPFM300
		1.378 35	1.772 45			GBWPFR-3T13-035045								
		1.772 45	2.362 60			GBWPFR-3T15-045060								
	.157 4	2.362 60	3.937 100	.591 15		GBWPFR-3T15-060100								
		3.937 100	9.843 250			GBWPFR-3T15-100250								
		1.181 30	1.575 40			GBWPFR-4T15-030040								
	.197 5	1.575 40	2.362 60	.591 15		GBWPFR-4T15-040060								
		2.362 60	4.724 120			GBWPFR-4T15-060120								
		4.724 120	11.811 300			GBWPFR-4T15-120300								
	.236 6	1.181 30	1.969 50	.591 15		GBWPFR-5T15-030050								
		1.969 50	4.724 120			GBWPFR-5T15-050120								
		4.724 120	∞ ∞			GBWPFR-5T15-120999								
L	.118 3	1.378 35	3.150 80	.591 15	GKWPL20-IN-H	GBWPFR-6T15-035080	1.25" (31.75)	1.25" (31.75)	7" (177.8)	1.25" (31.75)	1.939" (49.25)	—	—	GWPFM300
		3.150 80	∞ ∞			GBWPFR-6T15-080999								
		1.142 29	1.378 35			GBWPFR-3T13-029035								
	.157 4	1.378 35	1.772 45	.512 13		GBWPFR-3T13-035045								
		1.772 45	2.362 60			GBWPFR-3T15-045060								
		2.362 60	3.937 100			GBWPFR-3T15-060100								
	.197 5	3.937 100	9.843 250	.591 15		GBWPFR-3T15-100250								
		1.181 30	1.575 40			GBWPFR-4T15-030040								
		1.575 40	2.362 60			GBWPFR-4T15-040060								
	.236 6	2.362 60	4.724 120	.591 15		GBWPFR-4T15-060120								
		4.724 120	11.811 300			GBWPFR-4T15-120300								
		1.181 30	1.969 50			GBWPFR-5T15-030050								
L	.118 3	1.969 50	4.724 120	.591 15	GKWPL2020-H	GBWPFR-5T15-050120	.787" (20)	.787" (20)	4.921" (125)	.787" (20)	1.476" (37.5)	.472" (12)	.315" (8)	GWPFM300
		4.724 120	∞ ∞			GBWPFR-5T15-120999								
		1.378 35	3.150 80			GBWPFR-6T15-035080								
	.157 4	3.150 80	∞ ∞	.591 15		GBWPFR-6T15-080999								
		1.142 29	1.378 35			GBWPFR-3T13-029035								
		1.378 35	1.772 45			GBWPFR-3T13-035045								
	.197 5	1.772 45	2.362 60	.512 13		GBWPFR-3T15-045060								
		2.362 60	3.937 100			GBWPFR-3T15-060100								
		3.937 100	9.843 250			GBWPFR-3T15-100250								
	.236 6	1.181 30	1.575 40	.591 15		GBWPFR-4T15-030040								
		1.575 40	2.362 60			GBWPFR-4T15-040060								
		2.362 60	4.724 120			GBWPFR-4T15-060120								
L	.118 3	4.724 120	11.811 300	.591 15	GKWPL2525-H	GBWPFR-4T15-120300	.984" (25)	.984" (25)	5.906" (150)	.984" (25)	1.673" (42.5)	.276" (7)	.276" (7)	GWPFM300
		1.181 30	1.969 50			GBWPFR-5T15-030050								
		1.969 50	4.724 120			GBWPFR-5T15-050120								
	.157 4	4.724 120	∞ ∞	.591 15		GBWPFR-5T15-120999								
		1.378 35	3.150 80			GBWPFR-6T15-035080								
		3.150 80	∞ ∞			GBWPFR-6T15-080999								
	.197 5	1.142 29	1.378 35	.512 13		GBWPFR-3T13-029035								
		1.378 35	1.772 45			GBWPFR-3T13-035045								
		1.772 45	2.362 60			GBWPFR-3T15-045060								
	.236 6	2.362 60	3.937 100	.591 15		GBWPFR-3T15-060100								
		3.937 100	9.843 250			GBWPFR-3T15-100250								
		1.181 30	1.575 40			GBWPFR-4T15-030040								
L	.118 3	1.575 40	2.362 60	.591 15	GKWPL3232-H	GBWPFR-4T15-040060	1.260" (32)	1.260" (32)	6.693" (170)	1.260" (32)	1.949" (49.5)	—	—	GWPFM300
		2.362 60	4.724 120			GBWPFR-4T15-060120								
		4.724 120	11.811 300			GBWPFR-4T15-120300								
	.157 4	1.181 30	1.969 50	.591 15		GBWPFR-5T15-030050								
		1.969 50	4.724 120			GBWPFR-5T15-050120								
		4.724 120	∞ ∞			GBWPFR-5T15-120999								
	.197 5	1.378 35	3.150 80	.591 15		GBWPFR-6T15-035080								
		3.150 80	∞ ∞			GBWPFR-6T15-080999								
		1.142 29	1.378 35			GBWPFR-3T13-029035								

Grooving / Side Turning

Machining Poly-V Pulley Profiles

Grooving With Ceramics



Features

- High speed machining with Poly-V pulleys
- Up to 6-V grooving with single pass
- Precision inserts for plunging profiles

Recommended Cutting Conditions

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



Grooving /
Side Turning

3V **↔H31**

21 HP needed

4V **↔H32**

28 HP needed

5V **↔H33**

35 HP needed

6V **↔H34**

42 HP needed

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

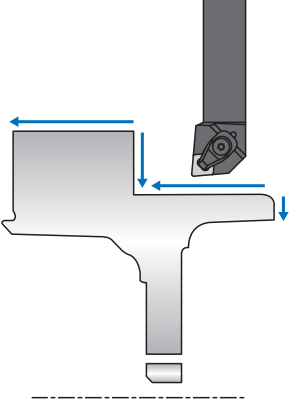
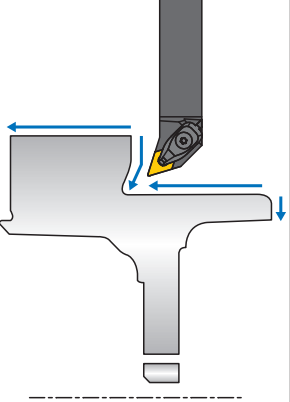
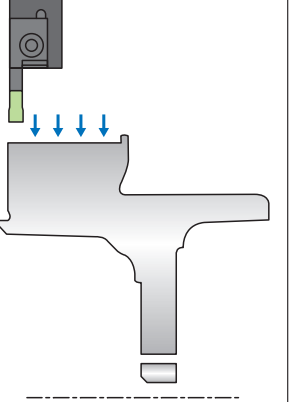
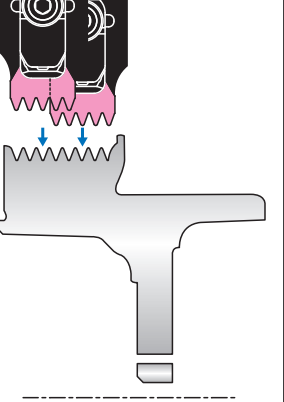
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Grooving / Side Turning

High-Speed Pulley Machining Example by NTK Ceramic Tools

	Process #1	Process #2	Process #3	Process #4
	OD and Profile Roughing	OD and Profile Finishing	Plunge Grooving	Poly-V Grooving
Tooling				
Insert	CNGX 453 T0820 SX6	DNGA 432 T0525 HC6 DNGA 432 T0420 SP9	VDB 250 B031 T0220 WAI	PTM 53 K50504 ENB HW2*
SFM	2000-2800	1500-2000 (HC6) 1800-2400 (SP9)	1000-1400	1200-1500 (1400SFM recommended)
IPR	.018-.024	.012-.018 (HC6) .018-.024 (SP9)	.008-.010	.002-.006
DOC (inch)	.080-.120	Process dependent (.020)	—	—
Coolant	DRY • (WET)	DRY • (WET)	DRY • (WET)	DRY
Life / corner	- 300 pcs	- 300 pcs	- 300 pcs	- 300 pcs

*Please check machine's HP when select insert.

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

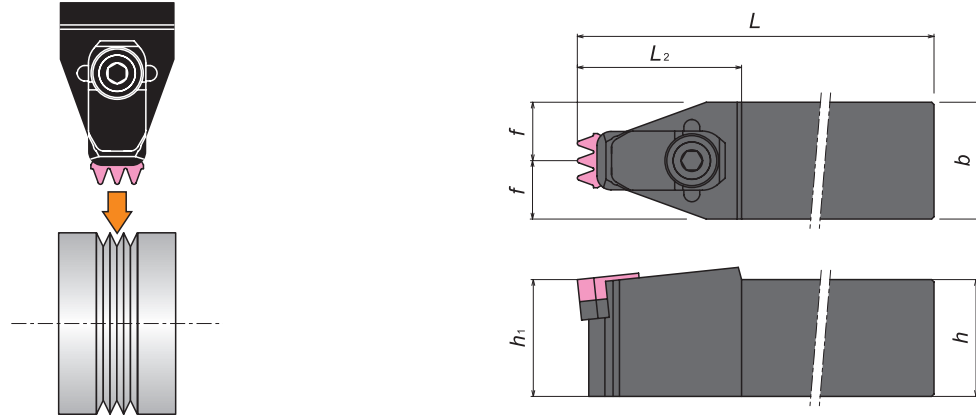


- **NTK's Ceramic Inserts ensure in higher productivity and stable tool life for Damper-Pulley machining.**

POLY-V (3V)

Clamp-on type

21 HP Needed



Toolholders

Item Number	Stock	Dimensions (inch)						Insert
		<i>h</i>	<i>b</i>	<i>h</i> ₁	<i>L</i>	<i>L</i> ₂	<i>f</i>	
POLY-V163	●	1.00	1.00	1.00	6.00	.50	1.40	PTM33K30..

Spare Parts

Holder	Clamp		Thrust Plate		Shim		Shim-Screw	
		Stock		Stock		Stock		Stock
POLY-V163	2417-C	●	9414	●	K3-C	●	1230-C	●

Insert

Shape	PTM33K305ENB		PTM33K30504ENB	
		HW2		HW2
IC : 3/8" Thickness : 3/16"		●		●
Shape	PTM33K305NSENB (low profile)		PTM33K30504NSENB (low profile)	
		●		●

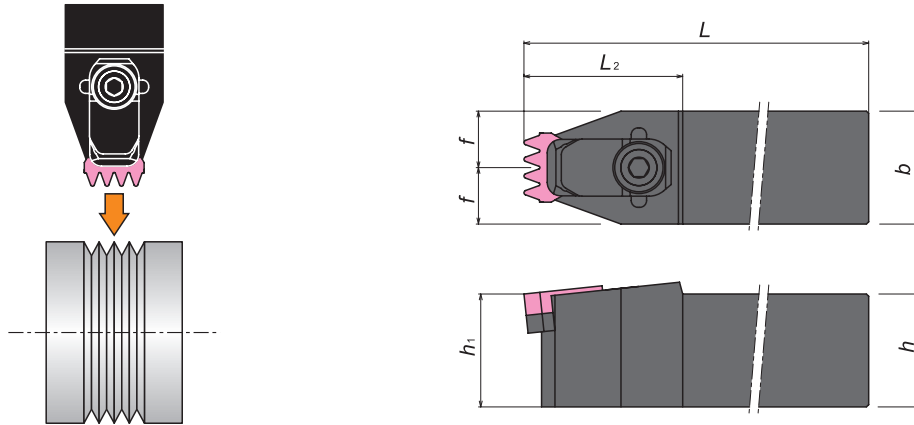
Grooving / Side Turning

Grooving / Side Turning

POLY-V(4V)

Face Grooving

28 HP Needed



● **Toolholders**

Item Number	Stock	Dimensions (inch)						Insert
		h	b	h_1	L	L_2	f	
POLY-V164	●	1.00	1.00	1.00	6.00	.50	1.40	PTM43K40..

● **Spare Parts**

Holder	Clamp		Thrust Plate		Shim		Shim-Screw	
		Stock		Stock		Stock		Stock
POLY-V164	2417-C	●	9414	●	K4-C	●	1230-C	●

● **Insert**

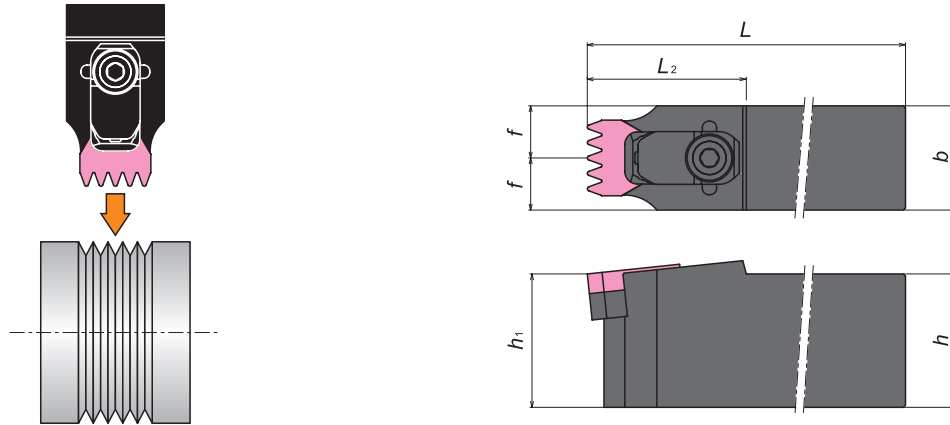
Shape	PTM43K405ENB		PTM43K40504ENB	
		HW2		HW2
IC : 1/2" Thickness : 3/16"		●		●
Shape	PTM43K405NSENB (low profile)		PTM43K40504NSENB (low profile)	
IC : 1/2" Thickness : 3/16"		●		●

Grooving / Side Turning

POLY-V (5V)

Clamp-on type

35 HP Needed



Toolholders

Item Number	Stock	Dimensions (inch)						Insert
		<i>h</i>	<i>b</i>	<i>h</i> ₁	<i>L</i>	<i>L</i> ₂	<i>f</i>	
POLY-V205	●	1.25	1.25	1.25	7.00	.625	1.50	PTM53K50..

Spare Parts

Holder	Clamp		Thrust Plate		Shim		Shim-Screw	
		Stock		Stock		Stock		Stock
POLY-V205	2417-C	●	9414	●	K5-C	●	1230-C	●

Insert

Shape	PTM53K505ENB		PTM53K50504ENB	
	(mm)	HW2	(mm)	HW2
<p>IC : 5/8" Thickness : 3/16"</p>	<p>φ 15.875 R0.3 3.35 40° R0.5 3.56</p>	●	<p>φ 15.875 R0.4 3.16 40° R0.5 3.56</p>	●
Shape	PTM53K505NSENB (low profile)		PTM53K50504NSENB (low profile)	
	(mm)	HW2	(mm)	HW2
<p>IC : 5/8" Thickness : 3/16"</p>	<p>φ 15.875 R0.3 3.35 40° R0.5 3.56 R0.3 0.2</p>	●	<p>φ 15.875 R0.4 3.16 40° R0.5 3.56 R0.4 0.2</p>	●

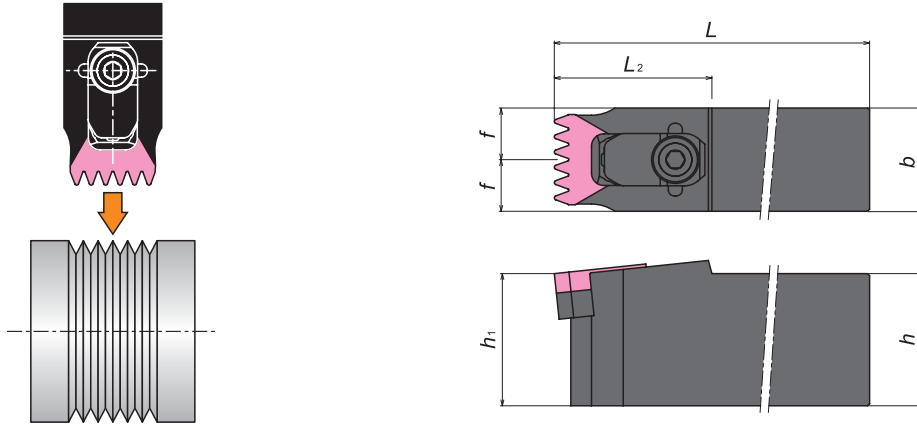
Grooving / Side Turning

Grooving / Side Turning

POLY-V(6V)

Face Grooving

42 HP Needed



● **Toolholders**

Item Number	Stock	Dimensions (inch)						Insert
		<i>h</i>	<i>b</i>	<i>h</i> ₁	<i>L</i>	<i>L</i> ₂	<i>f</i>	
POLY-V206	●	1.25	1.25	1.25	7.00	.625	1.50	PTM53K60..

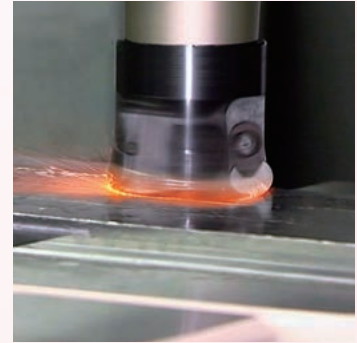
● **Spare Parts**

Holder	Clamp		Thrust Plate		Shim		Shim-Screw	
		Stock		Stock		Stock		Stock
POLY-V206	2417-C	●	9414	●	K6-C	●	1230-C	●

● **Insert**

Shape	PTM53K605ENB		PTM53K60504ENB	
		HW2		HW2
IC : 5/8" Thickness : 3/16"		●		●
Shape	PTM53K605NSENB (low profile)		PTM53K60504NSENB (low profile)	
IC : 5/8" Thickness : 3/16"		●		●

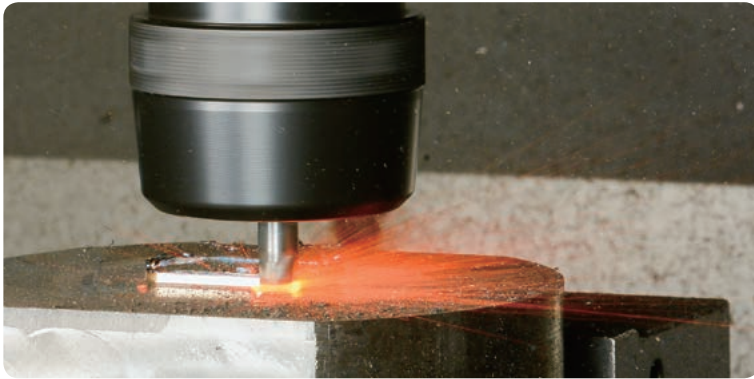
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Rotating Tools

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Ceramic Endmill (RCE) for HRSA Materials



Features

- *Extremely high speed machining for HRSA materials with our durable SiALON grade "SX9"*
- *More than 15 times higher productivity than a Carbide endmill*
- *4 flutes and 6 flutes are available*
- *Unique patent pending design provides toughness to the edge*

→18

NEW Ceramic Endmill (RCS) for Cast Iron/HRSA Materials



Features

- *Strong edge design ensures 5 times higher productivity than carbide tooling*
- *4, 6 and 8 flute designs*
- *Unique edge preparation has potential applications for Heat Resistant Super Alloy machining*

→18

HRSA materials and Hardened Materials

Features

- High performance milling cutter line that uses round-shaped inserts for machining both aerospace and hardened steels
- SX7, the new SiALON grade, has the best performance for high speed machining of high temperature alloys



AHM series →I12·I14
Advanced High Speed Mill



Gray / Ductile Cast Iron

XFM series

→I16



A.R.-4° R.R.0°

Features

- 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

HVM series

→I18·I20·I22



A.R.-6° R.R.-10°

Features

- 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

JQ series

→I17



A.R.+12° R.R.0°

Features

- Capable of 90-degree shoulder milling
- A variety of cutter diameters as small as .787 (φ 20mm)

TRI series

→I24



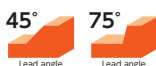
A.R.5° R.R.4°,7°,10°

Features

- Stable gray cast iron milling with lower cutting forces
- Maximizes ceramic insert potential and can mill faster than 3,200 SFM

HSM series

→I25·I26·I27



A.R.+12° R.R.0°

Features

- 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

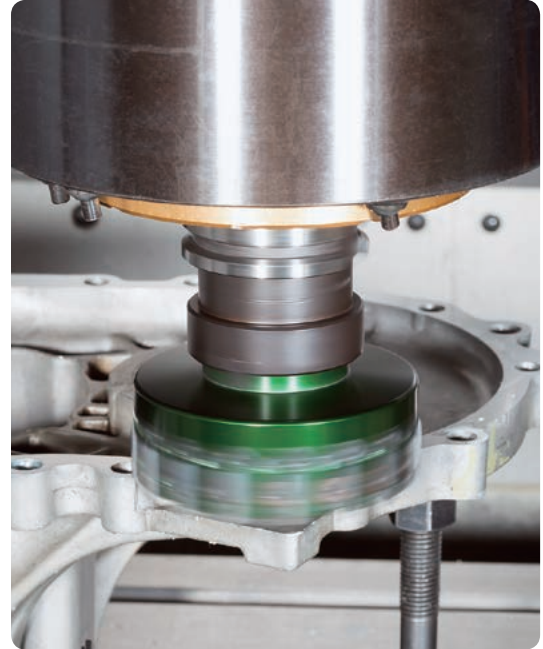
Aluminum

HFC series Adjustable type →I28
igh eed utter



Features

- **More teeth = More productivity**
- **Light weight aluminum body**
- **Adjustable edge height**
- **Produces outstanding surface finishes**
- **Internal coolant supply**
- **Inserts can be reground up to 4 times**
- **Guaranteed setup service is available**



HPC series →I32
igh erformance-utter



Features

- **A wide range of cutter diameters from ϕ .787" (20mm) to ϕ 3.937" (100mm)**
- **Strong rigid steel bodies**
- **With the fixed-type cutters, no time-consuming presetting is required**

Small Carbide Endmill for Swiss Machines



Features

- **The tool's sharpness creates a remarkable finish on machined surfaces.**
- **2, 3, and 4 flute designs with a selection of diameters to cover a variety of applications. (2 flute available in 2mm ϕ)**
- **40, 45, and 50mm lengths ideal for Swiss type lathes.**

Milling with NTK Grades by Application

General Guidelines for Successful Milling

- Select the best grade for the application
- Select cutter diameter 1.5 times greater than the workpiece width
- Eliminate any overhang to increase stability
- Choose the strongest nose radius
- No Coolant. Use compressed air
- Check clamp and part rigidity



Guidelines for Successful Milling by Material

Heat resistant alloy / PH stainless steel

- Down or climb milling where the chip thins upon exit is the preferred method for HNBA materials
- Reduce feed rate 50% upon entrance and exit
- Do not recut side walls as this can cause work hardening
- Use balanced shell mill adapter or shrink fit for end-mills
- As DOC gets thinner the feed must be increased to compensate for heat loss
- Use RPG geometries if tool pressure is a problem
- E01, E02 edge preparation recommended

Hardened Steel / Die mold / Chilled iron / Overlay

- Larger edge preparations need to be used
- Speed is reduced as hardness goes up

Cast Iron / Ductile Cast Iron

- Parts that are cast are more difficult to machine than forged • decrease feed rates by 25%
- Maximize feed rates for gray cast irons

Trouble shooting

Material	Insert Grade	NTK Grade	Problem	Solution					
				Speed	Feed	DOC	Edge Prep.	Insert Grade	Others
Hardened Steel	Ceramic	HC7 WA1	Chipping	—	↘	—	Wider	—	—
			Break	↘	↘	—	—	—	—
Cast Iron	Silicon Nitride	SX6 SP9	Chipping	↘	↘	—	Wider	—	—
			Break	↘	↘	↘	—	Tougher	Larger radius
			Thermal Crack	↘	↘	—	—	—	—
			Crater Wear	—	—	—	Sharper	—	—
Heat Resistant Alloy	SiALON	SX9 SX7	Notching	↗	↗	Vary / ↘	Wider	—	Pre-chamfer parts
			Flank Wear	↘	↗	—	—	Harder	—
			Chipping	—	—	—	Wider	Tougher	—
			Break	↘	—	↘	—	Tougher	—
			Tool Pressure	—	—	—	—	—	Use RPG insert

Hard Milling with WA1

Mill hardened materials (HRC 45 - 62) Reduce costs and eliminate grinding

- Rapid metal removal rates
- Achieve outstanding surface finishes
- Increased tool life vs carbides
- Versatile round insert geometries provide clearance in every direction



Target Industries

- Mold Shops
- Food processing
- Tool & Die
- Forging
- Mining

Application Materials

- Tool Steels
- Chilled Irons
- Stellite
- Mold Steels
- Powered Metal
- Weld Overlays

Cutters



→I12



→I12



→I14

Insert

- Grade
WA1
- Shape
RPG: Low tool pressure
RNG: More rigidity

Recommend Cutting Conditions

INSERT	DOC	HRC 45-55		HRC 55-60		HRC 60-62	
		Cutting Speed (SFM)	Feed (IPT)	Cutting Speed (SFM)	Feed (IPT)	Cutting Speed (SFM)	Feed (IPT)
RPG-21.51	.030"	850 - 1000	.004"	700 - 900	.003"	550 - 800	.0025"
RPG-32	.045"	850 - 1200	.0045"	700 - 1100	.003"	550 - 1000	.0025"
RPG-43	.050"	850 - 1300	.005"	700 - 1200	.0035"	550 - 1100	.003"
RNG-32	.045"	850 - 1200	.0045"	700 - 1100	.0045"	550 - 1000	.0025"
RNG-43	.045"	850 - 1400	.0045"	700 - 1300	.045"	550 - 1200	.003"
RNG45	.075"	850 - 1400	.005"	700 - 1300	.004"	550 - 1200	.003

Note: Speeds and Feeds are approximately starting points

Guidelines for Success

- Minimize overhang and have ridged set-ups
- Keep cutter engagement to 1/2 to 5/8 of the cutter diameter
- Reduce feed upon entrance and exit of the cut by 25%
- Use air blast without coolant
- Use helical interpolation to ramp down into a cavity
- Increase feed rates in corners to compensate for heat loss
- Use climb milling
- Use shrink fit holders whenever possible
- Safety first-do not exceed SFM
- As DOC gets smaller speed should accelerate to compensate for heat loss
- Adjust speed to maximize plastic deformation

Machine power requirements ~ Quick Check Table ~

Calculation ※Assuming that normal cast iron is machined at a cutting speed of 2600 SFM

$$\text{Required mechanical power (hp)} = \text{○○} \% \times \text{○○} \text{ hp}$$

Width of cutting $a_e = \text{__} \%$ of the cutter diameter

The value $\text{__} \text{ hp}$ determined from the applicable table below

(Example of calculation)

Cutter used : HVM $\phi 4$ " - 10 teeth Width of cutting $a_e = 1.2$ " → This is 30% of the cutter diameter
 Cutting conditions : 2600 SFM .008 IPT .118 DOC → The value 54hp in the table is located.

The required power (hp) = 30% × 54hp = 16hp

HVM Series 	HSM Series 	XFM Series 																																																																																													
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HVM $\phi 5$" - 12 teeth <table border="1"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="4">Feed rate per tooth (IPT)</th> </tr> <tr> <th>.004</th> <th>.008</th> <th>.012</th> <th>.016</th> </tr> </thead> <tbody> <tr> <th rowspan="4">Depth of cut (inch)</th> <th>.039</th> <td>16</td> <td>26</td> <td>34</td> <td>40</td> </tr> <tr> <th>.079</th> <td>32</td> <td>50</td> <td>66</td> <td>79</td> </tr> <tr> <th>.118</th> <td>48</td> <td>75</td> <td>98</td> <td>119</td> </tr> <tr> <th>.157</th> <td>64</td> <td>99</td> <td>131</td> <td>158</td> </tr> </tbody> </table>			Feed rate per tooth (IPT)				.004	.008	.012	.016	Depth of cut (inch)	.039	16	26	34	40	.079	32	50	66	79	.118	48	75	98	119	.157	64	99	131	158	HSM $\phi 5$" - 8 teeth <table border="1"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="4">Feed rate per tooth (IPT)</th> </tr> <tr> <th>.004</th> <th>.008</th> <th>.012</th> <th>.016</th> </tr> </thead> <tbody> <tr> <th rowspan="4">Depth of cut (inch)</th> <th>.039</th> <td>11</td> <td>17</td> <td>23</td> <td>27</td> </tr> <tr> <th>.079</th> <td>23</td> <td>34</td> <td>46</td> <td>55</td> </tr> <tr> <th>.118</th> <td>34</td> <td>51</td> <td>68</td> <td>82</td> </tr> <tr> <th>.157</th> <td>44</td> <td>67</td> <td>91</td> <td>110</td> </tr> </tbody> </table>			Feed rate per tooth (IPT)				.004	.008	.012	.016	Depth of cut (inch)	.039	11	17	23	27	.079	23	34	46	55	.118	34	51	68	82	.157	44	67	91	110																																
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	.157	64	97	130	157																																																																																										

Unit : kW

Tips for utilizing the above tables

- ① The assumption is that gray cast iron is machined at a cutting speed of 2600 SFM, with the cutter diameter shown as the width of cut ($a_e = 100\%$ of the cutter diameter).
- ② The required power becomes approximately half (50%) if the cutting width a_e or depth of cut a_p is halved. (The power is proportional to a_e or a_p .)
- ③ The required power is reduced to approximately 60% if the number of blades is halved.
- ④ Machines that have an output of 30 hp or greater are recommended.

*Please make use of the above tables, understanding that they are approximations as only a guide.

NEW Solid Ceramic End Mill



Features

- Extremely high speed machining for HRSA materials with our durable SiAlON grade "SX9"
- More than 15 times higher productivity than a Carbide end mill
- 4, 6 and 8 flutes are available
- Unique patent pending design provides toughness to the edge

RCE for HRSA materials →I10



● Ceramic specialist's design

Helix angle

- Designed for the purpose of:
 - 4-flute: toughness
 - 6-flute: less tool pressure and better chip evacuation



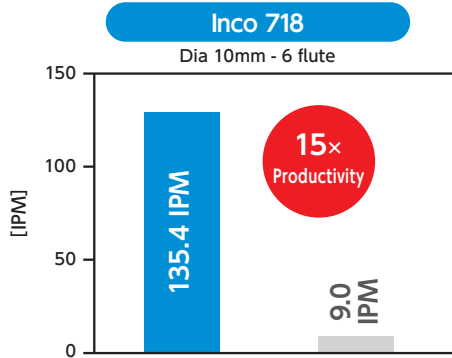
- Well balanced for toughness and wear resistance

Bottom edge

- Unique shape provides toughness

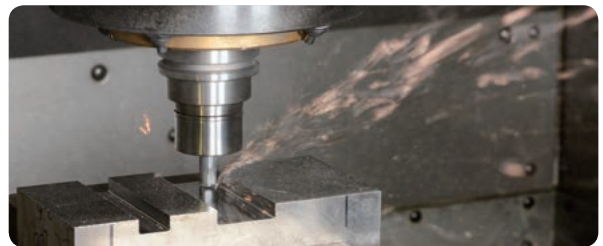
Flute

- Optimized for HRSA materials
- Excellent toughness



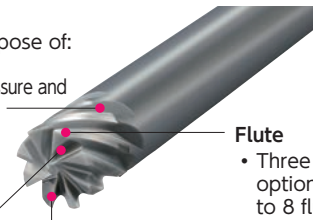
	SX9	Carbide
SFM	1970	130
IPT	.0012	←
DOC	.118	←

RCS for Cast iron / HRSA materials →I11



Helix angle

- Designed for the purpose of:
 - 4-flute: toughness
 - 6/8-flute: less tool pressure and better chip evacuation



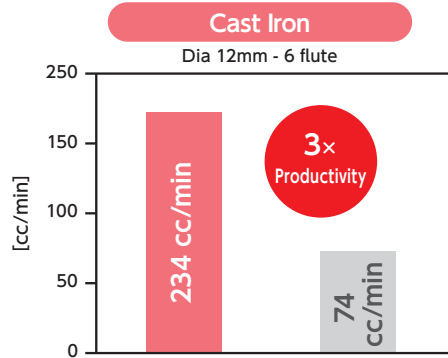
- Three flute options up to 8 flute

End Gash

- Bigger end gash brings toughness

Edge

- Added chamfer provides toughness for cast iron machining



	SX9	Carbide
SFM	2300	360
IPT	.002	←
DOC	.138	.275

4-flute



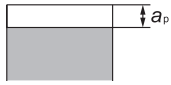

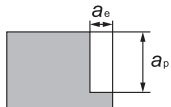

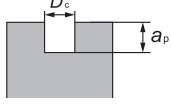



6-flute



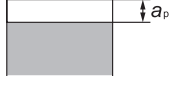

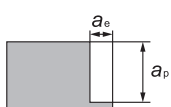

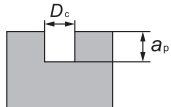

8-flute



● Recommend Cutting Conditions for HRSA material

Application	Grade	ϕD_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"	4/6/8	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.0012	.056	—	DRY 	
		1/2"								
		5/8"								
		3/4"								
		8mm								
		10mm								
		12mm								
		16mm								
		20mm								
Side Milling 	SX9	3/8"	4/6/8	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.0012	.187	.037	DRY 	
		1/2"								
		5/8"								
		3/4"								
		8mm								
		10mm								
		12mm								
		16mm								
		20mm								
Slotting 	SX9	3/8"	4	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.0012	.094	—	DRY 	
		1/2"								
		5/8"								
		8mm								
		10mm								
		12mm								
		16mm								
	SX9	6	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.0012	.056	—	DRY 		
						1/2"				
						5/8"				
						8mm				
						10mm				
						12mm				
						16mm				
						.094				
SX9	8	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.0012	.113	—	DRY 			
					3/4"					
					16mm					

● Recommended cutting conditions for Cast Iron

Application	Grade	ϕD_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	1/2"	4/6/8	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.004	.094	—	DRY 	
		5/8"								
		3/4"								
		12mm								
		16mm								
		20mm								
Side Milling 	SX9	1/2"	4/6/8	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.004	.375	.083	DRY 	
		5/8"								
		3/4"								
		12mm								
		16mm								
		20mm								
Slotting 	SX9	1/2"	4/6/8	[Red bar with 2 flutes]	[Red bar with 2 flutes]	.004	.094	—	DRY 	
		5/8"								
		3/4"								
		12mm								
		16mm								
		20mm								

For Maximum Productivity

- A continuous cut is recommended. An interrupted cut may cause chipping or breakage.
- When using a Hydraulic or Shrink chuck, blow air to the arbor body, DON'T blow air to the endmill itself.
- A Minimum speed of 980 SFM is required. (Don't run at lower speed.)
- A 1.5 degree ramping angle is recommended. Run at 50% lower feed rate when ramping cut.

When cutting HRSA materials

- Continue to machine even if you see BUE, removing BUE may cause chipping or breakage to the edge.
- High speed machining work hardens the material. For this reason, leave at least 0.3mm of material for a finishing process.

Rotating Tools

RCE for HRSA Materials

RCE-H4 (4-flute with Neck)

○ No center cutting edge



Slotting



Pocketing



Ramping



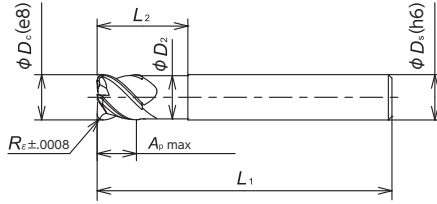
Z=4



35°



1.5°



Tolerances

$\phi D_c / \phi D_s$	e8	h6
3/8", 8mm, 10mm	-.00098/-0.00185"	+0/-0.00035"
1/2", 12mm	-.00126/-0.00232"	+0/-0.00043"

Heat Resistant Alloy S ● : 1st Choice ● : 2nd choice

Item Number	Grade	Flute	ϕD_c		ϕD_s		ϕD_2		R_e		$A_p \text{ max}$		L_1		L_2	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)
RCEI375H4R047S	●	4	3/8		3/8		.359		.047		9/32		2.50		3/4	
RCEI500H4R068S	●	4	1/2		1/2		.484		.068		3/8		2.75		1	
RCEM080H4R100S	●	4	.315	8	.315	8	.299	7.6	.039	1.0	.236	6	2.362	60	0.630	16
RCEM100H4R125S	●	4	.394	10	.394	10	.378	9.6	.049	1.25	.295	7.5	2.559	65	0.787	20
RCEM120H4R150S	●	4	.472	12	.472	12	.457	11.6	.059	1.5	.354	9	2.756	70	0.945	24

RCE-J6 (6-flute)

○ No center cutting edge



Face Milling



Side Milling



Profiling



Ramping



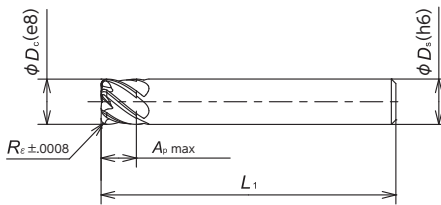
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40°



1.5°



Tolerances

$\phi D_c / \phi D_s$	e8	h6
3/8", 8mm, 10mm	-.00098/-0.00185"	+0/-0.00035"
1/2", 12mm	-.00126/-0.00232"	+0/-0.00043"

Heat Resistant Alloy S ● : 1st Choice ● : 2nd choice

Item Number	Grade	Flute	ϕD_c		ϕD_s		R_e		$A_p \text{ max}$		L_1	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)
RCEI375J6R047S	●	6	3/8		3/8		.047		9/32		2.50	
RCEI500J6R068S	●	6	1/2		1/2		.068		3/8		2.75	
RCEM080J6R100S	●	6	.315	8	.315	8	.039	1.0	.236	6	2.362	60
RCEM100J6R125S	●	6	.394	10	.394	10	.049	1.25	.295	7.5	2.559	65
RCEM120J6R150S	●	6	.472	12	.472	12	.059	1.5	.354	9	2.756	70

RCS for Cast Iron / HRSA Materials

RCS-H4

○ No center cutting edge



Slotting



Pocketing



Ramping



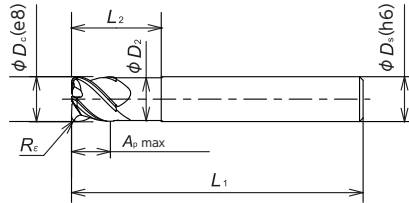
Z=4



35°



1.5°



Tolerances

$\phi D_c / \phi D_s$	e8	h6
1/2", 12mm, 5/8", 16mm	-.00126/-0.00232"	+0/-0.00043"

Cast Iron		K	●														
Heat Resistant Alloy		S	●	● : 1st Choice ● : 2nd choice													
	Item Number	Grade	Flute	ϕD_c		ϕD_s		R_ϵ		$A_p \text{ max}$		L_1		L_2			
		SX9		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
RCS-H4	RCSI500H4R068S	●	4	1/2		1/2		.484	12.3	.068	1.73	3/8	2.75	69.85	1	25.4	
	RCSI625H4R078S	●	4	5/8		5/8		.605	15.4	.078	1.98	.469	11.91	3	76.2	1.25	31.75
	RCSM120H4R150S	●	4	.472	12	.472	12	.457	11.6	.059	1.5	.354	9	2.76	70	.954	24
	RCSM160H4R200S	●	4	.630	16	.630	16	.610	15.5	.079	2.0	.472	12	2.95	75	1.26	32

RCS-J6 / RCS-J8

○ No center cutting edge



Face Milling



Side Milling



Profiling



Ramping



Z=6



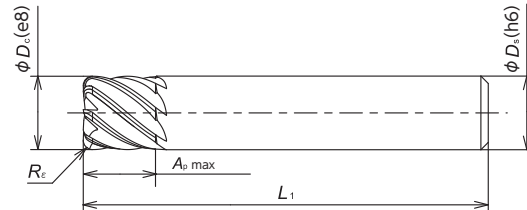
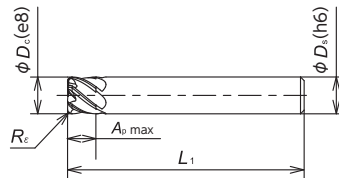
Z=8



40°



1.5°



Tolerances

$\phi D_c / \phi D_s$	e8	h6
1/2", 12mm, 5/8", 16mm	-.00126/-0.00232"	+0/-0.00043"
3/4", 20mm	-.00157/-0.00287"	+0/-0.00051"

Cast Iron		K	●										
Heat Resistant Alloy		S	●	● : 1st Choice ● : 2nd choice									
	Item Number	Grade	Flute	ϕD_c		ϕD_s		R_ϵ		$A_p \text{ max}$		L_1	
		SX9		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)
RCS-J6	RCSI500J6R068S	●	6	1/2		1/2		.068	1.73	3/8		2.75	
	RCSI625J6R078S	●	6	5/8		5/8		.078	1.98	.469	11.91	3	
	RCSM120J6R150S	●	6	.472	12	.472	12	.059	1.5	.354	9	2.76	70
	RCSM160J6R200S	●	6	.630	16	.630	16	.079	2.0	.472	12	2.95	75
RCS-J8	RCSI750J8R094S	●	8	3/4		3/4		.094	2.38	.563	14.29	4.25	
	RCSM200J8R250S	●	8	.787	20	.787	20	.098	2.5	.984	15	4.33	110

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ □ □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R)(L) : 1-2 week delivery (Right / Left-hand only)
 (R)(L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Rotating Tools

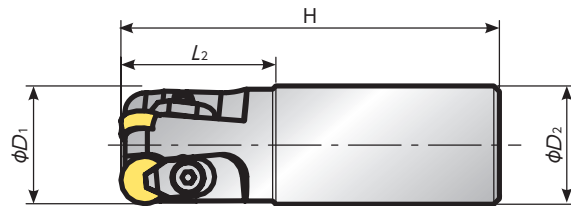


series

* Recommend using torque wrench @35lbs (4Nm)



A.R.+5°
R.R.-7°30'



● Inch size cutters

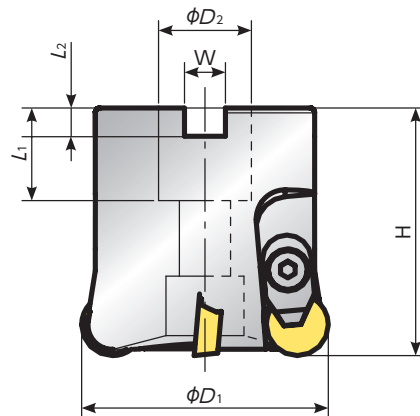
Item Number	Stock		Dimensions (inch)				Clamp	Clamp Screw	Weight (lbs)	Insert
			ϕD_1	D_2	H	L_2				
RPIW0625E0625R02	●	2	.625	.625	3.160	1.250	C-423978	S-3-48*1/4SHCS	0.2	RPG 21.5
RPIW075E075R02	●	2	.750	.750	3.270	1.220	AMS-3	AOB-3S	0.4	RPG 21.5
RPIW100E100R03	●	3	1.000	1.000	3.270	1.000	AMS-4	AOB-4S	0.6	RPG 32
RPIW125E125R03	●	3	1.250	1.250	4.000	1.640	AMS-5T	AOB-5S-T25	1.1	RPG 43
RPIW150E150R03	●	3	1.500	1.500	4.000	1.830			1.6	

● Metric size cutters

Item Number	Stock		Dimensions (mm)				Clamp	Clamp Screw	Weight (kg)	Insert
			ϕD_1	D_2	H	L_2				
JRPMW032E250R03	○	3	32	25	120	40	AMS-5T	AOB-5S-T25	0.4	RPG 43
JRPMW032E320R03	○		32	32					0.6	
JRPMW040E320R03	○		40	32					0.7	



A.R.+5°
R.R.-2°30' ~ -5°



● Inch size cutters

Item Number	Stock		Dimensions (inch)						Shim	Shim Screw	Clamp	Clamp Screw	A.R.	R.R.	Weight (lbs)	Insert
			ϕD_1	H	D_2	W	L_1	L_2								
RPIW200S075R04	●	4	2.00	2.00	.750	.32	.75	.22	ARP42A	M3 * 8	AMS-5T	AOB-5S-T25	+5°	+5°	0.9	RPG 43
RPIW300S100R05	●	5	3.00	2.00	1.000	.38	.75	.22					+5°	+5°	2.0	
RPIW400S125R06	●	6	4.00	2.00	1.250	.50	.82	.30					+5°	+5°	4.2	

● Metric size cutters

Item Number	Stock		Dimensions (mm)						Shim	Shim Screw	Clamp	Clamp Screw	A.R.	R.R.	Weight (kg)	Insert
			ϕD_1	H	D_2	W	L_1	L_2								
JRPMW050S220R04	○	4	50	50	22	10.4	20	6.3	ARP42A	M3 * 8	AMS-5T	AOB-5S-T25	+5°	+5°	0.4	RPG 43
JRPMW063S220R04	○	4	63	50	22	10.4	20	6.3					+5°	+5°	0.6	
JRPMW080S254R05	○	5	80	50	25.4	9.5	25	6.0					+5°	+2°30'	0.9	

● Inserts

(inch)	IC	T	(inch)	IC	T
RPG 21.5	1/4	3/32	RPG 43	1/2	3/16
RPG 32	3/8	1/8			

● : 1st Choice ● : 2nd choice

	Steel	P							
	Stainless Steel	M							
	Cast Iron	K	●	●	●	●	●	●	●
	Non-Ferrous Material	N							
	Heat Resistant Alloy	S	●	●	●	●	●	●	●
	Hardened Material	H						●	●
Item Number	ISO Item Number	IC	Ceramics						
			SiAlON				Whisker	Alumina - TiC	
			SX7	SX3	SX9	SX5	WA1	HC7	
RPG 21.5 E02	RPGN 060200 E004	1/4	●						
RPG 21.5 T0220	RPGN 060200 T00520	1/4		●	●	●	●	●	
RPG 21.5 T0320	RPGN 060200 T00820	1/4	●						
RPG 21.5 T0420	RPGN 060200 T01020	1/4						●	
RPG 32 E02	RPGN 090300 E004	3/8	●						
RPG 32 T0220	RPGN 090300 T00520	3/8		●	●			●	
RPG 32 T0320	RPGN 090300 T00820	3/8	●						
RPG 32 T0420	RPGN 090300 T01020	3/8						●	
RPG 43 E01	RPGN 120400 E002	1/2				●			
RPG 43 E02	RPGN 120400 E004	1/2	●						
RPG 43 T0220	RPGN 120400 T00520	1/2		●	●		●	●	
RPG 43 T0225	RPGN 120400 T00525	1/2			○				
RPG 43 T0320	RPGN 120400 T00820	1/2	●						
RPG 43 T0420	RPGN 120400 T01020	1/2				●	●	●	●
RPG 43 Z0620	RPGN 120400 Z01520	1/2						●	
RPG 43 Z0825	RPGN 120400 Z02025	1/2							●

● Recommend Cutting Conditions

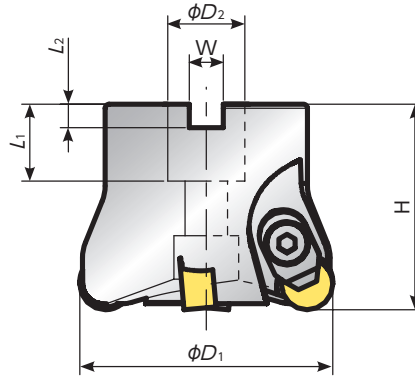
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)									Feed (IPT)							Depth of Cut (inch)	
				200	700	1200	1700	2200	2700	3200	3700	.002	.003	.004	.005	.006	.007				
S Heat Resistant Alloys	SX7	●																		~.150	
	SX3	●																			~.150
	SX9	●																			~.150
H Hardened Steel	WA1	●	○																		~.150
	HC7	●	○																		~.150
	WA1	●	○																		~.150
	HC7	●	○																		~.150

Rotating Tools



*** Recommend using torque wrench @35lbs (4Nm)**

A.R.-5°
R.R.-10°

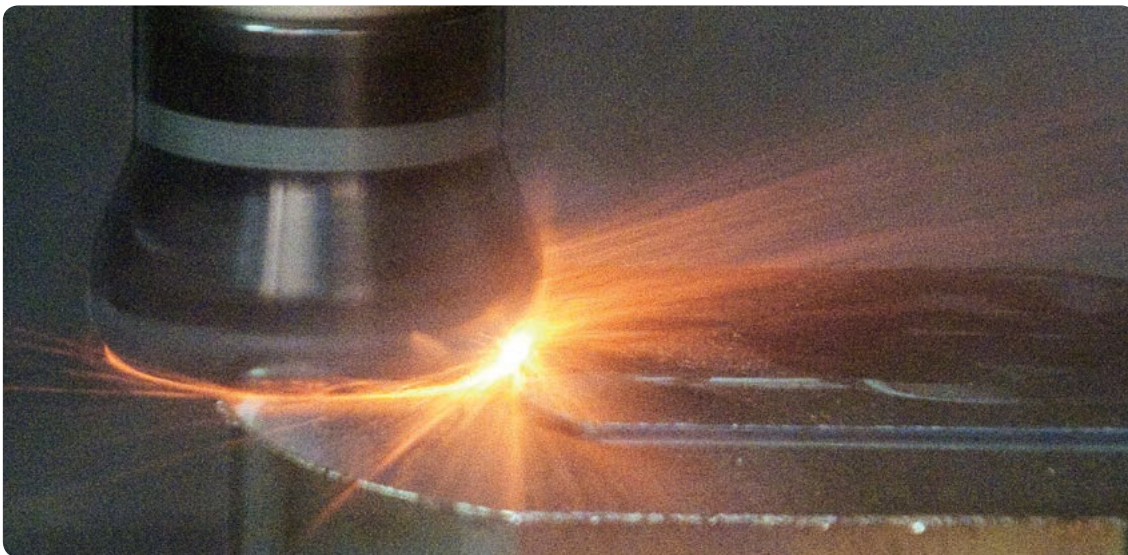


● Inch size cutters

Item Number	Stock	✳	Dimensions (inch)						Clamp	Clamp Screw	Weight (lbs)	Insert
			ϕD_1	H	ϕD_2	W	L ₁	L ₂				
RNIW200S075R04-43	●	4	2.00	2.00	.750	.32	.75	.22	AMS-6T	AOB-6S-T30	1.0	RNG 43
RNIW200S075R03	●	3	2.00	2.00	.750	.32	.75	.22			1.0	
RNIW250S075R04	●	4	2.50	2.00	.750	.32	.75	.22			1.3	RNG 45
RNIW300S100R05	●	5	3.00	2.00	1.000	.38	.75	.22			1.6	
RNIW400S125R06	●	6	4.00	2.00	1.250	.51	.82	.30			4.2	

● Metric size cutters

Item Number	Stock	✳	Dimensions (mm)						Clamp	Clamp Screw	Weight (kg)	Insert
			ϕD_1	H	ϕD_2	W	L ₁	L ₂				
JRNMW050S220R03	○	3	50	50	22	10.4	20	6.3	AMS-6T	AOB-6S-T30	0.4	RNG 45
JRNMW063S220R04	○	4	63	50	22	10.4	20	6.3			0.6	
JRNMW080S254R05	○	5	80	50	25.4	9.5	25	6.0			0.9	



● Inserts

● : 1st Choice ● : 2nd choice

(inch) RNG 43	IC 1/2	T 3/16	(inch) RNG 45	IC 1/2	T 5/16
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Item Number	ISO Item Number	IC	Ceramics														
			SIALON				Whisker	Silicon Nitride		Alumina - TiC							
			SX7	SX3	SX9	SX5	WA1	SX6	SP9	HC7							
RNG 43 E01	RNGN 120400 E002	1/2			●												
RNG 43 E02	RNGN 120400 E004	1/2	●	●													
RNG 43 T0220	RNGN 120400 T00520	1/2		●	●	●		●									
RNG 43 T0225	RNGN 120400 T00525	1/2			○			○									
RNG 43 T0320	RNGN 120400 T00820	1/2	●														
RNG 43 T0420	RNGN 120400 T01020	1/2			●			●									●
RNG 43 T0820	RNGN 120400 T02020	1/2									●						
RNG 43 T0825	RNGN 120400 T02025	1/2			○												
RNG 43 Z0825	RNGN 120400 Z02025	1/2															●
RNG 45 E01	RNGN 120700 E002	1/2			●					●							
RNG 45 E02	RNGN 120700 E004	1/2	●	●													
RNG 45 T0220	RNGN 120700 T00520	1/2		●	●	●		●		●							
RNG 45 T0225	RNGN 120700 T00525	1/2			○					○							
RNG 45 T0320	RNGN 120700 T00820	1/2	●														
RNG 45 T0420	RNGN 120700 T01020	1/2			●			●		●							●
RNG 45 T0620	RNGN 120700 Z01520	1/2									●						
RNG 45 Z0825	RNGN 120700 Z02025	1/2															●

● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				200	700	1200	1700	2200	2700	3200	3700	.002	.003	.004	.005	.006	.007	
S Heat Resistant Alloys	SX7	●																~.150
	SX3	●																~.150
	SX9	●																~.150
H Hardened Steel	WA1	●	○															~.150
	HRC 45-55 HC7	●	○															~.150
	HRC 55-65 WA1	●	○															~.150
	HRC 55-65 HC7	●	○															~.150

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓡ Ⓛ : 1-2 week delivery (Right / Left-hand only)
Ⓡ Ⓛ : 1-2 week delivery (Right / Left-hand only, Newly added)

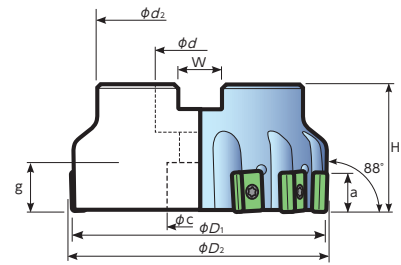
Rotating Tools

XFM series

- Lead angle 88 degree - LNX324 (A.R.-4°, R.R.0°)



Left hand added!



● Inch size cutters

Item Number	Stock		✳	Dimensions (inch)									Weight (lbs)	Insert
	R	L		φD ₁	φD ₂	H	a	φd	W	φd ₂	φc	g		
JXTM15IN-88-4%	●	●	4	1.50	1.55	1.75	.551	.750	.32	1.350	.610	—	1.0	LNX 324
JXTM15IN-88-5%	●	●	5	1.50	1.55	1.75	.551	.750	.32	1.350	.610	—	1.0	
JXTM20IN-88-6%	●	●	6	2.00	2.05	2.00	.551	.750	.32	1.770	.610	—	1.0	
JXTM25IN-88-8%	●	●	8	2.50	2.55	2.00	.551	1.000	.38	2.000	.760	—	1.5	
JXTM30IN-88-10%	●	●	10	3.00	3.04	2.00	.551	1.000	.38	2.362	.827	.539	2.4	
JXTM40IN-88-13%	●	●	13	4.00	4.04	2.00	.551	1.500	.64	3.150	2.000	.870	3.9	
JXTM50IN-88-16%	●	●	16	5.00	5.04	2.00	.551	1.500	.64	3.740	2.000	.870	6.5	
JXTM60IN-88-18%	●	●	18	6.00	6.05	2.00	.551	2.000	.75	4.000	2.800	1.120	8.0	

* 8 corners can be used when using right and left hand cutter.

● Metric size cutters

Item Number	Stock		✳	Dimensions (mm)									Weight (kg)	Insert
	R	L		φD ₁	φD ₂	H	a	φd	W	φd ₂	φc	g		
JXTM080-88-10%	○		10	80	83	50	14	25.4	9.5	58	36	14	1.1	LNX 324
JXTM100-88-13%	○		13	100	103	50	14	31.75	12.7	77	50	17	1.8	
JXTM125-88-16%	○		16	125	128	58	14	38.1	15.9	77	55	22	3.1	

● Spare Parts

Insert Screw	Wrench
LRIS-4 * 12	LLR-25S

● Screw Drivers (OP)

Bit	Handle	Handle & Bit
HLR-25S	XX2815-04	XX2815-04-25S

● Inserts

	Item Number	R	Silicon Nitride	
			SX6	SP9
	LNX 324-02 T0420 (LNX 324-08 T01020)	.031	●	●
	LNX 324-03 T0420 (LNX 324-12 T01020)	.047	●	●
LNX 324-04 T0420 (LNX 324-16 T01020)	.063	●	●	

* Recommend using torque wrench @35lbs (4Nm)

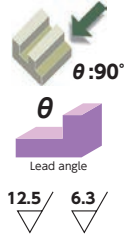
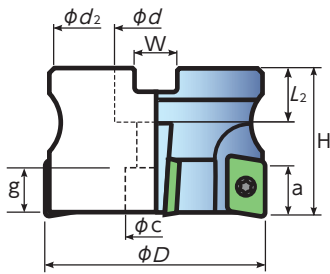
* 8 corners can be used when using right and left hand cutter.

● Recommend Cutting Conditions

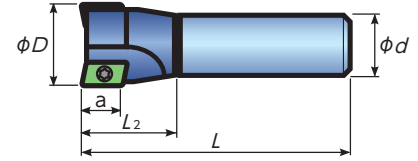
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)					Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010		.012
Gray Cast Iron	SX6	●	●														~.300
	SP9	●	○														~.300
Ductile Iron	SP9	●	○														~.300

JQ series

JQTS



JQTE



● JQTS Metric size cutters

Item Number	Stock		Dimensions (mm)									Weight (kg)	A.R.	R.R.	Insert Screw	Wrench	Insert
			ϕD	H	L_2	a	ϕd	W	ϕd_2	ϕc	g						
JQTS040-90-4R	●	4	40	40	18	14	16	8.4	35	12	4.2	0.2	+6°	-13°	FSI22-4.0*11	T-15A	
JQTS050-90-5R	●	5	50	40	22	14	22	10.4	45	18	10.7	0.3	+6°	-10°			
JQTS063-90-6R	●	6	63	50	22	14	22	10.4	58	18	14.5	1.4	+6°	-12°			

● JQTE Metric size cutters

Item Number	Stock		Dimensions (mm)					Weight (kg)	A.R.	R.R.	Insert Screw	Wrench	Insert
			ϕD	L	L_2	a	ϕd						
JQTE020-90-1R	●	1	20	100	30	14	20	0.2	+6°	-13°	FSI23-4.0*7	T-15A	
JQTE025-90-2R	●	2	25	100	30	14	25	0.3	+6°	-13°			
JQTE032-90-3R	○	3	32	110	35	14	32	0.5	+6°	-13°	FSI22-4.0*11		
JQTE040-90-4R	○	4	40	110	37	14	32	0.6	+6°	-13°			

● Inserts

Shape	Item Number	R	m	Silicon Nitride	
				SX6	SP9
 	APCW 160408 T01020	.031	.288	●	●
	APCW 160412 T01020	.047	.286	●	●
	APCW 160420 T01020	.079	.284	●	●
 	APCW 1604 PDTR	—	—	○	○
with wiper The insert must be installed in all insert pockets					

* Recommend using torque wrench @35lbs(4Nm)

● CBN Wiper Insert: Can install 1 or 2 CBN Wiper Inserts with ceramic insert.

Shape	Item Number	B30	B52
 	APCW 1604 PDSRCE	○	○
* Slightly taller insert than ceramic inserts so can be installed in standard cutter.			

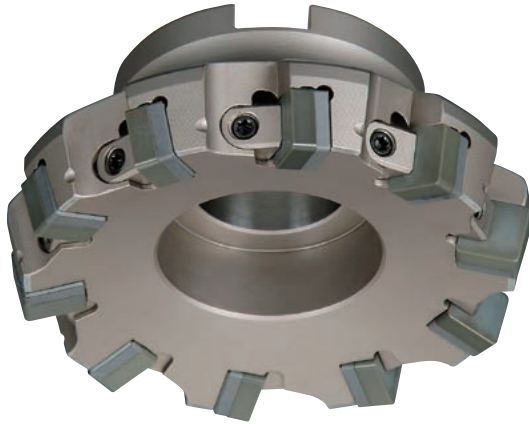
● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)						Depth of Cut (inch)	
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010		.012
Gray Cast Iron	SX6	●	○															
	SP9	●	●															
Ductile Iron	SP9	●	○															

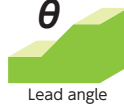
Rotating Tools

HVM high velocity mill series

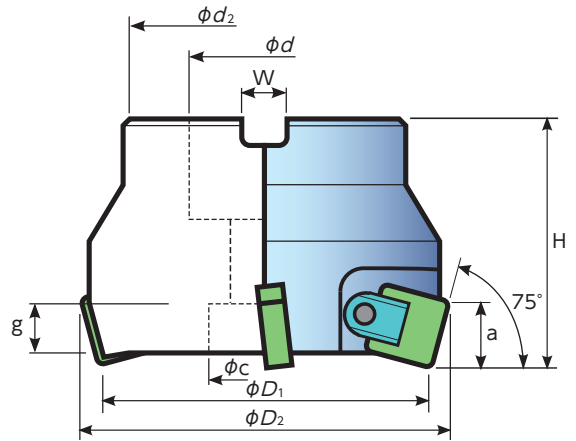
● Lead angle 75 degree -SN43(A.R. -6° R.R. -10°)



$\theta: 75^\circ$



12.5 / 6.3



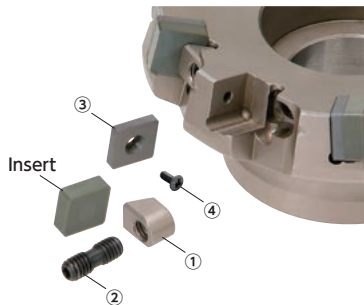
● Inch size cutters

Item Number	Stock		Dimensions (inch)									Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JFDX25IN-75-06R	●	6	2.50	2.732	2.00	.472	.750	.32	2.362	.669	.760	2.0	 SNG 43
JFDX30IN-75-08R	●	8	3.00	3.232	2.00	.472	1.000	.38	2.362	.827	.760	2.2	
JFDX40IN-75-10R	●	10	4.00	4.232	2.00	.472	1.500	.64	3.150	2.000	.850	3.3	
JFDX50IN-75-12R	●	12	5.00	5.232	2.00	.472	1.500	.64	3.740	2.000	.850	5.7	
JFDX60IN-75-16R	●	16	6.00	6.244	2.50	.472	2.000	.75	3.937	2.835	.945	8.8	

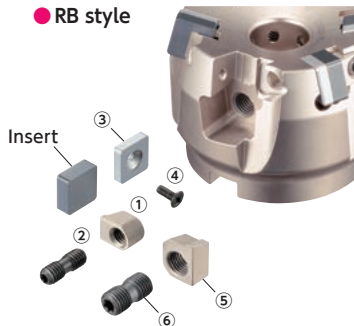
● Metric size cutters

Item Number	Stock		Dimensions (mm)									Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JFDX063-75-06R	○	6	63	70	50	12	22.0	10.4	58	18	18.5	0.8	 SNG 43
JFDX080-75-08R	○	8	80	87	50	12	25.4	9.5	62	36	15.5	1.1	
JFDX080-75-08RB*	○	8	80	87	50	12	25.4	9.5	62	36	15.5	1.36	
JFDX080MM-75-08R		8	80	87	50	12	27.0	12.4	64	19	15.5	1.1	
JFDX100-75-10R	○	10	100	107	50	12	31.75	12.7	62	45	16.5	1.4	
JFDX100-75-10RB*	○	10	100	107	50	12	31.75	12.7	62	45	16.5	1.83	
JFDX100MM-75-10R		10	100	107	50	12	32.0	14.4	64	45	23.5	1.3	
JFDX125-75-12R	○	12	125	132	58	12	38.1	15.9	83	55	21.5	2.6	
JFDX125-75-12RB*	○	12	125	132	58	12	38.1	15.9	83	55	21.5	3.34	
JFDX125MM-75-12R		12	125	132	58	12	40.0	16.4	85	55	26.5	2.3	
JFDX160-75-16R		16	160	166	60	12	50.8	19	100	72	20.5	4.1	
JFDX160-75-16RB*		16	160	166	60	12	50.8	19	100	72	20.5	5.47	

* One insert pocket can be adjusted for height




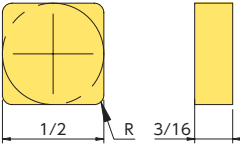

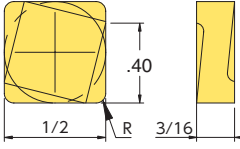

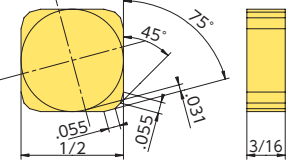
● RB style



● Spare Parts

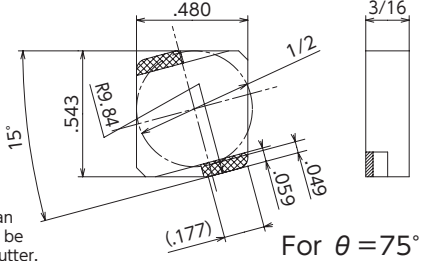
Wedge	Wedge Screw	Torx Wrench	Shim	Shim Screw
①	②		③	④
HLW175	WS0616-T15	T15	ASN423	M3×8
Wedge	Wedge Screw	Wrench		
⑤	⑥			
HLW177	WS0816-T25	LLR-T25		

● Inserts

Shape	Dimensions (inch)	Item Number	R	Silicon Nitride		Whisker
				SX6	SP9	WA1
 12.5		SNG 432 T0220	.031			●
		SNG 432 T0420	.031	●	●	●
		SNG 433 T0220	.047			●
		SNG 433 T0420	.047	●	●	●
		SNG 434 T0220	.063			●
		SNG 434 T0420	.063	●	●	●
 12.5 with chipbreaker		SNGF 433 TRCC413 Reduce tool pressure	.047	●		
		SNGF 433 RT0425 C421 Reduce tool pressure	.047		●	
 6.3 with wiper		SNG 43EN TN The insert must be installed in all insert pockets	—	●	●	

* Recommend using torque wrench @35lbs(4Nm)

● CBN Wiper Insert: Can install 1 or 2 CBN Wiper Inserts with ceramic inserts.

Dimensions (inch)	Item Number	R	CBN	
			B30	B52
 * Slightly taller insert than ceramic inserts so can be installed in standard cutter.	FDX 1204-75-50R	—	●	●

● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010	.012	
K	SX6	●	●															~.220
Gray Cast Iron	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220

Inserts(SNG) →E13

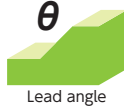
Rotating Tools

HVM High Velocity Mill series

● Lead angle 88 degree -SN43(A.R. -6° R.R. -10°)

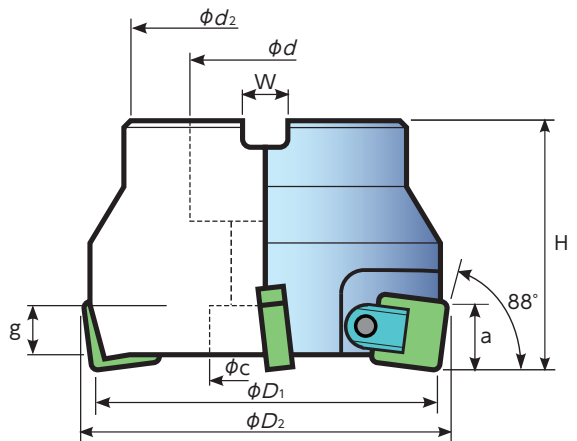


$\theta : 88^\circ$



Lead angle

12.5 / 6.3

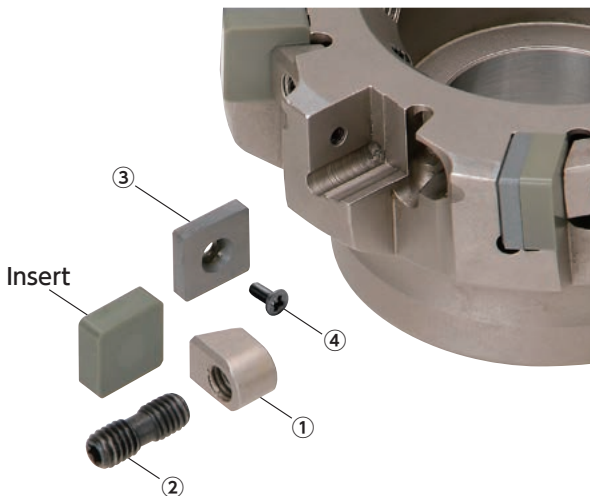


● Inch size cutters

Item Number	Stock		Dimensions (inch)									Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JFDX25IN-88-06R	●	6	2.50	2.531	2.00	.472	.750	.32	2.362	.669	.760	1.8	
JFDX30IN-88-08R	●	8	3.00	3.031	2.00	.472	1.000	.38	2.362	.827	.760	2.1	
JFDX40IN-88-10R	●	10	4.00	4.031	2.00	.472	1.500	.64	3.150	2.000	.850	3.2	
JFDX50IN-88-12R	●	12	5.00	5.031	2.00	.472	1.500	.64	3.740	2.000	.850	5.8	

● Metric size cutters


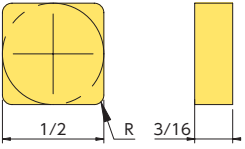

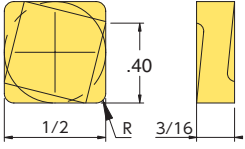

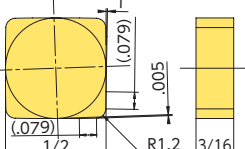
Item Number	Stock		Dimensions (mm)									Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JFDX063-88-06R	○	6	63	64	50	12	22.0	10.4	58	18	13	0.8	
JFDX080-88-08R	○	8	80	81	50	12	25.4	9.5	62	36	13.5	1.0	
JFDX080MM-88-08R		8	80	81	50	12	27.0	12.4	64	19	13.5	1.1	
JFDX100-88-10R	○	10	100	101	50	12	31.75	12.7	62	45	16.5	1.4	
JFDX100MM-88-10R		10	100	101	50	12	32.0	14.4	64	45	23.5	1.3	
JFDX125-88-12R	○	12	125	126	58	12	38.1	15.9	83	55	21.5	2.6	
JFDX125MM-88-12R		12	125	126	58	12	40.0	16.4	85	55	26.5	2.5	
JFDX160-88-16R		16	160	156	60	12	50.8	19	100	72	20.5	4.1	



● Spare Parts

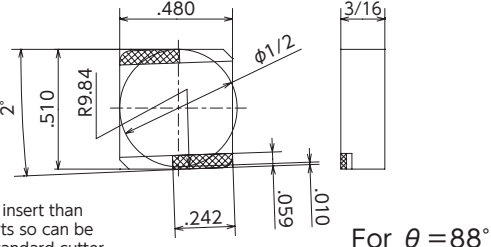
Wedge	Wedge Screw	Torx Wrench	Shim	Shim Screw
①	②		③	④
HLW175	WS0616-T15	T-15A	ASN423	M3×8

● Inserts

Shape	Dimensions (inch)	Item Number	R	Silicon Nitride		Whisker
				SX6	SP9	WA1
 12.5°		SNG 432 T0220	.031			●
		SNG 432 T0420	.031	●	●	●
		SNG 433 T0220	.047			●
		SNG 433 T0420	.047	●	●	●
		SNG 434 T0220	.063			●
		SNG 434 T0420	.063	●	●	●
 12.5° with chipbreaker		SNGF 433 TRCC413 Reduce tool pressure	.047	●		
		SNGF 433 RT0425 C421 Reduce tool pressure	.047		●	
 6.3° with wiper		SNEN 1204ZN T01025 The insert must be installed in all insert pockets	—	●	●	

* Recommend using torque wrench @35lbs (4Nm)

● CBN Wiper Insert: Can install 1 or 2 CBN Wiper Inserts with ceramic inserts.

Dimensions (inch)	Item Number	R	CBN	
			B30	B52
 * Slightly taller insert than ceramic inserts so can be installed in standard cutter. For $\theta = 88^\circ$	FDX 1204-88-50R	—	●	●

● Recommend Cutting Conditions

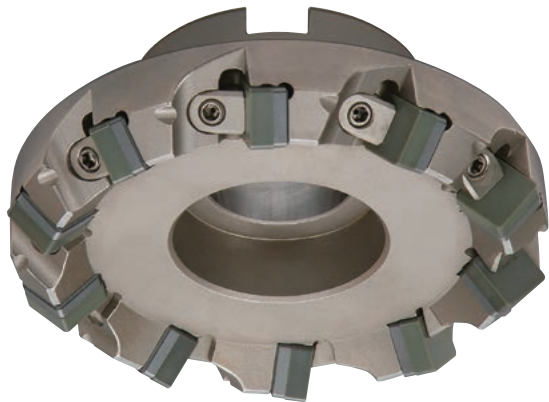
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010	.012	
K	SX6	●	●															~.220
Gray Cast Iron	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220

Inserts(SNG) ➔ E13

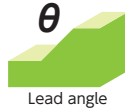
Rotating Tools

HVM igh elocity ill series

● Lead angle 45 degree -SN43(A.R. -6° R.R. -10°)

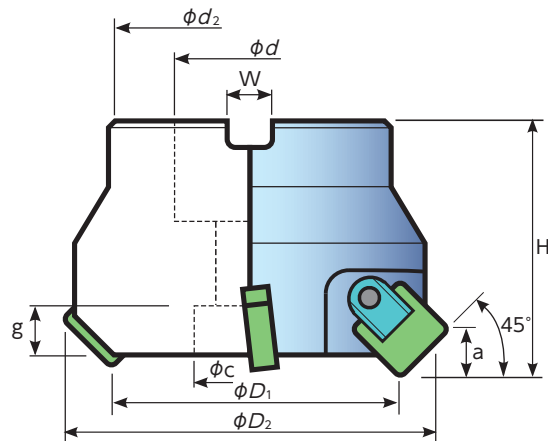


$\theta : 45^\circ$



Lead angle

12.5 / 6.3

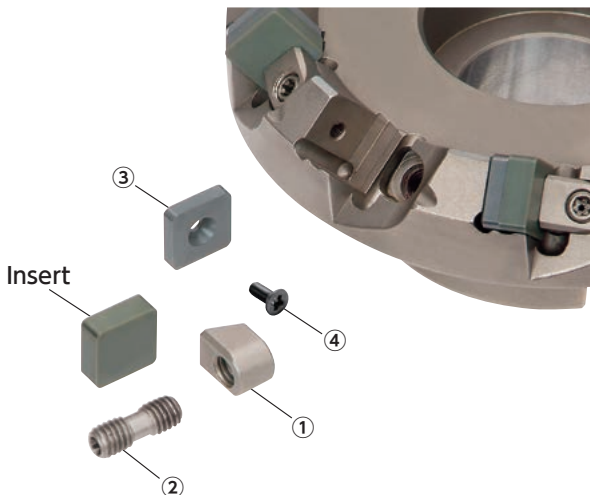


● Inch size cutters

Item Number	Stock		Dimensions (inch)									Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JFDX25IN-45-06R	●	6	2.50	3.129	2.00	.315	.750	.32	2.362	.669	.445	2.2	
JFDX30IN-45-08R	●	8	3.00	3.629	2.00	.315	1.000	.38	2.362	.827	.445	2.8	
JFDX40IN-45-10R	●	10	4.00	4.629	2.00	.315	1.500	.64	3.150	2.000	.535	3.9	
JFDX50IN-45-12R	●	12	5.00	5.629	2.00	.315	1.500	.64	3.740	2.000	.535	4.1	

● Metric size cutters


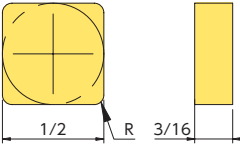

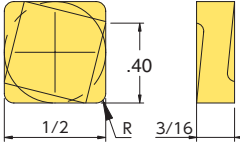

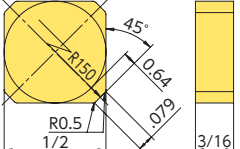
Item Number	Stock		Dimensions (mm)									Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JFDX063-45-06R	○	6	63	72	50	8	22.0	10.4	58	18	10.5	0.9	
JFDX080-45-08R	○	8	80	95	50	8	25.4	9.5	62	36	10.5	1.2	
JFDX080MM-45-08R	●	8	80	95	50	8	27.0	12.4	64	19	10.5	1.3	
JFDX100-45-10R	○	10	100	120	50	8	31.75	12.7	62	45	8.5	1.7	
JFDX100MM-45-10R	●	10	100	120	50	8	32.0	14.4	64	45	8.5	1.5	
JFDX125-45-12R	○	12	125	146	58	8	38.1	15.9	83	55	13.5	2.8	
JFDX125MM-45-12R	●	12	125	146	58	8	40.0	16.4	85	55	13.5	2.9	



● Spare Parts

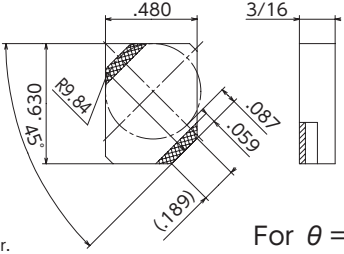
Wedge	Wedge Screw	Torx Wrench	Shim	Shim Screw
①	②	③	④	⑤
HLW175	WS0616-T15	T-15A	ASN423	M3×8

● Inserts

Shape	Dimensions (inch)	Item Number	R	Silicon Nitride		Whisker
				SX6	SP9	WA1
 12.5		SNG 432 T0220	.031			●
		SNG 432 T0420	.031	●	●	●
		SNG 433 T0220	.047			●
		SNG 433 T0420	.047	●	●	●
		SNG 434 T0220	.063			●
		SNG 434 T0420	.063	●	●	●
 12.5 with chipbreaker		SNGF 433 TRCC413	.047	●		
		SNGF 433 RT0425 C421	.047		●	
 6.3 with wiper		SNG 43AN TW	—	●	●	
		The insert must be installed in all insert pockets				

* Recommend using torque wrench @35lbs (4Nm)

● CBN Wiper Insert: Can install 1 or 2 CBN Wiper Inserts with ceramic inserts.

Dimensions (inch)	Item Number	R	CBN	
			B30	B52
 *Slightly taller insert than ceramic inserts so can be installed in standard cutter. For $\theta = 45^\circ$	FDX 1204-45-50R	—	●	●

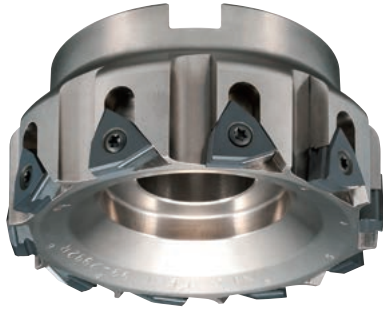
● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010	.012	
K	SX6	●	○															~.220
Gray Cast Iron	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220

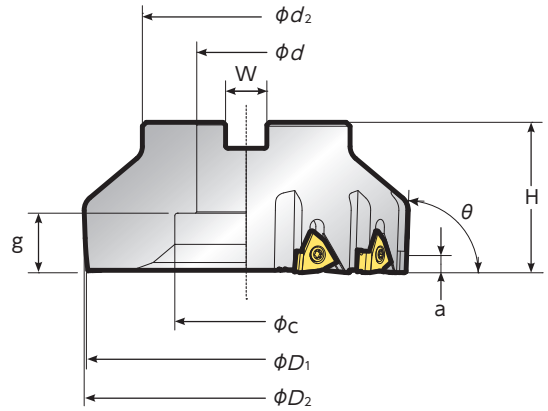
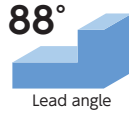
Inserts(SNG) **E13**

TRI series

● Lead angle 88 degree



A. R. 5°
R. R. 4°, 7°, 10°



● Metric size cutters

Item Number	Stock		Dimensions (mm)										Weight (kg)	Rake angle (°)		Insert Screw	Wrench
			φD ₁	φD ₂	H	a *1	a *2	φ d	W	φ d ₂	φ c	g		A.R.	R.R.		
JWNXM063C2200R06-A	○	6	63	63	50	5.5	4.5	22	10.4	60	18	15.5	0.9	+5	+4	FSI26-4.0 * 12-LH	LLR-T15
JWNXM080A2540R08-A	○	8	80	80	50	5.5	4.5	25.4	9.5	60	36	15	1.1	+5	+7		
JWNXM100A3175R10-A	○	10	100	100	50	5.5	4.5	31.75	12.7	80	50	18	1.8	+5	+10		
JWNXM125A3810R12-A	○	12	125	125	58	5.5	4.5	38.1	15.9	80	55	23	3	+5	+10		
JWNXM160A5080R16-A	○	16	160	160	60	5.5	4.5	50.8	19	100	72	22	4.9	+5	+10		

* 1 Dimension when set the insert [WNX44-C10T01020]
* 2 Dimension when set the insert [WNX44-R12T01020]

● Insert

Shape	Dimensions (inch)	Item number	C or f _ε	Silicon Nitride	
				SX6	SP9
		WNX44-C10T0420	C .040	○	○
		WNX44-R12T0420	R .0472	○	○

* Recommend using torque wrench @35lbs (4Nm)

○ : New standard stock items

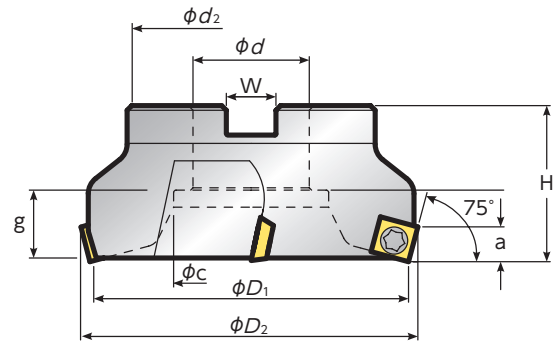
● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)						Depth of Cut (inch)		
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010		.012	
K	SX6	●	●																~.220
Gray Cast Iron	SP9	●	○																~.220
Ductile Iron	SP9	●	○																~.220

HSM series

High speed hear-ill series

● Lead angle 75 degrees - SDW43 (A.R.+12°, R.R.0°)



● Inch size cutters

Item Number	Stock	✳	Dimensions (inch)									Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
E250R100-SDW43-4C	●	4	2.500	2.780	2.000	.360	1.000	.38	2.290	.820	.787	1.9	SDCW 43
E300R100-SDW43-5C	●	5	3.000	3.280	2.000	.360	1.000	.38	2.290	.820	.787	2.4	
E400R150-SDW43-6C	●	6	4.000	4.280	2.000	.360	1.500	.64	3.200	2.000	.875	3.7	
E500R150-SDW43-7C	●	7	5.000	5.280	2.000	.360	1.500	.64	3.200	2.000	.875	5.4	

● Metric size cutters

Item Number	Stock	✳	Dimensions (mm)									Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JSDW063-75-04R	○	4	63	70.6	50	9.1	22	10.4	58	18	14	0.8	SDCW 43
JSDW080-75-05R	○	5	80	83.3	50	9.1	25.4	9.5	62	36	15.5	1.0	
JSDW100-75-06R	○	6	100	108.7	50	9.1	31.75	12.7	58	45	16.5	1.3	
JSDW125-75-07R	○	7	125	134.1	58	9.1	38.1	15.9	79	55	21.5	2.5	
JSDW160-75-10R		10	160	165	68	9.1	50.8	19	100	72	28.5	4.0	

● CBN Wiper Insert: Can install 1 or 2 CBN Wiper Inserts with ceramic inserts.

Shape	Item Number	CBN	
		B30	B52
<p>* Slightly taller insert than ceramic inserts so can be installed in standard cutter. For $\theta = 75^\circ$</p>	SDW 1204-75-50R	○	○

● Spare Parts

Insert Screw	Torx Wrench
<p>FSI21-5.0*12.45</p>	<p>T20</p>

● Inserts

Item Number	R	Fig.	Silicon Nitride	
			SX6	SP9
SDCW 432 T0420	.031	1	●	○
SDCW 433 T0420	.047	1	●	
SDCW 434 T0420	.063	1	●	
SDCW 43EER T0420*	—	2	●	○

* Recommend using torque wrench @35lbs (4Nm)

* The insert must be installed in all insert pockets

● Recommend Cutting Conditions

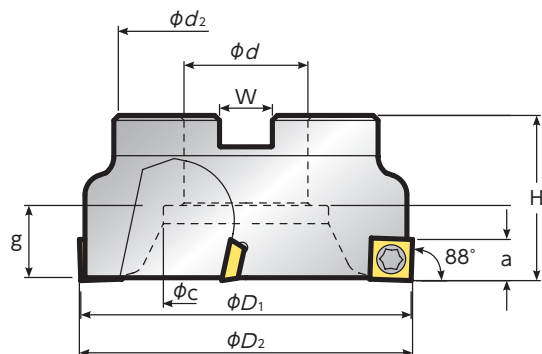
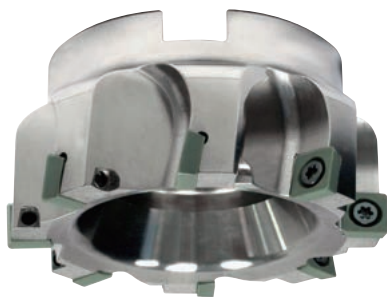
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)						Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010		.012
Gray Cast Iron	SX6	●	●														~.220
	SP9	●	○														~.220
Ductile Iron	SP9	●	○														~.220

Rotating Tools

HSM series

High speed hear-ill

● Lead angle 88 degree - SDW43 (A.R.+12°, R.R.0°)



● Inch size cutters

Item Number	Stock		Dimensions (inch)										Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g			
P250R100-SDW43-4C	●	4	2.500	2.590	2.000	.400	1.000	.38	2.290	.820	.787	1.7	 SDCW 43	
P300R100-SDW43-6C	●	6	3.000	3.070	2.000	.400	1.000	.38	2.290	.820	.787	2.2		
P400R150-SDW43-8C	●	8	4.000	4.070	2.000	.400	1.500	.64	3.200	2.000	.875	3.5		
P500R150-SDW43-10C	●	10	5.000	5.070	2.000	.400	1.500	.64	3.200	2.000	.875	5.2		

● Spare Parts

Insert Screw FSI21-5.0*12.45	Torx Wrench T20
-------------------------------------	------------------------

● Inserts

 Fig.1: SDCW43	 Fig.2: SDCW43PE with wiper	Item Number	R	Fig.	Silicon Nitride	
					SX6	SP9
		SDCW 432 T0420	.031	1	●	○
		SDCW 433 T0420	.047	1	●	
		SDCW 434 T0420	.063	1	●	
		SDCW 43PE T0420R*	.031	2	●	

* Recommend using torque wrench @35lbs(4Nm)

* The insert must be installed in all insert pockets

● Recommend Cutting Conditions

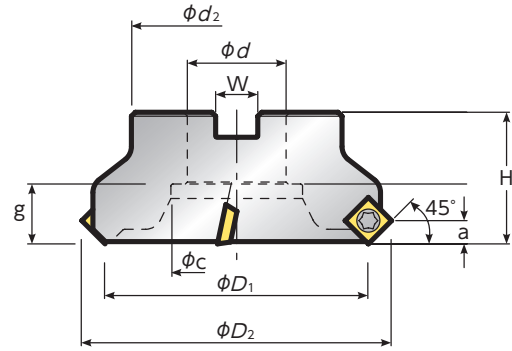
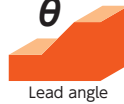
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)					Depth of Cut (inch)		
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008		.010	.012
K	SX6	●	●															~.220
Gray Cast Iron	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220

Inserts(SDCW)

● Lead angle 45 degree - SDW43 (A.R.+12°, R.R.0°)



$\theta : 45^\circ$



● Inch size cutters

Item Number	Stock	6	Dimensions (inch)									Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
A300R100-SDW43-6C	●	6	3.000	3.740	2.000	.260	1.000	.38	2.290	.820	.787	2.3	SDCW 43
A400R150-SDW43-7C	●	7	4.000	4.740	2.000	.260	1.500	.64	3.200	2.000	.875	3.3	
A500R150-SDW43-8C	●	8	5.000	5.740	2.000	.260	1.500	.64	3.810	2.120	.871	5.0	

● Metric size cutters

Item Number	Stock	6	Dimensions (mm)									Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JSDW080-45-06R	○	6	80	95.0	50	6.6	25.4	9.5	62	36	18	1.1	SDCW 43
JSDW100-45-07R	○	7	100	120.4	50	6.6	31.75	12.7	58	45	16	1.4	
JSDW125-45-08R	○	8	125	145.8	58	6.6	38.1	15.9	79	55	21	2.6	

● CBN Wiper Insert: Can install 1 or 2 CBN Wiper Inserts with ceramic inserts.

Shape	Item Number	CBN	
		B30	B52
<p>*Slightly taller insert than ceramic inserts so can be installed in standard cutter. For $\theta = 45^\circ$</p>	SDW 1204-45-50R	●	●

● Spare Parts

Insert Screw	Torx Wrench
<p>FSI21-5.0*12.45</p>	<p>T20</p>

● Inserts

Item Number	R	Fig.	Silicon Nitride	
			SX6	SP9
SDCW 432 T0420	.031	1	●	○
SDCW 433 T0420	.047	1	●	○
SDCW 434 T0420	.063	1	●	○
SDCW 43AE T0420*	—	2	●	○

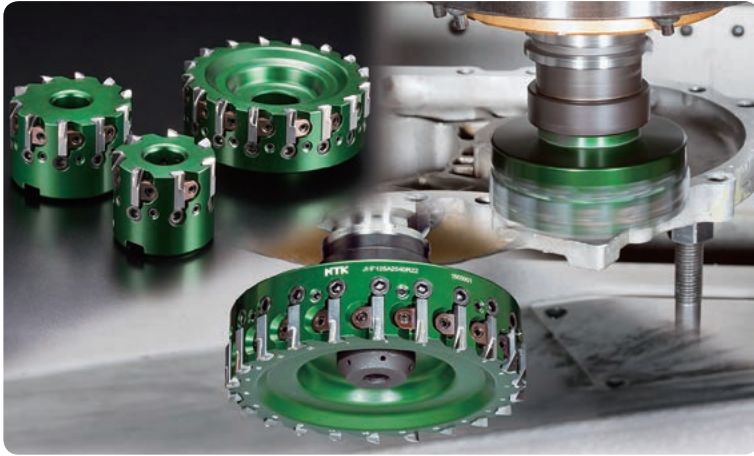
* Recommend using torque wrench @35lbs (4Nm)

* The insert must be installed in all insert pockets

● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)						Depth of Cut (inch)	
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010		.012
K	SX6	●	●															~.200
Gray Cast Iron	SP9	●	○															~.200
Ductile Iron	SP9	●	○															~.200

HFC series Adjustable type



Features

- **More teeth = More productivity**
- **Light weight aluminum body**
- **Adjustable edge height**
- **Produces outstanding surface finishes**
- **Internal coolant supply**
- **Inserts can be reground up to 4 times**
- **Guaranteed setup service is available**

● Cutter




	Item Number	Stock		Weight	Dimensions								Max RPM	Arbor style	Arbor bolt	Recommended tightening torque			
					ϕD		h		ϕd		b					a		N • m	lb • ft
					inch	mm	inch	mm	inch	mm	inch	mm				inch	mm		
	JHF050C2200R07	●	7	0.5	1.969	50	1.772	45	.866	22.0	.409	10.4	.409	6.3	20,000	FMC22	CS1040A	20	14.8
	JHF063C2200R10	●	10	0.8	2.480	63	1.772	45	.866	22.0	.409	10.4	.409	6.3	20,000	FMC22	CS1040A	20	14.8
	JHF080A2540R12	●	12	1.1	3.150	80	1.772	45	1.000	25.4	.374	9.5	.374	6.0	18,000	FMA25.4	MBC-M12	40	29.5
	JHF100A2540R16	●	16	1.6	3.937	100	1.772	45	1.000	25.4	.374	9.5	.374	6.0	18,000	FMA25.4	MBC-M12	40	29.5
	JHF125A2540R22	●	22	2.4	4.921	125	1.772	45	1.000	25.4	.374	9.5	.374	6.0	15,000	FMA25.4	MBC-M12	40	29.5

* Includes inserts and parts

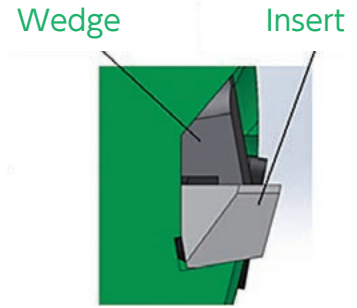
● Insert

	Item Number	PCD	Corner angle	Max DOC		A.R.	r_e		Wiper
				inch	mm		inch	mm	
For Standard use	HFT802006C05	●	90°	.295	7.5	6°	.02 chamfer	C0.5	Yes (Rounded)
	HFT802006R04	●	90°	.295	7.5	6°	R .016	R0.4	Yes (Rounded)
For less tool pressure	HFT70201W05	●	90°	.256	6.5	10°	Double chamfer		Yes (Straight)

● Spare Parts

Item number	Arbor bolt	Wedge	Axial set screw		Wedge set screw	
			Screw	Screwdriver	Screw	Screwdriver
JHF050C2200R07	CS1040A	HLW179	CS0510A	LW-4	WS0512	LW-2.5
JHF063C2200R10						
JHF080A2540R12	MBC-M12			LW-4		LW-2.5
JHF100A2540R16						
JHF125A2540R22						

● Safety clamp mechanism



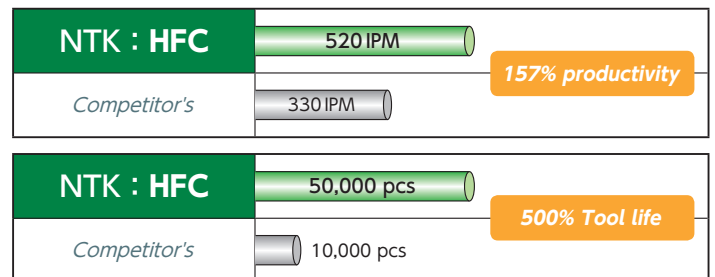
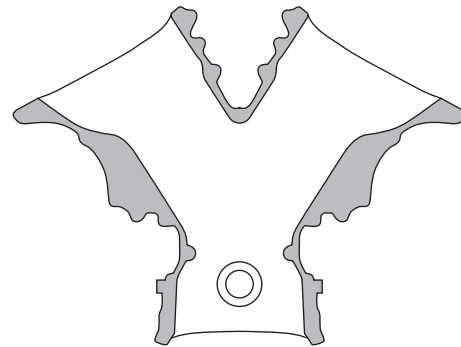
● Unique sphenoidal pocket prevents inserts from becoming dislodged

● Field Result

Part : Chain Cover
Material : ADC12

Cutter : JHF125A2540R22
Insert : HFT802006C05 PD1

	NTK	Competitor's
Number of edges	22	14
RPM	10,000	10,000
SFM	12,877	←
IPM	520	330
IPT	.0024	←
DOC	.111 (1 Pass)	.080+.031 (2 Passes)
Tool life	50,000pcs	10,000pcs



● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)											Feed (IPT)						Depth of Cut (inch)	
				1000	3000	5000	7000	9000	11000	13000	15000	17000	19000	.002	.004	.006	.008	.010	.012			
N	PD1	○	●																			
Aluminum Alloy (Si ≤ 13)																						
Aluminum Alloy (Si ≥ 13)	PD1	○	●																			

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

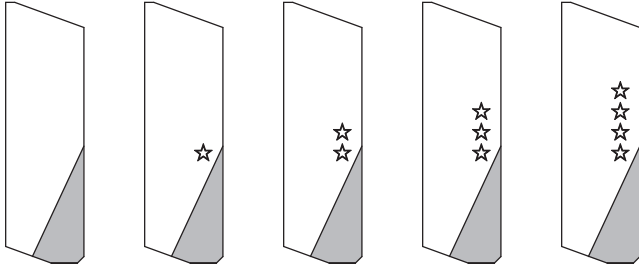
Rotating Tools

NTK Regrind Program

- Inserts can be reground up to (4*) times
- The cutter's diameter and height of the insert will change by .004" after each regrind
- The set of inserts placed back into the cutter must have the same amount of stars indicating number of regrinds

*The number of regrinds per insert may vary depending upon cutting conditions

Each insert will be marked with a star to indicate how many times it has been reground.



New

After 1st
regrinding

After 2nd
regrinding

After 3rd
regrinding

After 4th
regrinding

1 Send the inserts back to our NTK Wixom office with the appropriate paperwork. Minimum order is 30 pcs. (Note: Send in inserts with the same amount of regrind stars.) For orders greater than 50 pcs, NTK will manage the inserts in lots for regrind process.

2 Delivery will be 6-8 weeks upon receiving your inserts

3 The insert number will be changed to the following HFT802006C05 RPD1

4 When installing NTK inserts into a cutter, please make sure that all the inserts have the same number of regrind stars

NTK's Worry free guaranteed setting

- NTK offers cleaning, resetting and rebalancing service to customer for new and reground inserts.
- NTK's guaranteed setting provides stable and worry free operation.

Re-setting



±.002mm height run out
(±.00008")

Re-balancing



Balance grade: G 2.5

Adjusting and handling instructions for High Feed Cutter

Operational procedure

1. Loosen the axial adjustment screw
2. Install the inserts (initially tighten)
3. Clean the inserts
4. Adjust height of inserts (initial)
5. Tighten the wedge set screw
6. Adjust height of inserts (final)

Tools for setup

- Tool presetter
- Air blower
- Clay
- 4.0mm Hex wrench
- 2.5mm Hex torque-wrench

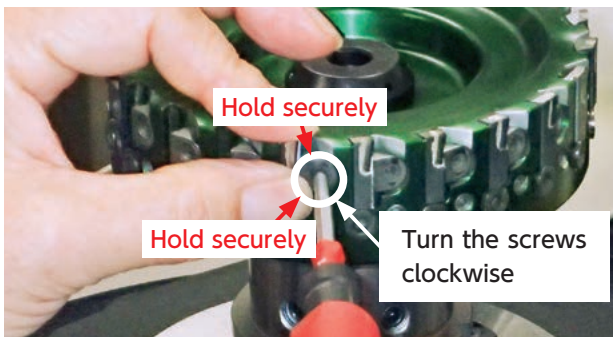


1. Loosen the axial adjustment screw



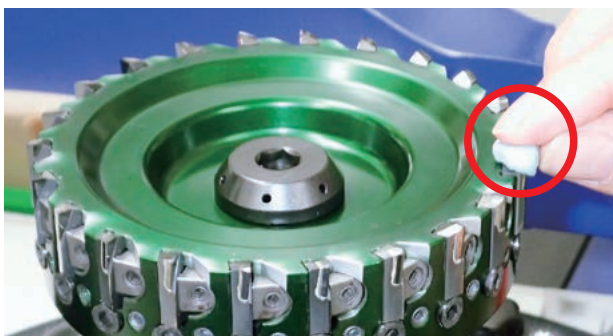
Loosen axial set screw until the screw head is 1 to 2 mm from cutter body.
Clean up insert pocket using air.

2. Install the inserts (initially tighten)



Install the insert to cutter pocket. Tighten wedge set screw with 1Nm torque while pushing insert to cutter center using two fingers. (do not overtighten)

3. Clean the inserts



Clean up insert edges using clay.

4. Adjust height of inserts (initial)



Tighten axial set screw of each insert until you reach around 44.980 mm height dimension.
Adjust other inserts within 0.01mm range.

5. Tighten the wedge set screw



Tighten wedge set screws with 4Nm torque.

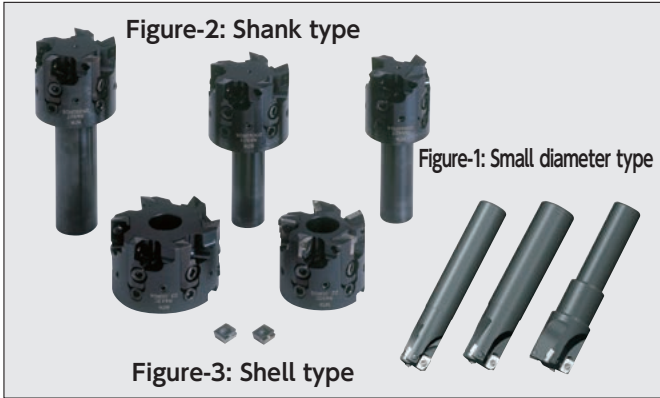
6. Adjust height of inserts (final)



Tighten axial set screws to get 45.000 mm height dimension.
Adjust other inserts within +/- 0.002 mm range.



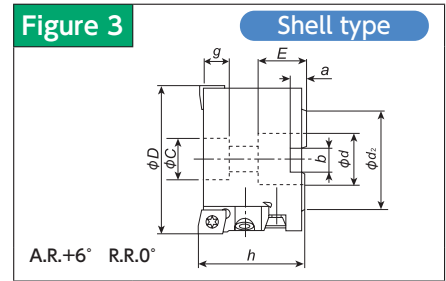
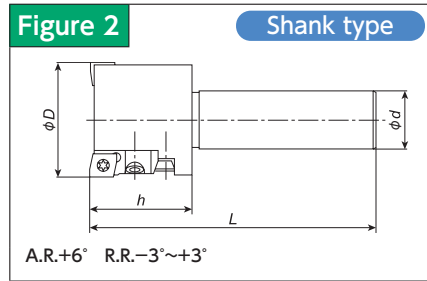
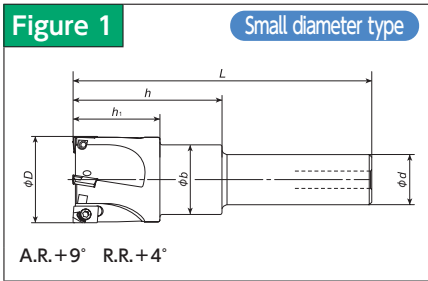
Fixed type/Adjustable type



Features

- **A wide range of sizes**
The diameters range from $\phi .787''$ - $\phi 3.937''$ for the HPC series
- **Excellent rigidity (HPC)**
The material for the HPC body is steel, achieving exceptional reliability

HPC (steel body) $\phi 20$ - $\phi 100$ ($\phi .787''$ - $\phi 3.937''$)



Metric size Cutters

Figure	Item number	Stock	✳	ϕD	h	ϕd	L	h_1	E	ϕb	b	a	ϕd_2	ϕc	g	Weight (kg)	Max. RPM allowed (RPM)	Item number of applicable insert
1	RD020T20070R03	○	3	20	30	20	100	30	-	-	-	-	-	-	-	0.23	18,000	HDA style
	RD025T25070R03	○	3	25	40	25	110	40	-	-	-	-	-	-	-	0.37	18,000	
	RD030T20060R04	○	4	30	60	20	120	35	-	25	-	-	-	-	-	0.33	18,000	
	RD032T20060R04	○	4	32	60	20	120	35	-	26	-	-	-	-	-	0.36	18,000	
	RD035T20060R04	○	4	35	60	20	120	35	-	28	-	-	-	-	-	0.36	18,000	
2	RA040T20060R04K	○	4	40	45	20	105	-	-	-	-	-	-	-	-	0.45	18,000	HAL style HAT style HAN style HLA style
	RA040T25080R04K	○	4	40	45	25	125	-	-	-	-	-	-	-	-	0.6	18,000	
	RA050T20060R05K	○	5	50	45	20	105	-	-	-	-	-	-	-	-	0.6	18,000	
	RA050T25080R05K	○	5	50	45	25	125	-	-	-	-	-	-	-	-	0.75	18,000	
	RA050T32080R05K	○	5	50	45	32	125	-	-	-	-	-	-	-	-	0.9	18,000	
3	RA050C22.00R05K	○	5	50	45	22	-	-	20	-	10.4	6.3	42	18	11	0.4	18,000	
	RA063C22.00R06K	○	6	63	45	22	-	-	20	-	10.4	6.3	42	18	11	0.73	18,000	
	RA080A25.40R07K	○	7	80	43	25.4	-	-	26	-	9.5	6.0	50	38.9	15	0.95	15,000	
	RA100A31.75R09K	○	9	100	45	31.75	-	-	32	-	12.7	8.0	60	61	11	1.6	10,000	
Adjustable type	RA040T20060R04	○	4	40	45	20	105	-	-	-	-	-	-	-	-	0.45	18,000	
	RA040T25080R04	○	4	40	45	25	125	-	-	-	-	-	-	-	-	0.60	18,000	
	RA050T20060R05	○	5	50	45	20	105	-	-	-	-	-	-	-	-	0.60	18,000	
	RA050T25080R05	○	5	50	45	25	125	-	-	-	-	-	-	-	-	0.75	18,000	
	RA050T32080R05	○	5	50	45	32	125	-	-	-	-	-	-	-	-	0.90	18,000	
	RA050C22.00R05	○	5	50	45	22	-	-	20	-	10.4	6.3	42	18	11	0.40	18,000	
	RA063C22.00R06	○	6	63	45	22	-	-	20	-	10.4	6.3	42	18	11	0.73	18,000	
	RA080A25.40R07	○	7	80	43	25.4	-	-	26	-	9.5	6.0	50	38.9	15	0.95	15,000	
	RA100A31.75R09	○	9	100	45	31.75	-	-	32	-	12.7	8.0	60	61	11	1.6	10,000	

Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)										Feed (IPT)				Depth of Cut (inch)		
				1000	3000	5000	7000	9000	11000	13000	15000	17000	19000	.002	.004	.006	.008		.010	.012
N	PD1	○	●																	
Aluminum Alloy (Si ≤ 13)	TM1	○	●																	
Aluminum Alloy (Si ≥ 13)	PD1	○	●																	
	TM1	○	●																	

● Inserts

Shape	Item number	Corner angle	w	T	Cutting edge length	A. R.	R. R.	r _ε	Wiper	PCD	PVD coated carbide	Cutter Type (figure)
										PD1	TM1	
	HDA4015R04	0°	6.7	3.4	4.0	+9°	+4°	0.4	Provided	●		1
	HDA4505R04	0°	6.7	3.4	Min. 5.0	+9°	+4°	0.4	Provided		○	1
	HAL3515R04	0°	10	4.0	3.5	+6°	0°	0.4	Provided	●		2 3
	HAT6021R04		10		6.0			0.4		●		
	HAT6021C05		10		6.0			C0.5		○		
	HRT6021R04 Regrindable		10.2		Min. 6.0			0.4		○		
	HAL3515C05	0°	10	4.0	3.5	+6°	0°	C0.5	Provided	○		2 3
	HRL3515R04 Regrindable				Min. 3.5			0.4		○		
	HAN9521R04N	0°	10	4.0	Min. 6.0	+6°	-3°	0.4	Provided		○	2 3
	HLA8521R04	0°	10.078	4.0	Min. 6.0	+6°	+3°	0.4	Provided		○	2 3

* Recommend using torque wrench @35lbs (4Nm)

● Spare Parts

Item number	Cartridge	Axial setscrew	Cartridge setscrew	Insert clamping screw	Handle	Torx screwdriver	Hex-screwdriver	Clamping bolt
RD020T20070R03	/	/	/	FSI0306A	2814HS (OP)	U107T10 (OP)	/	/
RD025T25070R03				FSI0307A				
RD030T20060R04								
RD032T20060R04								
RD035T20060R04								
RA040T20060R04/K	RA06P03NC	CS0510A	CS0510T	FSI035104A	2814HS (OP)	U107T15 (Torx) (OP)	U104-40 (Hex) (OP)	/
RA040T25080R04/K								
RA050T20060R05/K								
RA050T25080R05/K								
RA050T32080R05/K								
RA050C22.00R05/K								
RA063C22.00R06/K								
RA080A25.40R07/K								
RA100A31.75R09/K								
							MBC-M12(OP)	
							MBC-M16(OP)	

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 Ⓜ : Mirror finish
 Ⓜ : 1-2 week delivery (Right / Left-hand only)
 Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)
 Ⓜ : Coolant through

Rotating Tools

Insert Presetting and PCD Damage Preventative Measures for HPC

■ Be sure to clean all the insert pockets before carrying out the following steps:

● **Step1: Preventative measures against insert chipping**

Attach a piece of adhesive tape (preferably, a tape low in adhesion) to the end of a dial gauge's probe.

● **Step2: Mounting inserts**

For HPC: First, install the cartridges to the body, then, tighten each insert with the insert clamping screw at 3 N·m.

[Caution: If you mount inserts in a cartridge first, it's not possible to install the cartridges to the body.]

● **Step3: Temporary tightening (using a torque-wrench)**

Tighten set screw (1) first, at 4 N·m.

● **Step4: Setting**

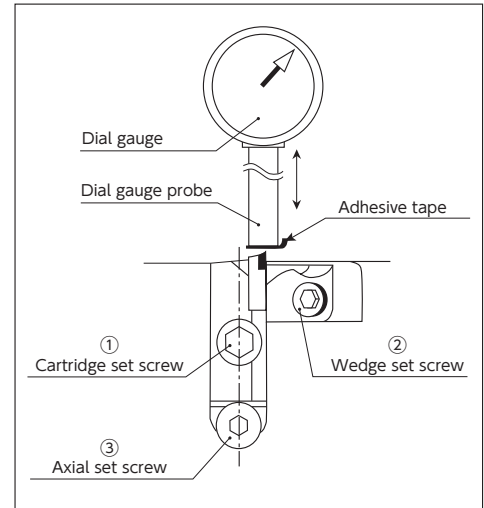
While watching the reading on the dial gauge, rotate set screw (2) so that the insert with the highest cutting edge is lifted by +0.03 mm. Next, with this position as the reference, set the cutting edges of all other inserts with variations in run out to stay within +/- 5 microns (10 microns in terms of range).

● **Step5**

Remove the probe from the dial gauge.

● **Step6: Tightening set screws (using a torque wrench)**

For HPC, tighten set screw (1) at 8 N·m.



■ **Supplemental explanation**

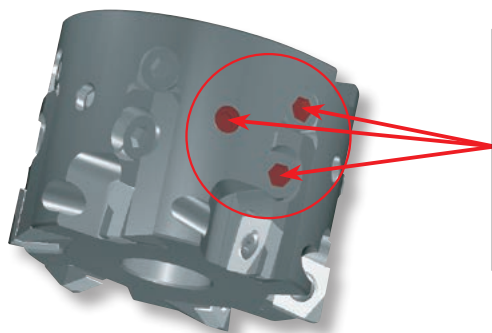
1. Even after the set screws have been tightened, the run out of the cutting edges should stay within approximately +/- 10 microns (20 microns in terms of range).
2. In the above case, NTK standard inserts (excluding some of them; see the note below for details.) and re-ground NTK inserts will not affect the tool life and surface finish.

HPC Fixed Type

No need for pre-setting

No need for cutting edge adjustments!

(The only requirement is clamping and unclamping of the inserts with the clamping bolt)



[Note]

The holes for the axial setscrews and balance adjusting screws are filled with a special material, thus, no screwdrivers and hex-wrenches can be inserted in them.

※The color of the special material is different from the color of the actual product body.

NTK

CUTTING TOOLS

SWISS TOOLING 8000



App for iOS



App for ANDROID



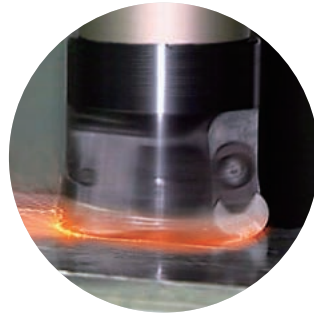
NTKCUTTINGTOOLS.com
youtube.com/NTKCUTTINGTOOLS



Tooling for Swiss-type Lathes

NTK TECHNOLOGY

- HRSA Materials



- Gray / Ductile Cast Iron



- Hardened Steels

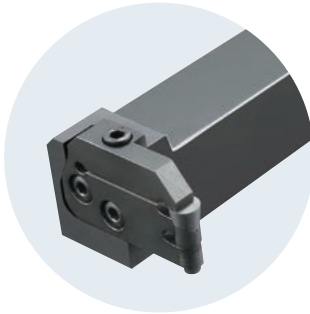


- Mill Rolls





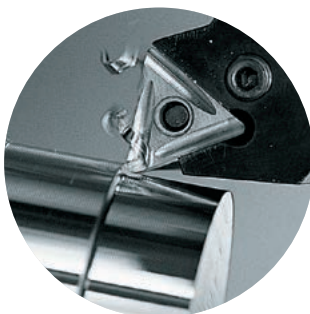
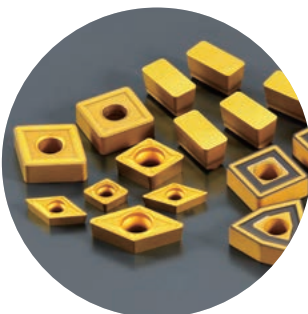
• Grooving



• Tooling For Swiss Type Lathes



• Steel Machining



• High Speed Machining of Aluminum



General Catalog



Advanced Cutting Tools



Swiss Tooling



NTK CUTTING TOOLS

Cutting tools play an integral part in any manufacturing process.

NTK offers a wide range of tooling products and inserts from Ceramics, CBNs, PCDs, Carbides to new materials like BIDEIMICS.

Guidelines for Catalog

- This catalog lists products as of September 2018.
 - Please note that specifications of the products listed in this catalog may be changed without notice due to continuous research & development and product improvements.
 - This catalog contains the major features and relevant information on all of our products. Please contact our sales representatives or dealers if more detailed information is needed.
 - Stock Status Symbols
 - : Standard stock available for Right-Hand, Left-Hand and neutral products
 - R : Stock available only in Right-Hand
 - L : Stock available only in Left-Hand
 - : 1-2 weeks delivery
 - Ⓜ : 1-2 weeks delivery only in Right-Hand
 - Ⓛ : 1-2 weeks delivery only in Left-Hand
 - : While stock lasts
 - No symbol : Not stocked
- } Non-returnable items
- Please note that this catalog was prepared based on products intended mainly for sale in North and South America.

■ Standard

1) Holder Type	Package quantity	Notes
Turning holder	1 pc/case	
Milling cutter	1 pc/case	
2) Spare parts	Package quantity	Notes
Screw	10 pcs/case	Clamp screw, Clamp bolt, Double screw, Button screw
Seat	10 pcs/case	Shim seat
Clamp	10 pcs/case	Clamp
Wrench and cutter parts (such as cartridges)	5 pcs/case	Wrench, bit, cutter product
Blade	1 pc/case	
Handle, Hose	1 pc/case	Handle with magnet, handle and bit
3) Insert Type	Package quantity	Notes
BIDEMICS (Brazed)	1 pc/case	JP2
End mill	1 pc/case	SX9 Ceramic end mill
CBN	1 pc/case	B23, B30, B36, B40, B52, B5K, B6K, B99
PCD, Diamond coating	1 pc/case	PD1, PD2, UC1
CTPW insert for cut-off	5 pcs/case	CTPW series
STICK DUO Solid carbide bar	1 pc/case	SHFS, SHFB, SBFS, SBFB, SBB, SBG, SBT, SSP
All others	10 pcs/case	

*Packaging may vary depending on the product size.

For more information, please contact your nearest distributor or our sales office.

NTK New and Unique Swiss Tooling	Section O
Tooling for Swiss-type Lathes	Section P
Front Turning	Section Q
Back Turning	Section R
Cut-off	Section S
Grooving / Side-Turning	Section T
Threading	Section U
ID Tooling	Section V
Shaper	Section W
Endmill	Section X
Information	Section Y
Index	Section Z



Keep edge cool, smooth chip evacuation

Splash Series

→O4

WATCH ON
YouTube

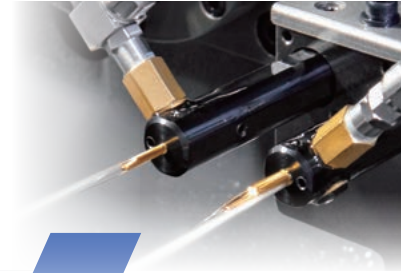


Coolant through Cut-Off for up to 1"

Cut Duo Splash

→O4

WATCH ON
YouTube



Coolant through boring sleeves

STICK DUO SPLASH

→O5

WATCH ON
YouTube

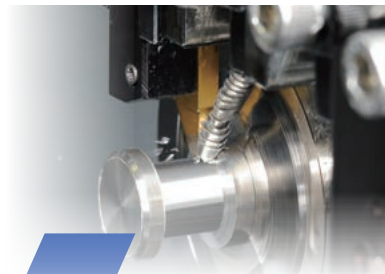


3D chipbreaker is now available with CTP/CTPA series

CTP / CTPA-CX

→O27

WATCH ON
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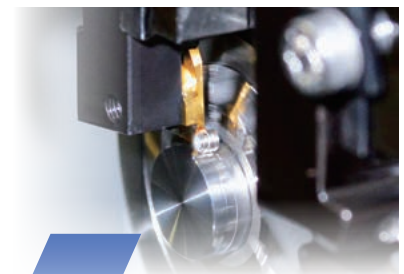


New molded chipbreaker for TBP/TBPA

TBP / TBPA-BM

→O28

WATCH ON
YouTube



New molded chipbreaker for GTM32 grooving

GTMH-GX

→O29

WATCH ON
YouTube



Chip controlled by gravity

Y-axis Toolholders

→O30

WATCH ON
YouTube



Tools for sub-spindle machining

DS-ACH / DS Toolholders / DS Sleeves

→O38 • O47

WATCH ON
YouTube



Toolholders for extended guide-bushing

Shifted Toolholders

→O57

WATCH ON
YouTube

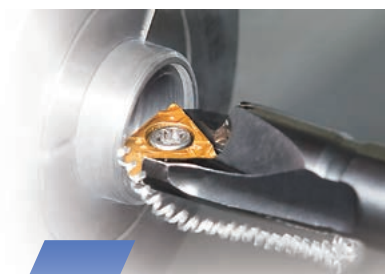


Cut off tool for up to 1.65" bar stock

CUT MAX

→O37

WATCH ON
YouTube



High rigidity boring bars

Mogul Bar

→O55

WATCH ON
YouTube



Toolholders for extended guide-bushing

Shifted Toolholders

→O57

WATCH ON
YouTube



Multi-lead thread machining capability

Thread Whirling

→O26 [WATCH ON YouTube](#)

Hexalobular Socket



NEW design

Hexagon Socket



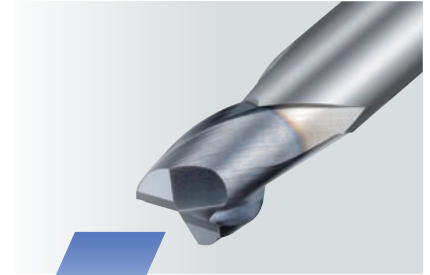
Square Socket



For Hexalobular, HEX and Square socket

SHAPER DUO

→O22 [WATCH ON YouTube](#)



Sharp carbide endmill for Swiss machine

S-MILL

→O19 [WATCH ON YouTube](#) **NEW**



Perfect combination of sharpness and chip control

YL Chipbreaker

→O48 [WATCH ON YouTube](#)



Very sharp edge with good chip control

CL Chipbreaker

→O48 [WATCH ON YouTube](#)



Best grade for 304 SS

ST4 Coating

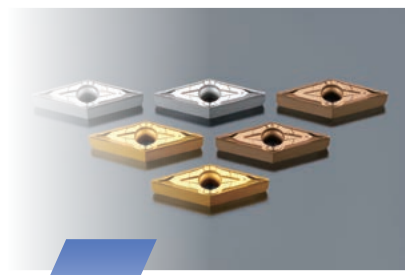
→O48 [WATCH ON YouTube](#) **NEW**



6 corner insert for Swiss machines

UL Chipbreaker

→O49 [WATCH ON YouTube](#)



Developed for Swiss machines

VBGT Tooling

→O50 [WATCH ON YouTube](#)



Front turning for large DOC

TFX Series

→O21 [WATCH ON YouTube](#) **NEW**



Interchangeable tools

CSV Series

→O51



Face turning / grooving tools

Saturn DUO

→O57 [WATCH ON YouTube](#)



Wide grooving tool for Swiss machines

Groove Duo

→O56 [WATCH ON YouTube](#)

NTK New and Unique Swiss Tooling

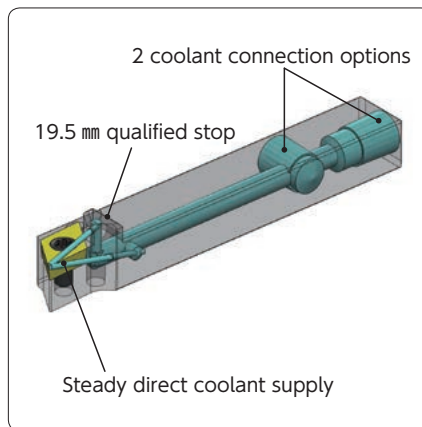


Features

- Evacuates chips away from the cutting edge
- Reduces cutting tool temperature and helps keep the edge sharp
- Y-axis toolholders are available
- Improves part tolerance by steady coolant supply to the edge
- 19.5mm and 20mm qualified stop ensures repeatability

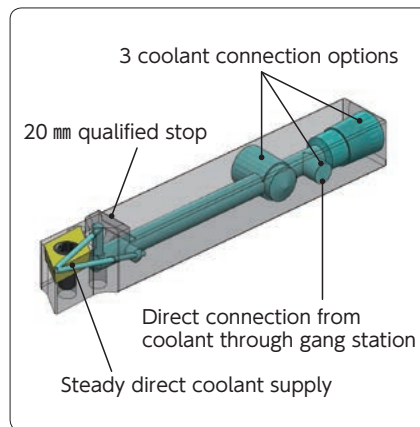
Square Shank Toolholders

OH Series



OH2 Series

NEW



Front Turning

SCLC-OH2 / OH	SDJC-OH2 / OH	Y-SDJC-OH2 / OH	
SVJB-OH2 / OH	SVJC-OH2 / OH	Y-SVJC-OH2 / OH	TFT-OH2

Back Turning

TBP-OH2 / OH	Y-TBP-OH2 / OH	TBPA-OH • CTPA-OH2 / OH

Cut Off

CTP-OH2 / OH	CTPA-OH2 / OH	CTDP-OH2 / OH

Grooving / Side Turning

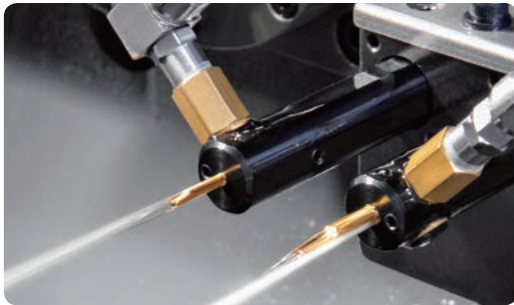
GTT-OH2 / OH	Y-GTT-OH2 / OH	GTPA-OH	Y-GTPA-OH

STICK DUO SPLASH

- Coolant through sleeves for ID Boring with Adjustable Overhang Mechanism -

Features

- Good chip control evacuation in ID machining
- Three coolant connection options
- Can choose from 2 coolant directions
- Adjustable overhang length



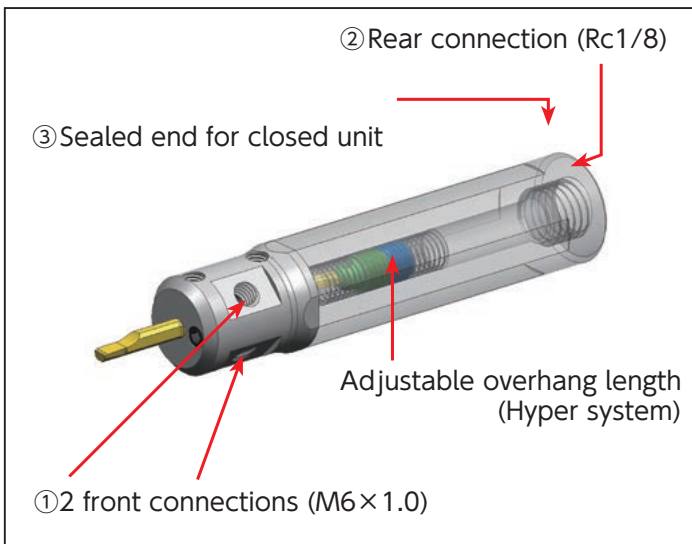
No chip problems

STICK DUO SPLASH	External coolant
<i>No chip inside hole</i>	<i>Chip packed</i>
Material : 4140 Insert bar : SHFS040R005S Hole depth : .590" (15mm) Pilot hole : $\phi .201" \times 1.102" L (\phi 5.1 \times 28.0 \text{mm} L)$ Coolant Pressure : 725psi (5MPa)	

Choose from 2 coolant directions

I) For Blind hole	II) For Through hole
Just rotated 180 degrees	

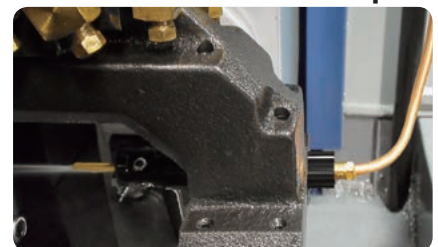
3 coolant connection options



① Front Connection example



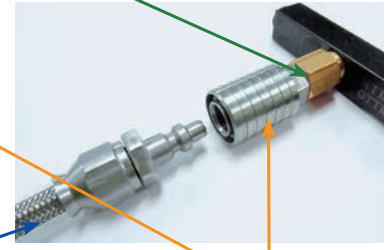
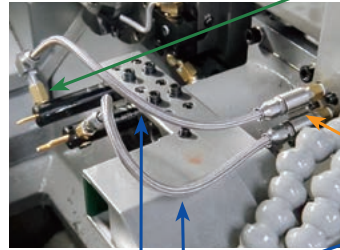
② Rear Connection example



Quick-change Coolant Components



③ Conversion / Extension Joint

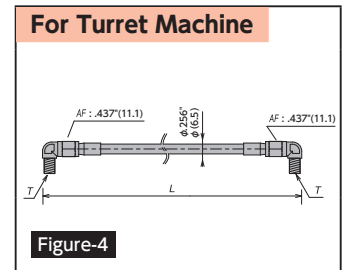
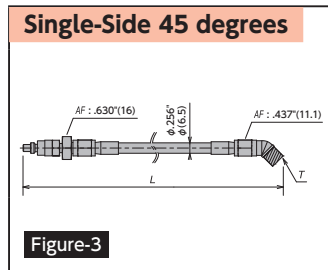
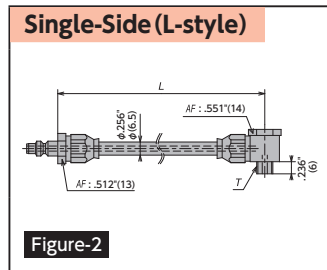
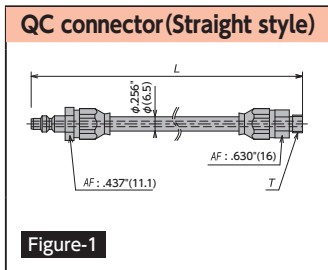


① Plug-in Style Flexible Hose

② Quick Change Coupling

- Up to 2900psi
- High quality flexible stainless steel braided hose
- Reduce machine downtime

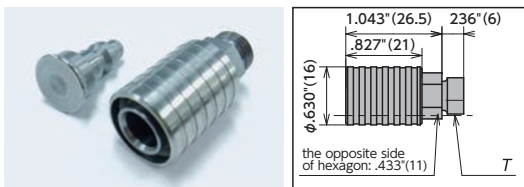
① Plug-in Style Flexible Hose



Item Number	Figure	Stock	L (Inch) (mm)	End A	End B (T)	Comes with
HOSE-ST-1/8NPT-6IN	1	●	6.0	Quick change connector	NPT1/8	—
HOSE-ST-1/8NPT-10IN	1	●	10.0	Quick change connector	NPT1/8	—
HOSE-ST-M8*1	1	●	11.8 300	Quick change connector	M8x1	Conversion adapters (M8x1 to M10x1) and b(M8x1 to G1/8)
HOSE-ST-1/8NPT-18IN	1	●	18.0	Quick change connector	NPT1/8	—
HOSE-AN-M8*1	2	●	11.9 302	Quick change connector	M8x1	Conversion adapter a(M8x1 to M10x1) and b(M8x1 to G1/8)
HOSE-45DEG-1/8NPT-7IN	3	●	7.0	Quick change connector	45 Deg x NPT1/8	—
HOSE-DA-1/8NPT2-6IN	4	●	6.0	NPT1/8	NPT1/8	—
HOSE-DA-1/8NPT2-8IN	4	●	8.0	NPT1/8	NPT1/8	—
HOSE-DA-1/8NPT2-10IN	4	●	10.0	NPT1/8	NPT1/8	—

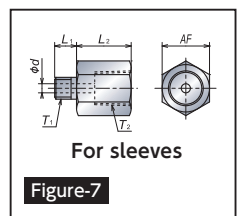
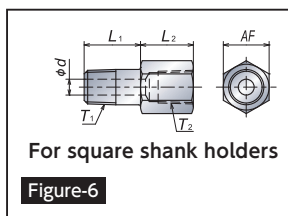
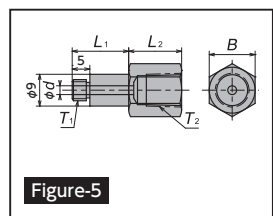


② Quick Change Coupling



Item Number	Stock	End (T)	Comes with
COUP-M10*1	●	M10 × 1	Seal Plug
COUP-NPT1/8	●	NPT 1/8	Seal Plug

③ Conversion / Extension Joint



Item Number	Figure	Stock	T ₁ (mm)	T ₂ (mm)	L ₁ (mm)	L ₂ (mm)	AF (mm)	d (mm)
SCJ-M6-RC1/8-L	5	○	M6 × 1	Rc1/8 (PT1/8)	16	15	13	2.5
SCJ-NPT1/8-M10-L	6	●	NPT1/8	M10 × 1	16	12	13	4.5
SCJ-R1/8-M10-L	6	○	R1/8 (PT1/8)	M10 × 1	16	12	13	4.5
SCJ-R1/8-RC1/8-L	6	○	R1/8 (PT1/8)	Rc1/8 (PT1/8)	16	15	13	4.5
SCJ-R1/8-NPT1/8-L	6	●	R1/8 (PT1/8)	NPT1/8	16	15	13	4.5
SCJ-M6-M10	7	○	M6 × 1	M10 × 1	6	15	12	2.5
SCJ-M6-RC1/8	7	○	M6 × 1	Rc1/8 (PT1/8)	6	15	13	2.5
SCJ-M6-NPT1/8	7	●	M6 × 1	NPT1/8	6	15	13	2.5
SCJ-M8-RC1/8	7	○	M8 × 1	Rc1/8 (PT1/8)	6	15	13	3.5
SCJ-R1/8-M10	7	○	R1/8 (PT1/8)	M10 × 1	10	15	12	4.5
SCJ-R1/8-NPT1/8	7	●	R1/8 (PT1/8)	NPT1/8	10	15	13	4.5

Front Turning Toolholders I

NTK New and Unique Swiss Tooling

SCLC-N-OH2 (Coolant through)

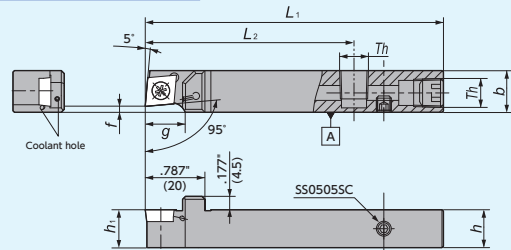
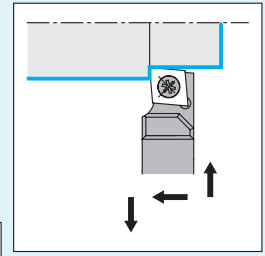


Figure-1

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown

SCLC-N-OH (Coolant through)

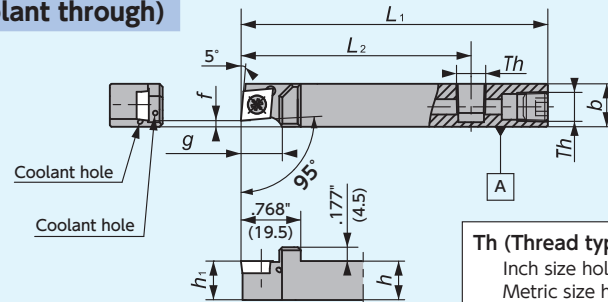
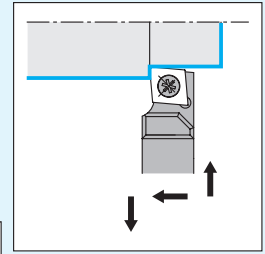


Figure-2

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown

SCLC

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	g (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L										
CC..21.5..	SCLC%1082H-F079-OH	2	●		1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.472 12	NPT1/8	LRIS-2.5 × 7	CLR-15S
	SCLC%1083H-F079-OH	2	■		1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.472 12	NPT1/8	LRIS-4 × 10	LLR-25S
	SCLC%1083H-F079-OH2	1	●		1/2	.551 14	1/2	3.937 100	.079 2	2.756 70	.472 12	NPT1/8	LRIS-4 × 10	LLR-25S
	SCLC%1103HL-F079-OH	2	●		5/8	5/8 14	5/8	3.937 100	.079 2	2.953 75	.697 17.7	NPT1/8	LRIS-4 × 10	LLR-25S
	SCLC%1103XL-F079-OH2	2	●		5/8	5/8 14	5/8	4.724 120	.079 2	2.953 75	.697 17.7	NPT1/8	LRIS-4 × 10	LLR-25S
CC..32.5..	SCLC%11014F09N-F020H	1	○		.394 10	.551 14	.394 10	3.150 80	.079 2.0	2.165 55	.472 12	M6 × 1	LRIS-4 × 10	LLR-25S
	SCLC%11214H09N-F020H	2	□		.472 12	.551 14	.472 12	3.937 100	.079 2.0	2.953 75	.472 12	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SCLC%11214H09N-F020H2	1	●		.472 12	.551 14	.472 12	3.937 100	.079 2.0	2.756 70	.472 12	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SCLC%11616H09N-F020H	2	○		.630 16	.630 16	.630 16	3.937 100	.079 2.0	2.953 75	.697 17.7	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SCLC%11616X09N-F020H2	1	●		.630 16	.630 16	.630 16	4.724 120	.079 2.0	2.953 75	.697 17.7	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S

DS-SCL (Coolant through)

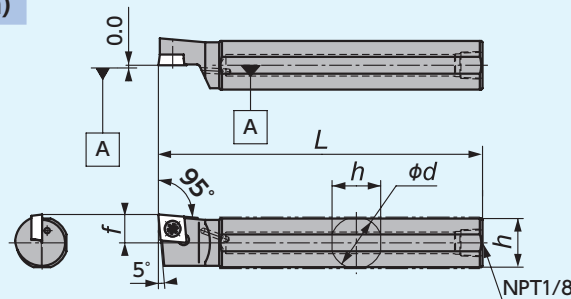
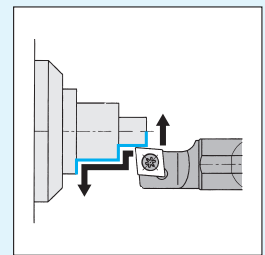


Figure-3



Left-Hand style shown
 Takes Right-hand or Neutral insert

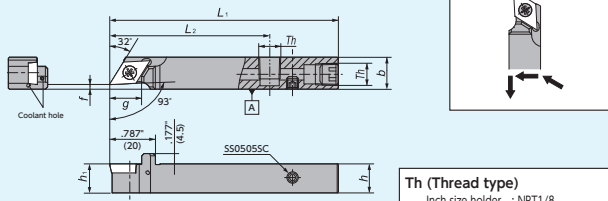
DS-SCL (Takes right-hand or neutral insert)

Gage Insert	Item Number	Figure	Stock		D _s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
			R	L							
CC..32.5..	DS-SCL19-09-004	3	●		3/4 19.050	.709 18	.709 18	4.724 120	.413 10.5	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09-005	3	●		.866 22.000	.827 21	.827 21	4.724 120	.472 12.0	LRIS-4 × 8	LLR-25S-20 × 65

Inserts → Q13

● : Stock
 ● : Stock (Newly added)
 ■ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 Ⓜ : Mirror finish
 Ⓜ : 1-2 week delivery (Right / Left-hand only)
 Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

SDJC-N-OH2 (Coolant through)

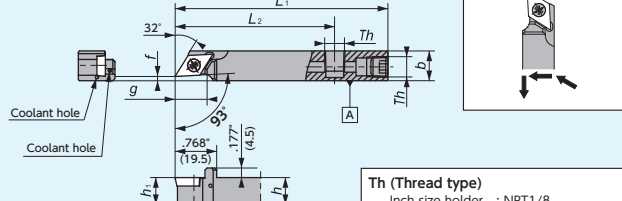


Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Figure-1

Right-Hand style shown

SDJC-N-OH (Coolant through)



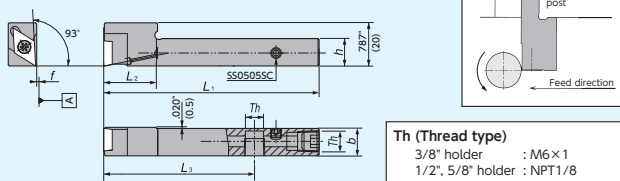
Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Figure-2

Right-Hand style shown

Gage Insert	Item Number	Figure	Stock		h	b	h ₁	L ₁	f	L ₂	g	Th	Clamp Screw	Wrench
			R	L										
DC..21.5../DC..21.5..WP	SDJC%082H-F079-OH	2	●		1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.630 16	NPT1/8	LRIS-2.5 × 7	CLR-15S
DC..32.5../DC..32.5..WP	SDJC%083H-F079-OH	2	■		1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.630 16	NPT1/8	LRIS-4 × 10	LLR-25S
	SDJC%083H-F079-OH2	1	●		1/2	.551 14	1/2	3.937 100	.079 2	2.756 70	.630 16	NPT1/8	LRIS-4 × 10	LLR-25S
	SDJC%103HL-F079-OH	2	●		5/8	5/8	5/8	3.937 100	.079 2	2.953 75	.724 18.4	NPT1/8	LRIS-4 × 10	LLR-25S
	SDJC%103XL-F079-OH2	1	●		5/8	5/8	5/8	4.724 120	.079 2	2.953 75	.724 18.4	NPT1/8	LRIS-4 × 10	LLR-25S
	SDJC%1014F11N-F02OH	2	○		.392 10	.551 14	.394 10	3.150 80	.079 2	2.165 55	.630 16	M6 × 1	LRIS-4 × 10	LLR-25S
	SDJC%1214H11N-F02OH	2	■		.472 12	.551 14	.472 12	3.937 100	.079 2	2.953 75	.630 16	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SDJC%1214H11N-F02OH2	1	■		.472 12	.551 14	.472 12	3.937 100	.079 2	2.756 70	.630 16	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SDJC%1616H11N-F02OH	2	○		.630 16	.630 16	.630 16	3.937 100	.079 2	2.953 75	.724 18.4	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SDJC%1616X11N-F02OH2	1	○		.630 16	.630 16	.630 16	4.724 120	.079 2	2.953 75	.724 18.4	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S

Y-SDJC-OH2 (Coolant through)

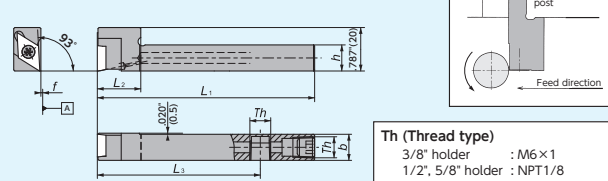


Th (Thread type)
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-3

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SDJC-OH (Coolant through)



Th (Thread type)
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-4

Right-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		h	b	L ₁	f	L ₂	L ₃	Th	Clamp Screw	Wrench
			R	L									
DC..21.5../DC..21.5..WP	Y-SDJCR062H-IN-OH	4	●		3/8	3/8	3.937 100	0 0	.984 25	2.953 75	M6 × 1	LRIS-2.5 × 7	CLR-15S
DC..21.5../DC..21.5..WP	Y-SDJCR082H-IN-OH	4	●		1/2	1/2	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-2.5 × 7	CLR-15S
DC..32.5../DC..32.5..WP	Y-SDJCR083H-IN-OH	4	■		1/2	1/2	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR083H-IN-OH2	3	●		1/2	1/2	3.937 100	0 0	.984 25	2.756 70	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR103H-IN-OH	4	●		5/8	5/8	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR1212H11S-OH	4	■		.472 12.0	.472 12.0	3.937 100	0 0	.787 20	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR1212H11S-OH2	3	●		.472 12.0	.472 12.0	3.937 100	0 0	.787 20	2.756 70	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR1616H11-OH	4	○		.630 16.0	.630 16.0	3.937 100	0 0	.984 25	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65

DS-SDX (Coolant through)

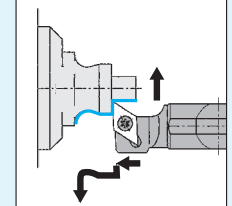
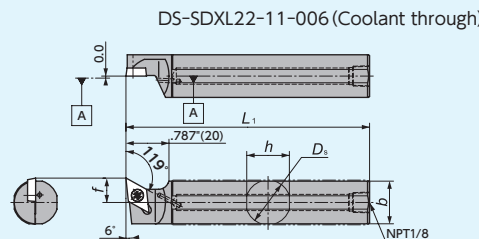


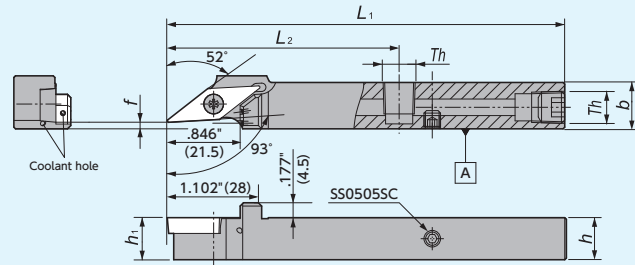
Figure-5

Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		D _s	h	b	L ₁	f	Clamp Screw	Wrench
			R	L							
DC..32.5../DC..32.5..WP	DS-SDX%22-11-006	5	●		.866 22.000	.827 21.0	.827 21.0	4.724 120	.472 12.0	LRIS-4 × 10	LLR-25S-20 × 65

Front Turning Toolholders II

SVJB-OH2 (Coolant through)



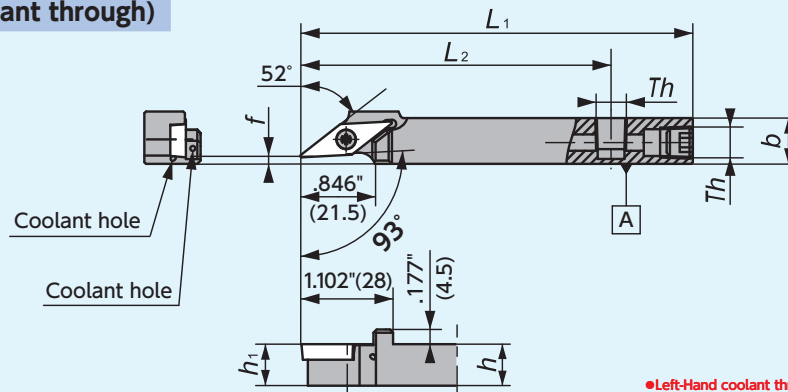
Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

Right-Hand style shown

● Left-Hand coolant through holders are designed for Right-Hand machines

Figure-1

SVJB-OH (Coolant through)




Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

Right-Hand style shown

● Left-Hand coolant through holders are designed for Right-Hand machines

Figure-2

VBGT33

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	g (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L										
 VBGT33..	SVJB%{083C-F079-OH	2	●	●	1/2	.551 14	1/2	4.724 120	.079 2	3.740 95	.079 2	NPT1/8	LRIS-4 × 10	LLR-255
	SVJB%{083C-F079-OH2	1	●	●	1/2	.551 14	1/2	4.724 120	.079 2	2.756 70	.079 2	NPT1/8	LRIS-4 × 10	LLR-255
	SVJB%{103C-F079-OH	2	●	●	5/8	5/8	5/8	4.724 120	.079 2	3.740 95	0 0	NPT1/8	LRIS-4 × 10	LLR-255
	SVJB%{103C-F079-OH2	1	●	●	5/8	5/8	5/8	4.724 120	.079 2	2.953 75	0 0	NPT1/8	LRIS-4 × 10	LLR-255
	SVJB%{1214-X16N-F02OH	2	●	●	.472 12	.551 14	.472 12	4.724 120	.079 2	3.740 95	.079 2	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255
	SVJB%{1616-X16N-F02OH	2	●	●	.630 16	.630 16	.630 16	4.724 120	.079 2	3.740 95	0 0	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255

● Left-Hand coolant through holders are designed for Right-Hand machines

Inserts → Q23

SVJC-OH2 (Coolant through)

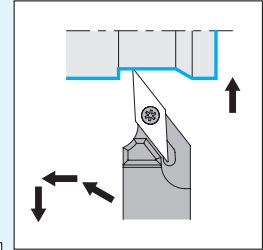
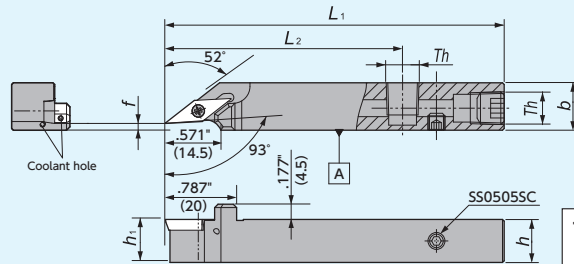


Figure-1

Th (Thread type)
Inch size holder: NPT1/8

Right-Hand style shown

SVJC-OH (Coolant through)

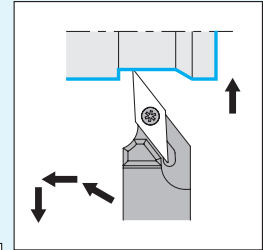
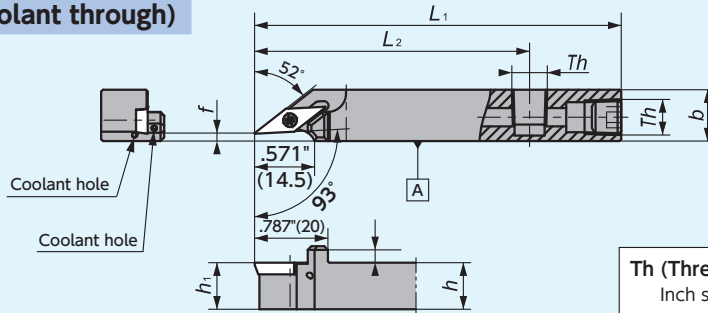


Figure-2

Th (Thread type)
Inch size holder: NPT1/8

Right-Hand style shown

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		L ₂		f	Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)				
VC..22	SVJC%4-082H-F079-OH	2	■		1/2	.551 14	1/2	.551 14	1/2	3.937 100	2.953 75	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S			
	SVJC%4-082H-F079-OH2	1	●		1/2	.551 14	1/2	.551 14	1/2	3.937 100	2.756 70	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S			
	SVJC%4-102X-F079-OH	2	●		5/8	5/8	5/8	5/8	3.937 100	2.953 75	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S				
	SVJC%4-102X-F079-OH2	1	●		5/8	5/8	5/8	5/8	4.724 120	2.953 75	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S				
VC..22	SVJCR1014F11N-F02OH	2	○		.394 10	.551 14	.394 10	.551 14	3.150 80	2.953 75	.079 2.0	M6 × 1	LRIS-2.5 × 7	CLR-15S				
	SVJCR1214H11N-F02OH	2	○		.472 12	.551 14	.472 12	.551 14	3.937 100	2.953 75	.079 2.0	Rc1/8 (PT1/8)	LRIS-2.5 × 7	CLR-15S				
	SVJCR1616H11N-F02OH	2	○		.630 16	.630 16	.630 16	.630 16	3.937 100	2.953 75	.079 2.0	Rc1/8 (PT1/8)	LRIS-2.5 × 7	CLR-15S				

Y-SVJCR-OH2 (Coolant through)

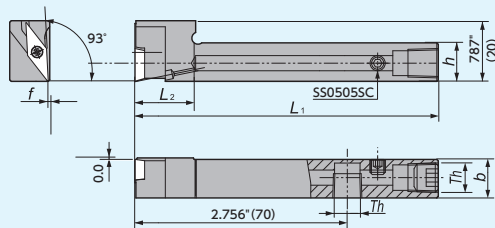


Figure-3

Th (Thread type)
Inch size holder: NPT1/8

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SVJCR-OH (Coolant through)

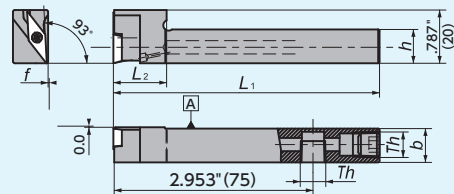


Figure-4

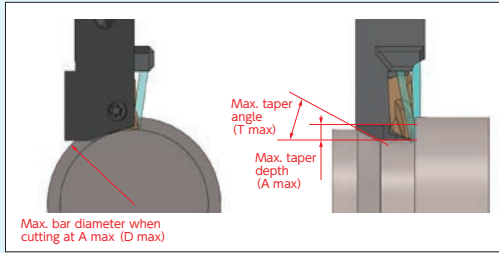
Th (Thread type)
Inch size holder: NPT1/8

Right-Hand style shown
Takes Right-hand or Neutral insert

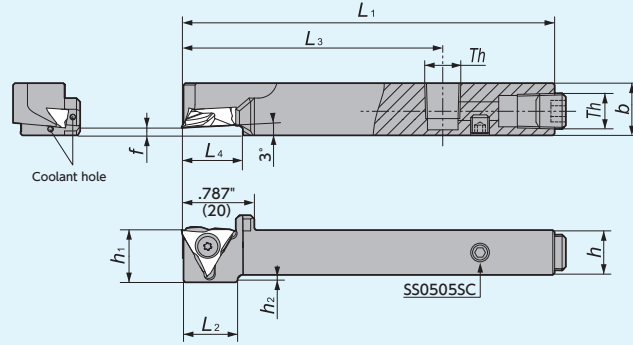
Gage Insert	Item Number	Figure	Stock		h		b		L ₁		f		L ₂	Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)				
VC..22..	Y-SVJCR082HS-IN-OH	4	■		1/2	1/2	1/2	1/2	3.937 100	0.0 0.0	.787 20	20	NPT1/8	LRIS-2.5 × 7	CLR-15S	
	Y-SVJCR082HS-IN-OH2	3	●		1/2	1/2	1/2	1/2	3.937 100	0.0 0.0	.787 20	20	NPT1/8	LRIS-2.5 × 7	CLR-15S	
	Y-SVJCR102H-IN-OH	4	●		5/8	5/8	5/8	5/8	3.937 100	0.0 0.0	.984 25	25	NPT1/8	LRIS-2.5 × 7	CLR-15S	
VC..22..	Y-SVJCR1212H11S-OH	4	□		.472 12	.472 12	.472 12	.472 12	3.937 100	0.0 0.0	.787 20	20	Rc1/8 (PT1/8)	LRIS-2.5 × 7	CLR-15S	
	Y-SVJCR1212H11S-OH2	3	●		.472 12	.472 12	.472 12	.472 12	3.937 100	0.0 0.0	.787 20	20	Rc1/8 (PT1/8)	LRIS-2.5 × 7	CLR-15S	
	Y-SVJCR1616H11S-OH	4	○		.630 16	.630 16	.630 16	.630 16	3.937 100	0.0 0.0	.787 20	20	Rc1/8 (PT1/8)	LRIS-2.5 × 7	CLR-15S	

TFT-OH2 (Coolant through)

Screw accessible from both sides




Max. bar diameter when cutting at A max (D max)



Right-Hand style shown

Figure-1

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		h ₂		L ₃		L ₄		Th	Max. DOC inch/side	Taper cut capability					
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	D max	A max			T max					
 TFX33	TFT%L06H-IN-OH2	1	●	●	3/8	.551 14	3/8	3.937 100	.079 2.0	.591 15	.157 4	2.756 70	.591 15	M6 × 1.0	.197	.787														
	TFT%L08H-IN-OH2	1	●	●	1/2	.551 14	1/2	3.937 100	.079 2.0	.591 15	.079 2	2.756 70	.591 15	NPT1/8		1.181														
	TFT%L10X-IN-OH2	1	●	○	5/8	5/8	5/8	4.724 120	.079 2.0	0 0	0 0	2.756 70	.689 17.5	NPT1/8		1.574														
	TFT%L1014H-OH2	1	○	○	.394 10	.551 14	.394 10	3.937 100	.079 2.0	.591 15	.157 4	2.756 70	.591 15	M6 × 1.0		.787														
	TFT%L1214H-OH2	1	●	●	.472 12	.551 14	.472 12	3.937 100	.079 2.0	.591 15	.079 2	2.756 70	.591 15	Rc1/8(PT1/8)		1.181														
	TFT%L1616X-OH2	1	○	○	.630 16	.630 16	.630 16	4.724 120	.079 2.0	0 0	0 0	2.756 70	.689 17.5	Rc1/8(PT1/8)		1.574														

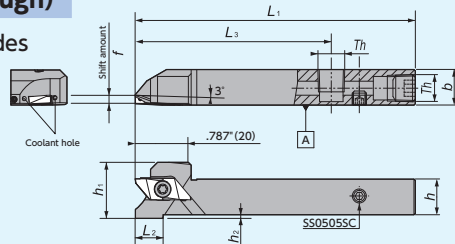
Inserts [Q33](#)

Back Turning Toolholders

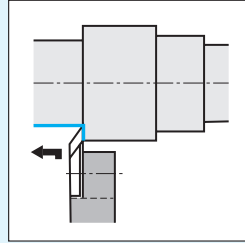
NTK New and Unique Swiss Tooling

TBP-OH2 (Coolant through)

Screw accessible from both sides



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

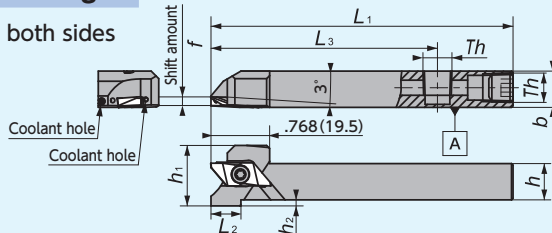


Right-Hand style shown

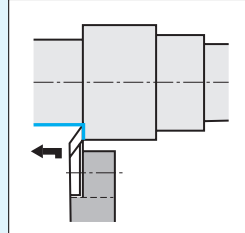
Figure-1

TBP-OH (Coolant through)

Screw accessible from both sides



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

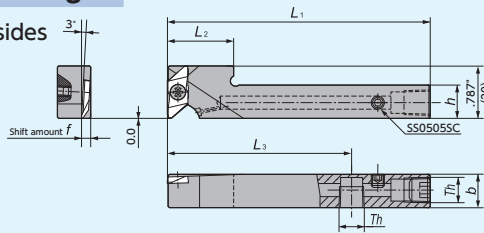


Right-Hand style shown

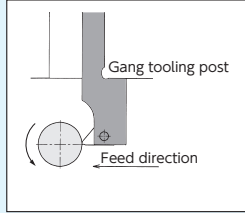
Figure-2

Y-TBP-OH2 (Coolant through)

Screw accessible from both sides



Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)

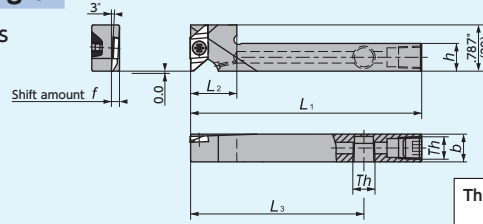


Right-Hand style shown
 Takes Right-hand Insert

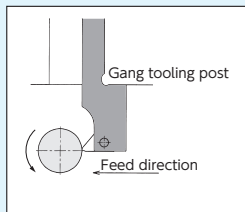
Figure-3

Y-TBP-OH (Coolant through)

Screw accessible from both sides



Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown
 Takes Right-hand Insert

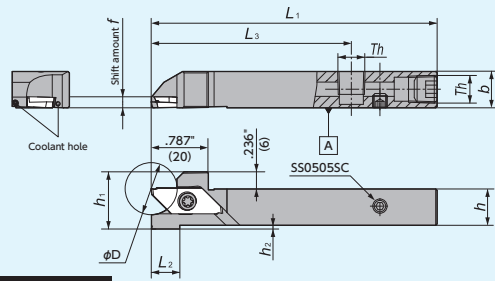
Figure-4

TBP

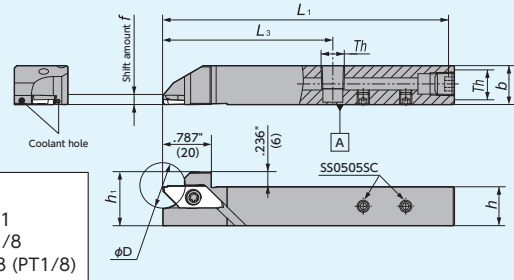
Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench	
			R	L												
	TBP% ₁ 06H-IN-OH	2	●	●	3/8	.472 12	3/8	3.937 100	.138 3.5	.748 19	.176 4.475	2.953 75	M6 × 1	LRIS-4 × 10PW	CLR-155	
	TBP% ₁ 08H-IN-OH	2	■	●	1/2	1/2	1/2	3.937 100	.138 3.5	.394 10	.051 1.3	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-155	
	TBP% ₁ 08H-IN-OH2	1	●	●	1/2	1/2	1/2	3.937 100	.138 3.5	.394 10	.051 1.3	2.756 70	NPT1/8	LRIS-4 × 12PW	CLR-155	
	TBP% ₁ 10H-IN-OH	2	●	●	5/8	5/8	5/8	3.937 100	.138 3.5	0 0	0 0	0 0	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-155
	TBP% ₁ 10X-IN-OH2	1	●	●	5/8	5/8	5/8	4.724 120	.138 3.5	0 0	0 0	0 0	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-155
	TBP% ₁ 1012H-OH	1	○	○	.394 10	.472 12	.394 10	3.937 100	.138 3.5	.748 19	.176 4.475	2.953 75	M6 × 1	LRIS-4 × 10PW	CLR-155	
	TBP% ₁ 12H-OH	2	■	●	.472 12	.472 12	.472 12	3.937 100	.138 3.5	.394 10	.051 1.3	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-155	
	TBP% ₁ 12H-OH2	1	●	●	.472 12	.472 12	.472 12	3.937 100	.138 3.5	.394 10	.051 1.3	2.756 70	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-155	
	TBP% ₁ 16H-OH	2	○	○	.630 16	.630 16	.630 16	3.937 100	.138 3.5	0 0	0 0	0 0	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-155
	TBP% ₁ 16X-OH2	1	●	●	.630 16	.630 16	.630 16	4.724 120	.138 3.5	0 0	0 0	0 0	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-155
	Y-TBP% ₁ 08H-IN-OH	4	■	●	1/2	1/2	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-155
	Y-TBP% ₁ 08H-IN-OH2	3	●	●	1/2	1/2	—	3.937 100	.138 3.5	.984 25	—	—	2.756 70	NPT1/8	LRIS-4 × 12PW	CLR-155
	Y-TBP% ₁ 12HS-OH	4	■	●	.472 12	.472 12	—	3.937 100	.138 3.5	.787 20	—	—	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-155
	Y-TBP% ₁ 12HS-OH2	3	●	●	.472 12	.472 12	—	3.937 100	.138 3.5	.787 20	—	—	2.756 70	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-155
	Y-TBP% ₁ 16H-OH	4	○	○	.630 16	.630 16	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-155

CTPA-OH2 (Coolant through)

Screw accessible from both sides



CTPA 1/4 10X, CTPA 1/4 16X



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

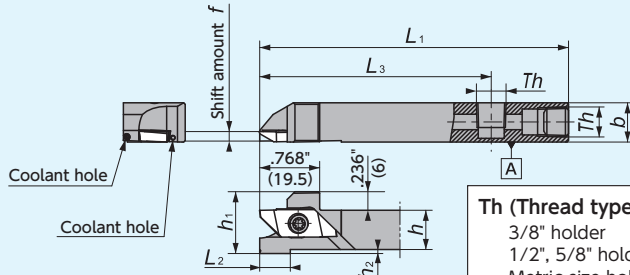
Figure-1

● Left-Hand coolant through holders are designed for Right-Hand machines.

Right-Hand style shown

CTPA-OH / TBPA-OH (Coolant through)

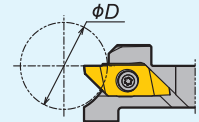
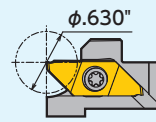
Screw accessible from both sides



Max Bar Dia at Max DOC

CTPA-OH

TBPA-OH



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Figure-2

● Left-Hand coolant through holders are designed for Right-Hand machines.

Right-Hand style shown

CTPA (Compatible with TBPA & CTPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. ϕD		h	h_1	b	L_1	h_2	L_2	L_3	Th	f	Clamp Screw	Wrench						
			R	L	(Inch)	(mm)												(Inch)	(mm)				
TBPA..	CTPA 1/4 06H-IN-OH	2	●	●	.630	16	3/8	3/8	3/8	3.937	100	.176	4.475	.787	20	2.165	55	M6×1	.134	3.4	LR1S-4×10PW	CLR-15S	
	CTPA 1/4 08H-IN-OH	2	■	■	.630	16	1/2	1/2	1/2	3.937	100	.051	1.3	.394	10	2.953	75	NPT1/8	.134	3.4	LR1S-4×12PW	CLR-15S	
	CTPA 1/4 08H-IN-OH2	1	●	●	.630	16	1/2	1/2	1/2	3.937	100	.051	1.3	.394	10	2.756	70	NPT1/8	.134	3.4	LR1S-4×12PW	CLR-15S	
	CTPA 1/4 10H-IN-OH	2	●	●	.630	16	5/8	5/8	5/8	3.937	100	0	0	0	0	2.953	75	NPT1/8	.134	3.4	LR1S-4×12PW	CLR-15S	
	CTPA 1/4 10X-IN-OH2	1	●	●	.630	16	5/8	5/8	5/8	4.724	120	0	0	0	0	2.953	75	NPT1/8	.134	3.4	LR1S-4×12PW	CLR-15S	
	CTPA 1/4 12H-OH	2	■	■	.630	16	.472	12	.472	12	3.937	100	.079	2	.394	10	2.953	75	Rc1/8 (PT1/8)	.134	3.4	LR1S-4×12PW	CLR-15S
	CTPA 1/4 12H-OH2	1	●	●	.630	16	.472	12	.472	12	3.937	100	.079	2	.394	10	2.756	70	Rc1/8 (PT1/8)	.134	3.4	LR1S-4×12PW	CLR-15S
	CTPA 1/4 16H-OH	2	○	○	.630	16	.630	16	.630	16	3.937	100	0	0	—	0	2.953	75	Rc1/8 (PT1/8)	.134	3.4	LR1S-4×12PW	CLR-15S
	CTPA 1/4 16X-OH2	1	●	●	.630	16	.630	16	.630	16	4.724	120	0	0	—	0	2.756	70	Rc1/8 (PT1/8)	.134	3.4	LR1S-4×12PW	CLR-15S

TBPA (Optimized for TBPA Inserts)

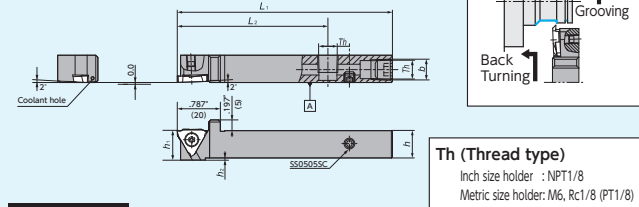
Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. ϕD		h	h_1	b	L_1	h_2	L_2	L_3	Th	f	Clamp Screw	Wrench						
			R	L	(Inch)	(mm)												(Inch)	(mm)				
TBPA..	TBPA 1/4 12H-OH	2	○	○	.984	25	.472	12	.472	12	3.937	100	.157	4	.394	10	2.513	75	Rc1/8 (PT1/8)	.134	3.4	LR1S-4X12PW	CLR-15S
	TBPA 1/4 16H-OH	2	○	○	1.378	35	.630	16	.630	16	3.937	100	.079	2	1	10	2.513	75	Rc1/8 (PT1/8)	.134	3.4	LR1S-4X12PW	CLR-15S
	TBPA 1/4 20H-OH	2	○	○	1.969	50	.787	20	.787	20	3.937	100	0	0	0	0	2.513	75	Rc1/8 (PT1/8)	.134	3.4	LR1S-4X12PW	CLR-15S

Inserts → R11

Back Turning / Grooving / Side Turning Toolholders

GTT-OH2 (Coolant through)

Screw accessible from both sides



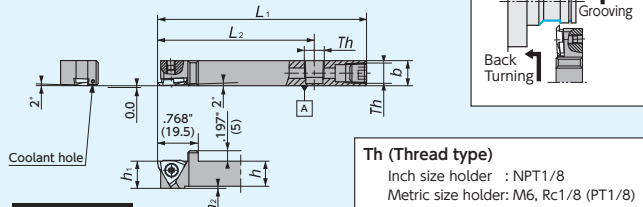
Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Figure-1

Right-Hand style shown

GTT-OH (Coolant through)

Screw accessible from both sides



Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Figure-2

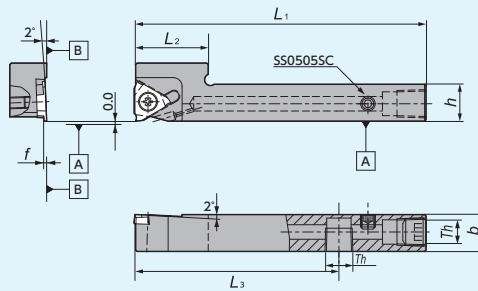
Right-Hand style shown

GTT

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	a _r (Inch) (mm)	h ₂ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
TBMH32..	GTT%08HA-IN-OH	2	●	●	1/2	1/2	1/2	3.937 100	.000 0	2.953 75	.071 1.8	.039 1	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%08HA-IN-OH2	1	●	●	1/2	1/2	1/2	3.937 100	.000 0	2.756 70	.071 1.8	.039 1	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%08HB-IN-OH	2	●	●	1/2	1/2	1/2	3.937 100	.000 0	2.953 75	.106 2.7	.039 1	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%08HB-IN-OH2	1	●	●	1/2	1/2	1/2	3.937 100	.000 0	2.756 70	.106 2.7	.039 1	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%10HA-IN-OH	2	●	●	5/8	5/8	5/8	3.937 100	.000 0	.768 19.5	.071 1.8	.000 0	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%10XA-IN-OH2	1	●	●	5/8	5/8	5/8	4.724 120	.000 0	.768 19.5	.071 1.8	.000 0	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%10HB-IN-OH	2	●	●	5/8	5/8	5/8	3.937 100	.000 0	.768 19.5	.106 2.7	.000 0	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%10XB-IN-OH2	1	●	●	5/8	5/8	5/8	4.724 120	.000 0	.768 19.5	.106 2.7	.000 0	NPT1/8	LR-5-4x10PW	CLR-155
	GTT%1012H00-OH	2	○	○	.394 10	.472 12	.394 10	3.937 100	.000 0	.768 19.5	.071 1.8	.039 1	M6 x 1	LR-5-4x10PW	CLR-155
	GTT%12H00-OH	2	○	○	.472 12	.472 12	.472 12	3.937 100	.000 0	.768 19.5	.071 1.8	.039 1	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-155
	GTT%12H00-OH2	1	○	○	.472 12	.472 12	.472 12	3.937 100	.000 0	2.756 70	.071 1.8	.039 1	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-155
	GTT%16H00-OH	2	○	○	.630 16	.630 16	.630 16	3.937 100	.000 0	.768 19.5	.071 1.8	0 0	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-155
GTT%16X00-OH2	1	○	○	.630 16	.630 16	.630 16	4.724 120	.000 0	.768 19.5	.071 1.8	0 0	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-155	

Y-GTT-OH2 (Coolant through)

Screw accessible from both sides



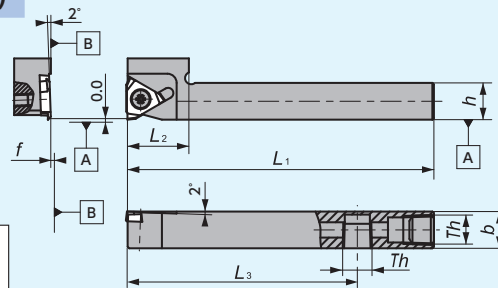
Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-3

Right-Hand style shown
Takes Right-hand Insert

Y-GTT-OH (Coolant through)

Screw accessible from both sides



Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-4

Right-Hand style shown
Takes Right-hand Insert

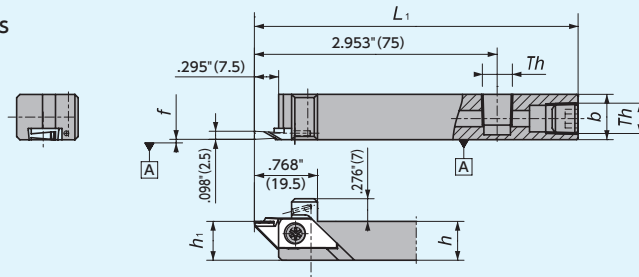
GTT

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	a _r (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
TBMH32..	Y-GTT%08H-IN-OH	4	●	●	1/2	1/2	- -	3.937 100	.000 0	.984 25.0	.063 1.6	2.756 70	NPT1/8	LR-5-4x10PW	CLR-155
	Y-GTT%08H-IN-OH2	3	●	●	1/2	1/2	- -	3.937 100	.000 0	.984 25.0	.063 1.6	2.953 75	NPT1/8	LR-5-4x10PW	CLR-155
	Y-GTT%12H00S-OH	4	●	●	.472 12	.472 12	- -	3.937 100	.000 0	.787 20.0	.063 1.6	2.756 70	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-155
	Y-GTT%12H00S-OH2	3	●	●	.472 12	.472 12	- -	3.937 100	.000 0	.787 20.0	.063 1.6	2.953 75	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-155
	Y-GTT%16H00-OH	4	○	○	.630 16	.472 16	- -	3.937 100	.000 0	.984 25.0	.063 1.6	2.953 75	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-155

Inserts →R20 · T12

GTPA-OH (Coolant through)

Screw Accessible from both sides

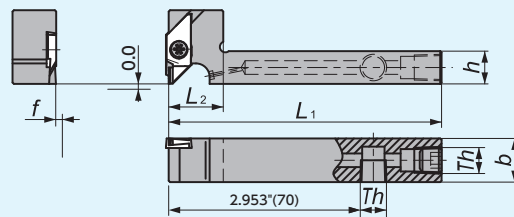


Th (Thread type)
Metric size holder: Rc1/8 (PT1/8)
Right-Hand style shown

Figure-1

Y-GTPA-OH (Coolant through)

Screw Accessible from both sides



Th (Thread type)
Metric size holder: Rc1/8 (PT1/8)
Right-Hand style shown

Figure-2

GTPA

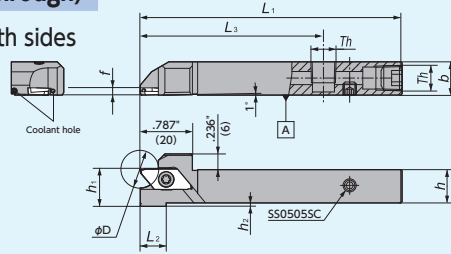
Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
GTPA	GTPA%{1214H-OH	1	○		.472	12	.551	14	.472	12	3.937	100	.004	0.1	—	—	Rc1/8(PT1/8)	LR15-4 × 12PW	CLR-15S
	Y-GTPA%{1014F5S-OH	2	○		.394	10	.551	14	—	—	3.150	80	.004	0.1	.591	15	Rc1/8(PT1/8)	LR15-4 × 12PW	CLR-15S
	Y-GTPA%{1216H5-OH	2	○		.472	12	.630	16	—	—	3.937	100	.004	0.1	.787	20	Rc1/8(PT1/8)	LR15-4 × 12PW	CLR-15S
	Y-GTPA%{1216H-OH	2	○		.630	16	.630	16	—	—	3.937	100	.004	0.1	.984	25	Rc1/8(PT1/8)	LR15-4 × 12PW	CLR-15S

Inserts → T22

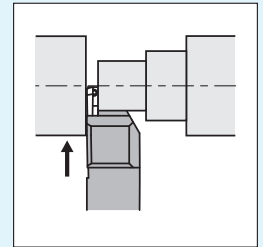
Cut-off Toolholders

CTP-OH2 (Coolant through)

Screw Accessible from both sides



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

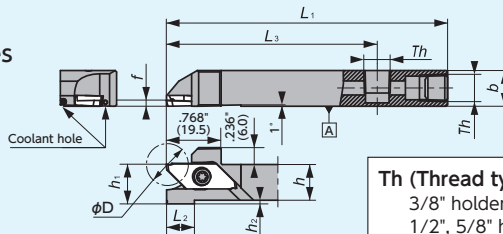


Right-Hand style shown

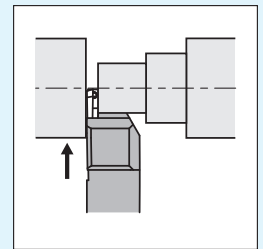
Figure-1

CTP-OH (Coolant through)

Screw Accessible from both sides



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

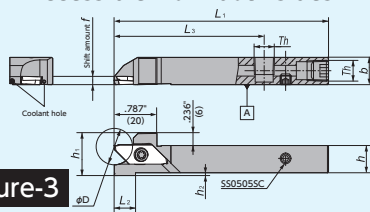


Right-Hand style shown

Figure-2 • Left-Hand holders are designed for Right-Hand machines

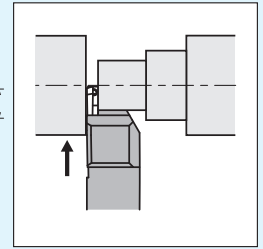
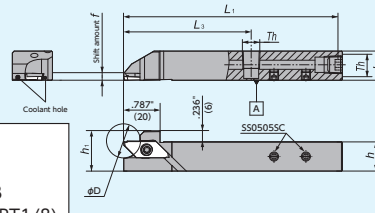
CTPA-OH2 (Coolant through)

Screw Accessible from both sides



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

CTPA^R 10X, CTPA^R 16X

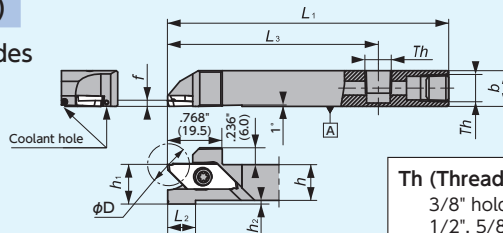


Right-Hand style shown

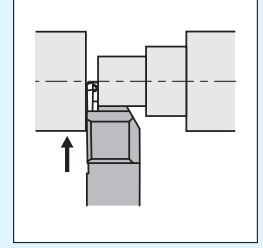
Figure-3

CTPA-OH (Coolant through)

Screw Accessible from both sides



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)



Right-Hand style shown

Figure-4 • Left-Hand holders are designed for Right-Hand machines

CTP

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*	h	h_1	b	L_1	h_2	L_2	L_3	Th	f	Clamp Screw	Wrench
			R	L													(Inch)	(mm)
CTP FR../FL..	CTP ^R 06H-IN-OH	2	●	●	.472 12	3/8	.472 12	3/8	3.937 100	.176 4.475	.748 19	2.953 75	M6 × 1	0.0 0.0	LR15-4×10PW	CLR-15S
	CTP ^R 08H-IN-OH	2	●	●	.472 12	1/2	1/2	1/2	3.937 100	.051 1.3	.394 10	2.953 75	NPT1/8	0.0 0.0	LR15-4×12PW	CLR-15S
	CTP ^R 08H-IN-OH2	1	●	●	.472 12	1/2	1/2	1/2	3.937 100	.051 1.3	.394 10	2.756 70	NPT1/8	0.0 0.0	LR15-4×12PW	CLR-15S
	CTP ^R 1012H-OH	2	○	○	.472 12	.394 10	.472 12	.394 10	3.937 100	.176 4.475	.748 19	2.953 75	M6 × 1	0.0 0.0	LR15-4×12PW	CLR-15S
	CTP ^R 12H-OH	2	●	●	.472 12	.472 12	.472 12	.472 12	3.937 100	.051 1.3	.394 10	2.953 75	Rc1/8 (PT1/8)	0.0 0.0	LR15-4×12PW	CLR-15S
	CTP ^R 12H-OH2	1	●	●	.472 12	.472 12	.472 12	.472 12	3.937 100	.051 1.3	.394 10	2.756 70	Rc1/8 (PT1/8)	0.0 0.0	LR15-4×12PW	CLR-15S
	CTP ^R 16H-OH	2	○	○	.472 12	.630 16	.630 16	.630 16	3.937 100	0 0	—	2.953 75	Rc1/8 (PT1/8)	0.0 0.0	LR15-4×12PW	CLR-15S

• Left-Hand coolant through holders are designed for Right-Hand machines

* Would be changed by insert

CTPA

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*	h	h_1	b	L_1	h_2	L_2	L_3	Th	f	Clamp Screw	Wrench
			R	L													(Inch)	(mm)
CTPA FR../FL..	CTPA ^R 06H-IN-OH	4	●	●	.630 16	3/8	.472 12	3/8	3.937 100	.176 4.475	.787 20	2.953 75	M6 × 1	0.0 0.0	LR15-4×10PW	CLR-15S
	CTPA ^R 08H-IN-OH	4	●	●	.630 16	1/2	1/2	1/2	3.937 100	.051 1.3	.394 10	2.953 75	NPT1/8	0.0 0.0	LR15-4×12PW	CLR-15S
	CTPA ^R 08H-IN-OH2	3	●	●	.630 16	1/2	1/2	1/2	3.937 100	.051 1.3	.394 10	2.756 70	NPT1/8	0.0 0.0	LR15-4×12PW	CLR-15S
	CTPA ^R 10H-IN-OH	4	●	●	.630 16	5/8	5/8	5/8	3.937 100	0 0	—	2.953 75	NPT1/8	0.0 0.0	LR15-4×12PW	CLR-15S
	CTPA ^R 10X-IN-OH2	3	●	●	.630 16	5/8	5/8	5/8	4.724 120	0 0	—	2.756 70	NPT1/8	0.0 0.0	LR15-4×12PW	CLR-15S
	CTPA ^R 12H-OH	4	●	●	.630 16	.472 12	.472 12	.472 12	3.937 100	.079 2	.394 10	2.953 75	Rc1/8 (PT1/8)	0.0 0.0	LR15-4×12PW	CLR-15S
	CTPA ^R 12H-OH2	3	●	●	.630 16	.472 12	.472 12	.472 12	3.937 100	.079 2	.394 10	2.756 70	Rc1/8 (PT1/8)	0.0 0.0	LR15-4×12PW	CLR-15S
	CTPA ^R 16H-OH	4	○	○	.630 16	.630 16	.630 16	.630 16	3.937 100	0 0	0 0	2.953 75	Rc1/8 (PT1/8)	0.0 0.0	LR15-4×12PW	CLR-15S
CTPA ^R 16X-OH2	3	●	●	.630 16	.630 16	.630 16	.630 16	4.724 120	0 0	0 0	2.756 70	Rc1/8 (PT1/8)	0.0 0.0	LR15-4×12PW	CLR-15S	

• Left-Hand coolant through holders are designed for Right-Hand machines

* Would be changed by insert

CTDP-OH2 (Coolant through)

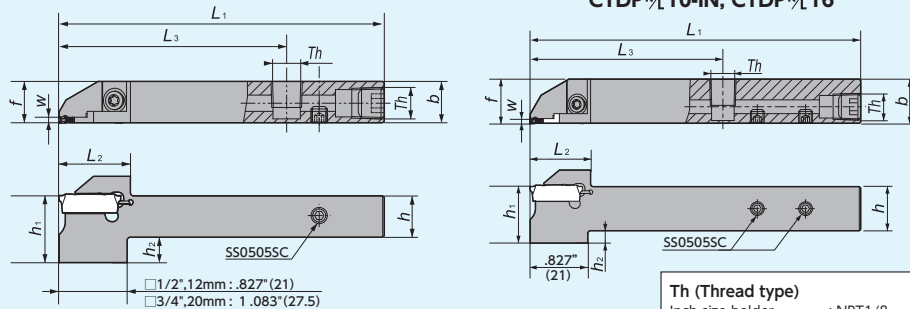


Figure-1 • Left-Hand holders are designed for Right-Hand machines

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder : Rc1/8(PT1/8)

Right-Hand style shown

CTDP-OH (Coolant through)

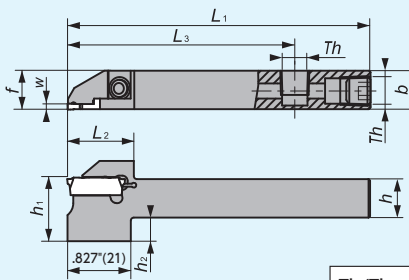


Figure-2 • Left-Hand holders are designed for Right-Hand machines

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder : Rc1/8(PT1/8)

Right-Hand style shown

CTDP

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. D_m		w (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	h_1 (Inch) (mm)	L_1 (Inch) (mm)	h_2 (Inch) (mm)	L_2 (Inch) (mm)	L_3 (Inch) (mm)	Th	f		Clamp Screw	Wrench								
			R	L	(Inch)	(mm)										(Inch)	(mm)										
CTDP20	CTDP $\frac{1}{8}$ 108-IN-20D25-OH	2	■	■	1.000	25.4	.079	2.0	1/2	1/2	.807	20.5	3.937	100	.307	7.8	.866	22.0	2.953	75	NPT1/8	.506	12.85	LRIS-4 × 12	LLR-255		
	CTDP $\frac{1}{8}$ 108-IN-20D25-OH2	1	●	●	1.000	25.4	.079	2.0	1/2	1/2	.807	20.5	3.937	100	.307	7.8	.866	22.0	2.756	70	NPT1/8	.506	12.85	LRIS-4 × 12	LLR-255		
	CTDP $\frac{1}{8}$ 110-IN-20D25-OH	2	●	●	1.000	25.4	.079	2.0	5/8	5/8	.807	20.5	3.937	100	.182	4.625	.866	22.0	2.953	75	NPT1/8	.631	16.025	LRIS-4 × 12	LLR-255		
	CTDP $\frac{1}{8}$ 110-IN-20D25-OH2	1	●	●	1.000	25.4	.079	2.0	5/8	5/8	.807	20.5	4.729	120	.182	4.625	.866	22.0	2.756	70	NPT1/8	.631	16.025	LRIS-4 × 12	LLR-255		
	CTDP $\frac{1}{8}$ 112-20D25-OH	2	■	■	1.000	25.4	.079	2.0	.472	12	.472	12	.807	20.5	3.937	100	.335	8.5	.866	22.0	2.953	75	Rc1/8(PT1/8)	.478	12.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{8}$ 112-20D25-OH2	1	●	●	1.000	25.4	.079	2.0	.472	12	.807	20.5	3.937	100	.335	8.5	.866	22.0	2.756	70	Rc1/8(PT1/8)	.478	12.15	LRIS-4 × 12	LLR-255		
	CTDP $\frac{1}{8}$ 116-20D25-OH	2	●	●	1.000	25.4	.079	2.0	.630	16	.630	16	.807	20.5	3.937	100	.177	4.5	.866	22.0	2.953	75	Rc1/8(PT1/8)	.636	16.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{8}$ 116-20D25-OH2	1	●	●	1.000	25.4	.079	2.0	.630	16	.807	20.5	4.729	120	.177	4.5	.866	22.0	2.756	70	Rc1/8(PT1/8)	.636	16.15	LRIS-4 × 12	LLR-255		
CTDP25	CTDP $\frac{1}{8}$ 112-IN-25D32-OH2	1	●	●	1.260	32.0	.098	2.5	3/4	3/4	.945	24.0	4.729	120	.195	4.95	1.122	28.5	2.953	75	NPT1/8	.756	19.2	CS0516LSH	LW-3		
	CTDP $\frac{1}{8}$ 120-IN-25D34A-OH2	1	●	●	1.260	32.0	.098	2.5	.787	20	.787	20	.945	24.0	4.729	120	.157	4.0	1.122	28.5	2.953	75	Rc1/8(PT1/8)	.793	20.15	CS0516LSH	LW-3

Inserts → S17

ID Tooling - STICK DUO SPLASH -

NTK New and Unique Swiss Tooling

HY-NBH-OH (Coolant through)

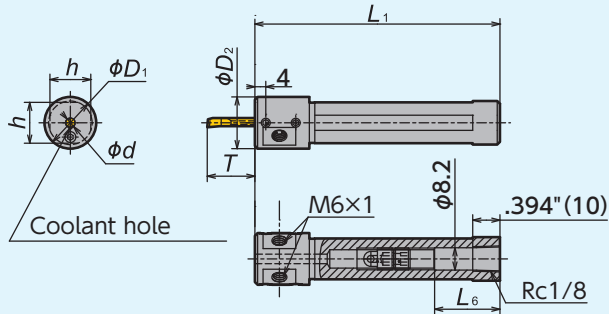


Figure-1

HY-NBH-OH (Coolant through)

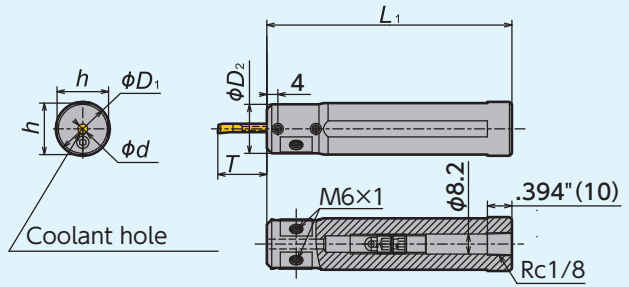


Figure-2

Item Number	Stock	Figure	ϕd		ϕD_1		ϕD_2	h	L_1	Overhang Length of Bar T				
			(Inch)	(mm)	(Inch)	(mm)				Min.		Max.		
											(Inch)	(mm)	(Inch)	(mm)
HY-NBH02016G-OH	●	1	.079	2.0	.630	16.0	19	15	90	.197	5.0	.709	18.0	
HY-NBH02516G-OH	●	1	.098	2.5	.630	16.0	19	15	90	.248	6.3	.768	19.5	
HY-NBH03016G-OH	●	1	.118	3.0	.630	16.0	19	15	90	.295	7.5	.827	21.0	
HY-NBH03516G-OH	●	1	.138	3.5	.630	16.0	19	15	90	.346	8.8	.965	24.5	
HY-NBH04016G-OH	●	1	.157	4.0	.630	16.0	19	15	90	.394	10.0	1.102	28.0	
HY-NBH05016G-OH	●	1	.197	5.0	.630	16.0	19	15	90	.492	12.5	1.378	35.0	
HY-NBH02019J-OH	●	2	.079	2.0	3/4	19.05	19.05	18	110	.197	5.0	.709	18.0	
HY-NBH02519J-OH	●	2	.098	2.5	3/4	19.05	19.05	18	110	.248	6.3	.768	19.5	
HY-NBH03019J-OH	●	2	.118	3.0	3/4	19.05	19.05	18	110	.295	7.5	.827	21.0	
HY-NBH03519J-OH	●	2	.138	3.5	3/4	19.05	19.05	18	110	.346	8.8	.965	24.5	
HY-NBH04019J-OH	●	2	.157	4.0	3/4	19.05	19.05	18	110	.394	10.0	1.102	28.0	
HY-NBH05019J-OH	●	2	.197	5.0	3/4	19.05	19.05	18	110	.492	12.5	1.378	35.0	
HY-NBH06019J-OH	●	2	.236	6.0	3/4	19.05	19.05	18	110	.591	15.0	1.654	42.0	
HY-NBH02020J-OH	●	2	.079	2.0	.787	20.0	20	19	110	.197	5.0	.709	18.0	
HY-NBH02520J-OH	●	2	.098	2.5	.787	20.0	20	19	110	.248	6.3	.768	19.5	
HY-NBH03020J-OH	●	2	.118	3.0	.787	20.0	20	19	110	.295	7.5	.827	21.0	
HY-NBH03520J-OH	●	2	.138	3.5	.787	20.0	20	19	110	.346	8.8	.965	24.5	
HY-NBH04020J-OH	●	2	.157	4.0	.787	20.0	20	19	110	.394	10.0	1.102	28.0	
HY-NBH05020J-OH	●	2	.197	5.0	.787	20.0	20	19	110	.492	12.5	1.378	35.0	
HY-NBH06020J-OH	●	2	.236	6.0	.787	20.0	20	19	110	.591	15.0	1.654	42.0	
HY-NBH02022X-OH	●	2	.079	2.0	.866	22.0	20	21	120	.197	5.0	.709	18.0	
HY-NBH02522X-OH	●	2	.098	2.5	.866	22.0	20	21	120	.248	6.3	.768	19.5	
HY-NBH03022X-OH	●	2	.118	3.0	.866	22.0	20	21	120	.295	7.5	.827	21.0	
HY-NBH03522X-OH	●	2	.138	3.5	.866	22.0	20	21	120	.346	8.8	.965	24.5	
HY-NBH04022X-OH	●	2	.157	4.0	.866	22.0	20	21	120	.394	10.0	1.102	28.0	
HY-NBH05022X-OH	●	2	.197	5.0	.866	22.0	20	21	120	.492	12.5	1.378	35.0	
HY-NBH06022X-OH	●	2	.236	6.0	.866	22.0	20	21	120	.591	15.0	1.654	42.0	
HY-NBH02025.0K-OH	●	2	.079	2.0	.984	25.0	20	24	125	.197	5.0	.709	18.0	
HY-NBH02525.0K-OH	●	2	.098	2.5	.984	25.0	20	24	125	.248	6.3	.768	19.5	
HY-NBH03025.0K-OH	●	2	.118	3.0	.984	25.0	20	24	125	.295	7.5	.827	21.0	
HY-NBH03525.0K-OH	●	2	.138	3.5	.984	25.0	20	24	125	.346	8.8	.965	24.5	
HY-NBH04025.0K-OH	●	2	.157	4.0	.984	25.0	20	24	125	.394	10.0	1.102	28.0	
HY-NBH05025.0K-OH	●	2	.197	5.0	.984	25.0	20	24	125	.492	12.5	1.378	35.0	
HY-NBH06025.0K-OH	●	2	.236	6.0	.984	25.0	20	24	125	.591	15.0	1.654	42.0	
HY-NBH02025.4K-OH	●	2	.079	2.0	1	25.4	20	24	125	.197	5.0	.709	18.0	
HY-NBH02525.4K-OH	●	2	.098	2.5	1	25.4	20	24	125	.248	6.3	.768	19.5	
HY-NBH03025.4K-OH	●	2	.118	3.0	1	25.4	20	24	125	.295	7.5	.827	21.0	
HY-NBH03525.4K-OH	●	2	.138	3.5	1	25.4	20	24	125	.346	8.8	.965	24.5	
HY-NBH04025.4K-OH	●	2	.157	4.0	1	25.4	20	24	125	.394	10.0	1.102	28.0	
HY-NBH05025.4K-OH	●	2	.197	5.0	1	25.4	20	24	125	.492	12.5	1.378	35.0	
HY-NBH06025.4K-OH	●	2	.236	6.0	1	25.4	20	24	125	.591	15.0	1.654	42.0	

S-MILL / Solid Carbide End-mill



Features

- The tool's sharpness creates a remarkable finish on machined surface.
- 2, 3, and 4 flute designs with a selection of diameters to cover a variety of applications. (2 flute available in 2mm ϕ)
- 40, 45, and 50mm lengths ideal for automatic lathes.

NTK New and Unique Swiss Tooling

Two style



Three flute options



Surface finish

	NTK (S-MILL)	Competitor A	Competitor B
Magnified work material (side face)			
Magnified work material			
	Excellent surface finish	Bad surface finish	
304 SS (ϕ 16mm) ϕ 6mm -2 flute 3,000 rpm, 11.8 IPM, 118" DOC, .047" width			

Field Result

316 SS (D-cut) ϕ 6mm-2 flute	
3,200 rpm	
5.5 IPM	
.024 DOC	
WET	
NTK : S-MILL	12,000 pcs/corner+ α
Competitor's solid endmill	10,000 pcs/corner
The competitor's end mill showed an obvious decrease in surface finish quality as it reached the end of its tool life. NTK's S-MILL maintained a quality surface finish throughout the extent of its longer tool life.	

1045 (AF 8mm HEX) ϕ 6mm-2 flute	
2,600 rpm	
18.9 IPM	
.039 DOC	
WET	
NTK : S-MILL	70 pcs/corner+ α
Competitor's solid endmill	50 pcs/corner
The S-MILL sharpness reduces the occurrence of burrs and tool life is increased; clear improvements over the competitor's tool. The sharp cutting edge also produces noticeably less sound than the current tooling.	

New coating optimized for 304SS

NTK New and Unique Swiss Tooling



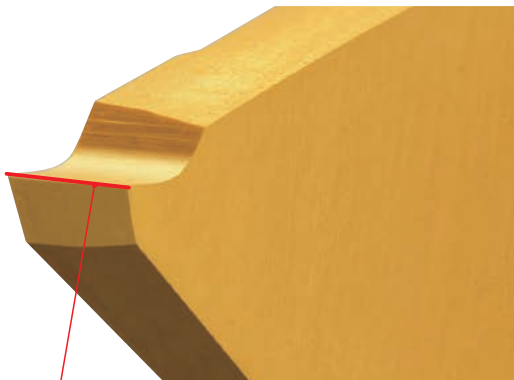
Features

- Optimized for 304SS
- Excellent adhesion and wear resistance

Field Result	
Dia .236" (6mm)	
304SS	
-187 SFM	
10006 IPR	
NTK : ST4	27,000 pcs
Competitor's coated carbide	18,000 pcs

CTP-TH

Cut off style optimized for Stainless Steel



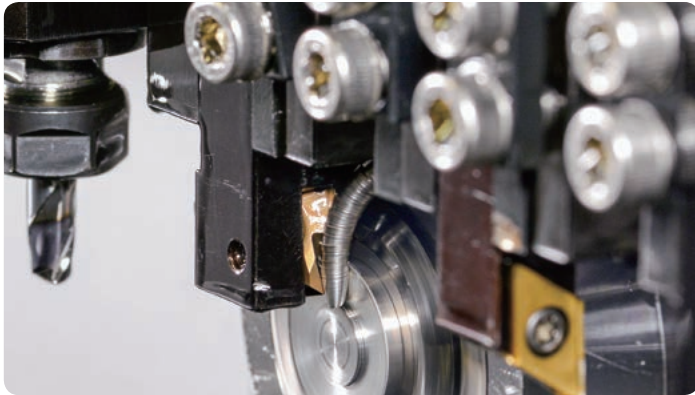
Strengthen edge

Features

- Specially designed cut off insert for stainless steel
- The combination of ST4 and CTP-TH provides best performance on 304 SS

Field Result	
Dia .236" (6mm)	
304SS	
-187 SFM	
10006 IPR	
NTK : ST4	27,000 pcs
Competitor's coated carbide	18,000 pcs

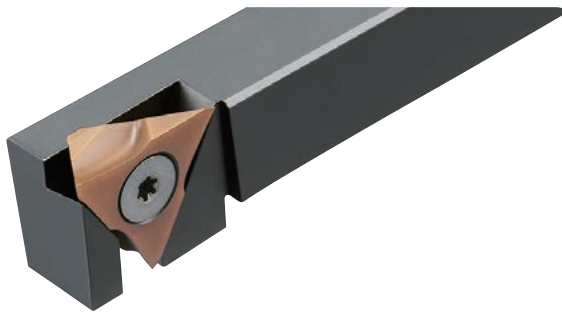
Front turning insert for large DOC



Features

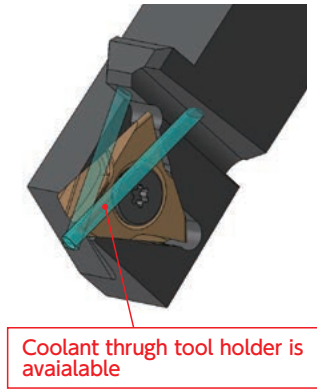
- Up to .197" DOC capability
- Specially designed chipbreaker provides excellent chip control and sharpness
- Coolant through toolholder helps to evacuate chips

NTK New and Unique Swiss Tooling

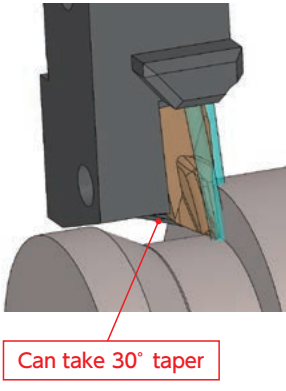


Available in wiper insert

Rigid side clamp

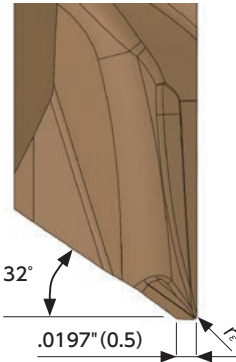


Coolant through tool holder is available

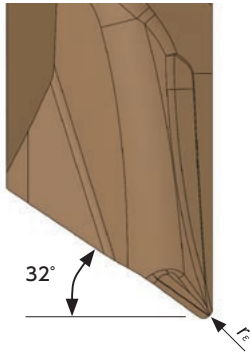


Can take 30° taper

With wiper

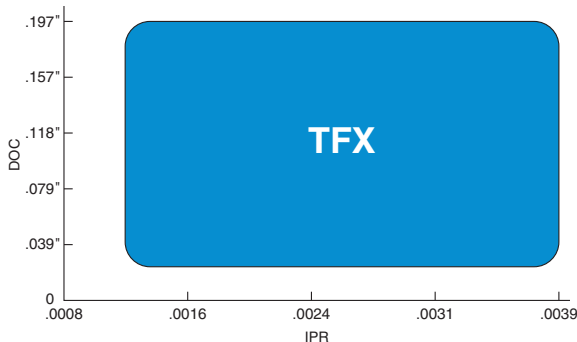
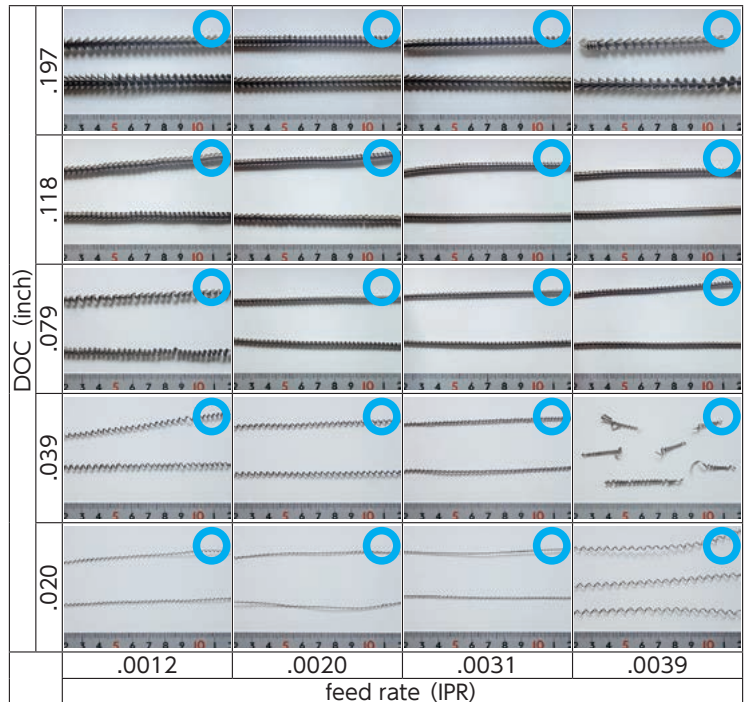


No wiper



Excellent chip control

304 SS dia 16mm material, 260 SFM





Hexalobular Socket



Hexagon Socket




Square Socket



- Now available for Hexalobular(6-lobe) Socket
- Perfect fit for back spindle of Swiss machine
- Achieves good corner edge sharpness


- Less tool pressure than Rotary-Broaching
- Easy to adjust for correct dimension
- Economical double-ended insert bar (Except for Hexalobular)

Comparison Chart of Hexalobular Socket Machining

	Tool Pressure	Cycle Time	Tool Cost	High speed spindle	Program	
Shaper Duo 	◎	◎	◎	Not necessary	Simple	<ul style="list-style-type: none"> ● No high speed spindle needed ● A lot less cycle time
End milling	○	×	△	Necessary	Complicated	<ul style="list-style-type: none"> ● Need high speed spindle ● Time consuming process

- Small diameter endmill driven by high-speed spindle is popular way to create Hexalobular(6-lobe) socket. It has some flexibility but needs high speed spindle unit and it is a time consuming process.
- SHAPER DUO can make Hexalobular(6-lobe) socket faster and simpler.

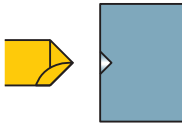
Comparison Chart of HEX Socket Machining

	Tool Pressure	Cycle Time	Flexibility	Tool Cost	
Shaper Duo 	◎	△ * Can be off-set by over-wrapping operation	○	◎	<ul style="list-style-type: none"> ● Less tool pressure-especially on small diameter parts ● One size can cover several socket sizes
Broach Tool	△	○	×	△	<ul style="list-style-type: none"> ● Need to have tools for each socket size

- Rotary-broach is an efficient way for Hexagon socket. But tool pressure is high and often times it pushes part too hard.
- SHAPER DUO system enables less tool pressure and provides better tolerance with less cost.

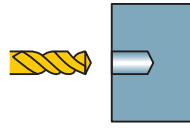
Process Chart

① Center drilling



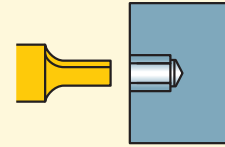
Make a center hole which is smaller than pilot hole drill.

② Drilling (Pilot hole)



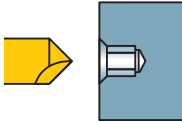
Select a drill with same or smaller (0~0.1mm) dia. as AF and machine a bit deeper because burrs may cause chipping on shaper insert

③ Shaper tool



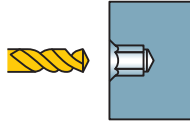
Machine socket rotating 60 degrees 6 times

④ Chamfering



Chamfer with the same pilot hole drill as ①

⑤ Deburring



Finish and deburr with the same drill as in process②
☆Reduce cutting conditions due to heavy interruption

SHAPER DUO Process Chart -Hexalobular-

Socket Size	Tool	Pilot bore Dia. (mm)	Starting "X" position (mm)	Number of passes			Estimated cycle time *		
				Final "X" position (mm)	Roughing pass 0.025mm	Finishing pass 0.005mm	ISO10664 Standard depth of Hexalobular hole (mm)	Whole process ①-⑤	Process④ Shaper
T6	SSP050N25T06	1.15	1.14	1.75	13	1	1.82	51 sec	23.2 sec
T7	SSP050N31T07	1.38	1.35	2.06	15	1	2.44	59 sec	28.2 sec
T8	SSP050N36T08	1.62	1.59	2.40	17	1	3.05	67 sec	33.8 sec
T10	SSP050N41T10	1.92	1.89	2.80	19	1	3.56	75 sec	39.5 sec
T15	SSP050N43T15	2.30	2.29	3.35	22	1	3.81	84 sec	46.2 sec
T20	SSP050N46T20	2.71	2.69	3.95	26	1	4.07	94 sec	55.4 sec
T25	SSP050N50T25	3.13	3.09	4.50	29	1	4.45	105 sec	63.8 sec
T27	SSP050N55T27	3.52	3.51	5.07	32	1	4.70	115 sec	71.8 sec
T30	SSP050N55T30	3.91	3.89	5.60	35	1	4.95	125 sec	80.2 sec

* Using Carbide drill

* Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.005 mm (Finishing)

SHAPER DUO Process Chart -Hexagonal-

HEX Standard	Tool	Pilot bore Dia. (mm)	Starting "X" position (mm)	Number of passes			Estimated cycle time *		
				Final "X" position (mm)	Roughing pass 0.025mm	Finishing pass 0.005mm	ISO 2936 standard depth of Hex hole (mm)	Whole process ①-⑤	Process④ Shaper
HEX 1.5	SSP020N1130H	1.5	1.47	1.73	6	1	2	39 sec	14 sec
HEX 2.0	SSP020N1430H	2.0	1.95	2.31	8	1	2.5	44 sec	16 sec
HEX 2.5	SSP030N1940H	2.5	2.48	2.89	9	1	3	50 sec	20 sec
HEX 3.0	SSP030N1940H	3.0	2.95	3.46	11	1	3.5	55 sec	23 sec
HEX 4.0	SSP040N2450H	4.0	3.96	4.62	14	1	5	73 sec	33 sec
HEX 5.0	SSP050N3260H	5.0	4.96	5.77	17	1	6	90 sec	46 sec
HEX 6.0	SSP060N42120H	6.0	5.97	6.93	20	1	8	117 sec	63 sec
HEX 8.0	SSP080N62160H	8.0	7.98	9.24	26	1	10	155 sec	92 sec

* Pilot bore diameter is same or smaller(0-0.1mm) as AF.
* Using Carbide drill

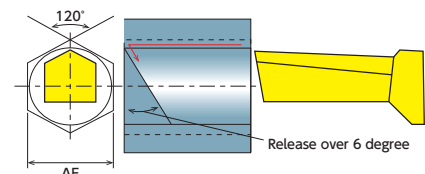
* Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.005 mm (Finishing)

Recommended Cutting Conditions

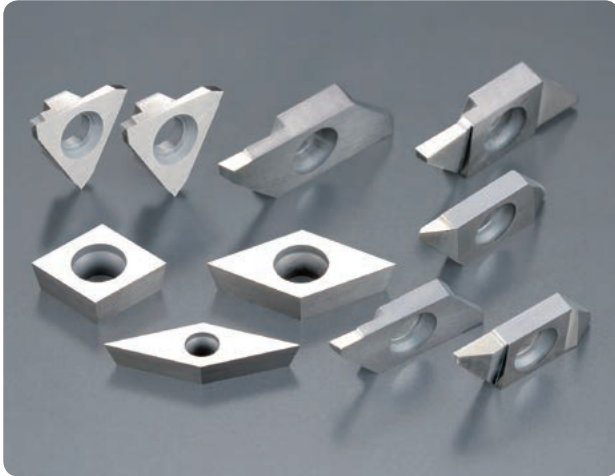
Feed : 3000 mm/min (120 IPM)
DOC : Roughing ... 0.025 mm (.0010") + Finishing ... 0.005 mm (.0002")

Program Example → **W6**



KM1

Best tool for PEEK material



Features

- NTK's KM1 inserts are designed for other non-ferrous materials such as PEEK
- Extremely up-sharp edge and mirror insert surface creates excellent surface finishes
- R 0.0 corner radius inserts are available






R0.0 Insert

Cover all applications



Front turning	Back turning	Cut-off	Grooving / side turning	Threading
CC DC VC	TBP	CTP CTPA	GTMH GTPA	TTP

Grade	Wark material	Application	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	DRY	WET
KM1	PEEK Copper Brass Aluminum Plastics	Turning	160-300 (160-650)	.0004-.004	-.100	●	●

Front turning


Shape	Item Number	ISO Item Number	IC	R	KM1
 CCGW..	CCGW 21.501 H M	CCGW 060200 H	1/4	.001	●
	CCGW 21.504 H M	CCGW 060201 H	1/4	.004	●
	CCGW 21.508 H M	CCGW 060202 H	1/4	.008	●
	CCGW 32.501 H M	CCGW 09T300 H	3/8	.001	●
	CCGW 32.504 H M	CCGW 09T301 H	3/8	.004	●
	CCGW 32.508 H M	CCGW 09T302 H	3/8	.008	●
 DCGW..	DCGW 21.501 H M	DCGW 070200 H	1/4	.001	●
	DCGW 21.504 H M	DCGW 070201 H	1/4	.004	●
	DCGW 21.508 H M	DCGW 070202 H	1/4	.008	●
	DCGW 32.501 H M	DCGW 11T300 H	3/8	.001	●
	DCGW 32.504 H M	DCGW 11T301 H	3/8	.004	●
	DCGW 32.508 H M	DCGW 11T302 H	3/8	.008	●
 VCGW..	VCGW 2201 H M	VCGW 110300 H	1/4	.001	●
	VCGW 2204 H M	VCGW 110301 H	1/4	.004	●
	VCGW 2208 H M	VCGW 110302 H	1/4	.008	●

Grooving / Side turning







Shape	Item Number	Groove Width W (Inch) (mm)	Max Depth of Cut (Inch) (mm)	r_e (Inch)	KM1
 GTMH.. <small>W=.001(0.025)</small> <small>1.18" (3.18)</small>	GTMH32100 ^R / _L SSH M	.039 1.00	.063 1.6	.002	●
	GTMH32150 ^R / _L SSH M	.059 1.50	.106 2.7	.002	●
	GTMH32200 ^R / _L SSH M	.079 2.00	.106 2.7	.002	●
 GTPA.. <small>1.18" (3.18)</small>	GTPA20FRN01	.079 2.00	.236 6.0	-.004	○
	GTPA25FRN01	.098 2.50	.236 6.0	-.004	○

NTK New and Unique Swiss Tooling


Back turning

Shape	Item Number	Max Depth of Cut b (Inch) (mm)	θ	r_e (Inch)	KM1	
					R	L
 TBP.. <small>0.08" (0.2)</small>	TBP60 ^R / _L V M	.209 5.3	60°	0.00	●	
	TBP60 ^R / _L V05 M	.209 5.3	60°	.002	●	
	TBP60 ^R / _L V10 M	.209 5.3	60°	.004	●	

Threading

Shape	Item Number	Hand	θ	f	r_e (Inch)	Pitch (TPI) (mm)	KM1
	TTP60FR4AS M	Right	60°	.016	(.002) MAX Flat	127-34 0.2-0.75	○
	TTP60FR8AS M		60°	.031	(R.002)	63-21 0.4-1.25	○
	TTP60FR4BS M		60°	.016	(.002) MAX Flat	127-34 0.2-0.75	○
	TTP60FR8BS M		60°	.031	(R.002)	63-21 0.4-1.25	○
	TTP60FR-NS M		60°	.049	(R.004)	25-17 1.0-1.5	○
	TTP60FL4AS M		Left	60°	.016	(.002) MAX Flat	127-34 0.2-0.75
	TTP60FL8AS M	60°		.031	(R.002)	63-21 0.4-1.25	○
	TTP60FL4BS M	60°		.016	(.002) MAX Flat	127-34 0.2-0.75	○
	TTP60FL8BS M	60°		.031	(R.002)	63-21 0.4-1.25	○
	TTP60FL-NS M	60°		.049	(R.004)	25-17 1.0-1.5	○

Cut off

Shape	Item Number	Hand	Max. Cut-off Dia. ϕD (Inch) (mm)	w (Inch)	θ	r_e (Inch)	KM1	
 CTP FR./FL.. Right-Hand Flat top Left-Hand Flat top	CTP10FRV M	Right	.472 12.0	.039	20°	0.0	●	
	CTP15FRV M		.472 12.0	.059	20°	0.0	●	
	CTP20FRV M		.472 12.0	.079	20°	0.0	●	
	CTP15FRNV M		.472 12.0	.059	0°	0.0	●	
	CTP20FRNV M		.472 12.0	.079	0°	0.0	●	
	CTP15FLKV M		Left	.433 11.0	.059	20°	0.0	●
	CTP15FLNV M	.472 12.0		.059	0°	0.0	●	
	CTP20FLNV M	.472 12.0		.079	0°	0.0	●	
	CTPA20FRV M	Right		.630 16.0	.079	20°	0.0	●
	CTPA20FRNV M			.630 16.0	.079	0°	0.0	●
	CTPA20FLKV M			Left	.571 14.5	.079	20°	0.0
	CTPA20FLNV M	.630 16.0	.079		0°	0.0	●	

Thread Whirling

Features



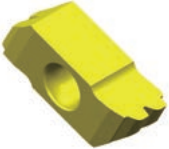
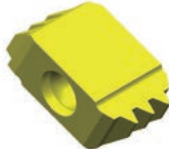
WATCH ON
New Double-lead video is on 



- NTK's unique patented design technology makes precise and correct inserts the first time, *without any redesign or remanufacture even if it is a multiple-lead thread*
- Sharp cutting edges produce a better surface finish and longer tool life than competitor's inserts

Form Double-lead or Multiple-lead with Single Pass

Patented

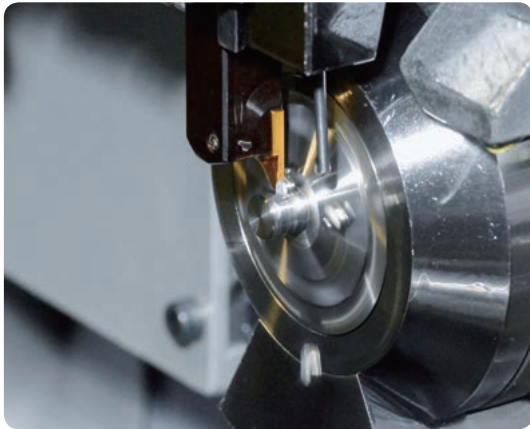
	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm gear
Work material	Ti-6Al-4V ELI	brass
Work appearance		
Insert appearance		
Major Dia.	$\phi .157"$ (4.0mm)	$\phi .278"$ (7.0mm)
Minor Dia.	$\phi .094"$ (2.4mm)	$\phi .185"$ (4.7mm)
Lead [Pitch×No. of Lead]	$.135"$ (3.42mm) [.067"×2(1.71mm×2)]	$.193"$ (4.9mm) [.064"×3(1.63mm×3)]

- Can reduce cycle time by more than half
- NTK can achieve what other competitors cannot

Double-lead Bone Screw Process Example

- 1 1st thread whirl at taper part
- 2 Rotate the bar 180° and whirl the 2nd thread on same part as **1**
- 3 Thread whirl whole straight part
- 4 Thread whirl at very last part to get two-exits, after back of bar has been backed up a half lead (one pitch) and rotated 180°

CTP-CX / CTPA-CX for Cut-off

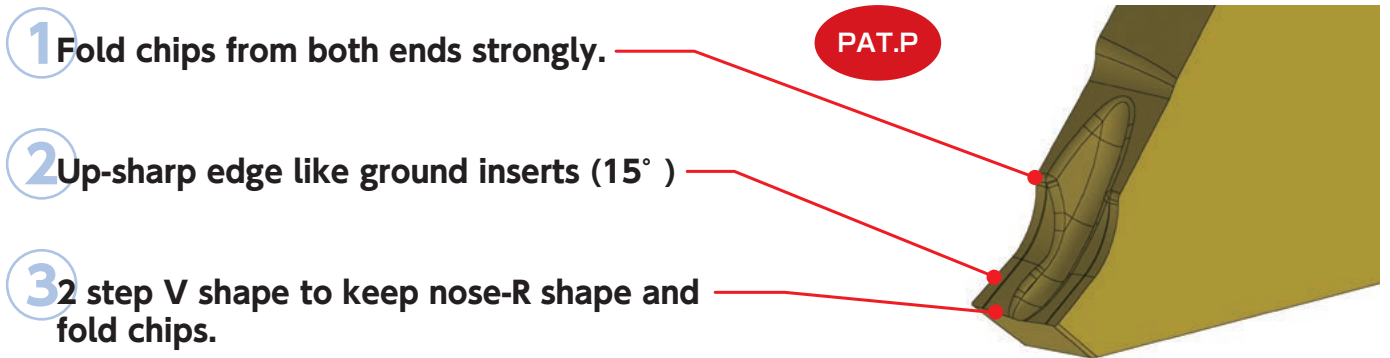


Features

WATCH ON
YouTube

- New 3D molded chipbreaker on CTP style inserts
- Excellent chip control and straight-line stability with proprietary designed CX chipbreaker.
- Fold chips strongly from both ends result superior machined surface finish

NTK New and
Unique Swiss Tooling



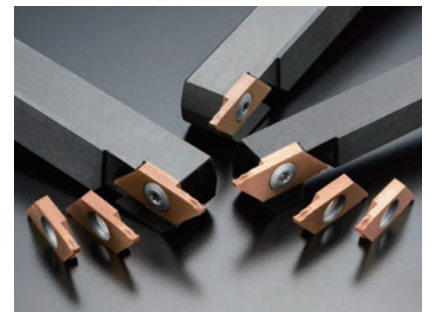
With lead angle

Neutral



Best Solution for Chip Control

Coolant through toolholders now available



Superior Surface Finish and Excellent Chip control

Feed IPR	CX chipbreaker		Conventional (ground chipbreaker)		Competitor (3D chipbreaker)	
	Chip	Surface finish	Chip	Surface finish	Chip	Surface finish
.0008						
.0020						
	Excellent machined surface finish		Rough surface finish		Vibration occurs by low rigidity	
Material : 304 SS (φ.315"), 260 SFM , WET Holder : CTPR12 Insert : CTP15FRN-CX DM4						

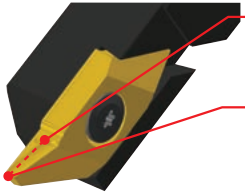
TBP-BM / TBPA-BM for Back Turning



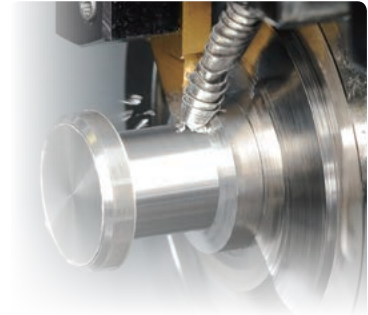
Features

- "Single Pass Back Turning" offers excellent surface finishes
- Up-right style insert and screw clamping provides high rigidity
- Wiper flat on cutting edge offers excellent surface finishes even under high feed cutting conditions

New BM chipbreaker

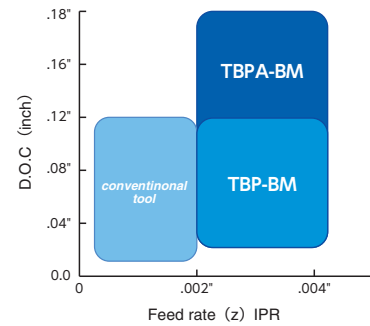
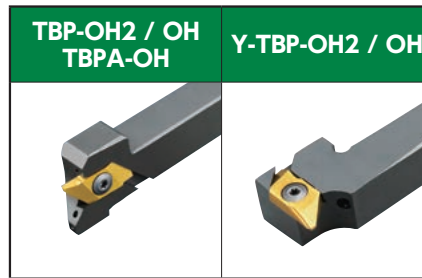


- Prevents the rough end face from hitting the chip
- Wiper flat on cutting edge creates excellent surface finishes



Best Solution for Chip Control

Coolant through toolholders now available



Superior Surface Finish

1Pass	BM chipbreaker		Competitor's tool	
	End face	OD	End face	OD
		 Ra : 0.72 μm Rz : 4.46 μm		 Ra : 1.65 μm Rz : 6.01 μm

Material : 304 SS (φ.630") , 260 SFM , Feed X : .0008 IPR , Feed Z : .0031 IPR , .118"DOC , WET

Excellent Chip Control

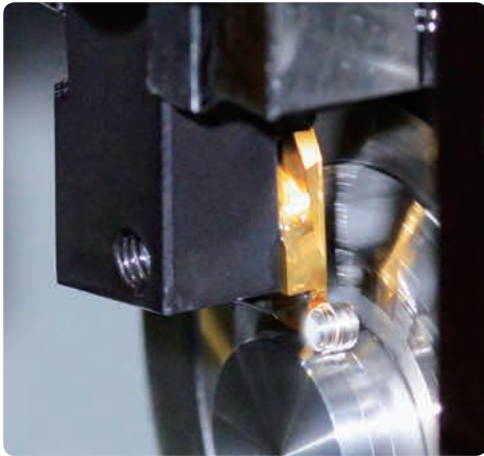
D.O.C (inch)	BM chipbreaker		Competitor	
	.002"	.003"	.002"	.003"
.020"				
.120"				

Material : 304 SS (φ.630") , 260 SFM , WET

GTMH-GX for Grooving / Side Turning

WATCH ON
YouTube

NTK New and
Unique Swiss Tooling

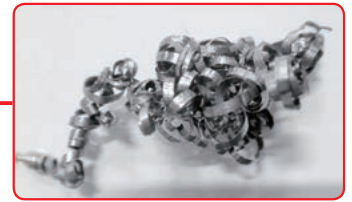


Features

- Can solve the problem of chips remaining in the grooves and bird's nest of chips
- Good surface finishes on groove side faces
- Up to .078" DOC side turning capability

Typical Grooving Problems

- Chips remain at the bottom of groove
- Bird's nest of chips



Excellent Chip Control

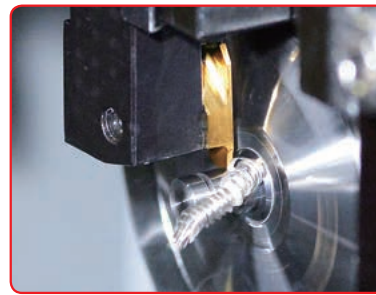
• Chipbreakers



Groove width .059"~



Groove width ~.039"



GX chipbreaker can solve these problems

• Grooving

DOC	Feed rate (IPR)		
	.0004"	.0011"	.0020"
GX chipbreaker			
Competitor's chipbreaker			

Material : 304 SS (φ .630"), 260 SFM, .059", DOC

Best Solution for Chip Control

Coolant through toolholders now available



• Side Turning

DOC	Feed rate (IPR)			
	.0004"	.0011"	.0020"	.0031"
.010"				
.020"				
.030"				

Material : 304 SS (φ .630"), 260 SFM, .030" width insert

Y-axis Toolholders

Chip control by gravity



Features

- Chip drops down to the bed of the machine due to gravity, and chip control problem is solved
- Available in coolant through style
- Front turning, grooving, and back turning operations can be performed by utilizing Y-axis control



- Perfect solution for chip problems
- Less wear, more stable dimensions

Programming guidance

Regular Toolholder					Y-axis Toolholder			
① T300				Select tool	① T300			
② G0	X .450	Z .000	T3	Position tool	② G0	Y .450	Z .000	T3
③					③	X .000		
④ G1	X .300		F .003	Move to OD to cut	④ G1	Y .300		F .003
⑤		Z .200	F .002	Cut .200" length	⑤		Z .200	F .002
⑥	X .400			Cut face	⑥	Y .450		
⑦ G0	X .450				⑦ G0	X .450		

Cut by X-axis

Cut by Y-axis

Note: Need Y-offset for holder shank size.

Front Turning

DC.. Series - Toolholders

Y-SDJC

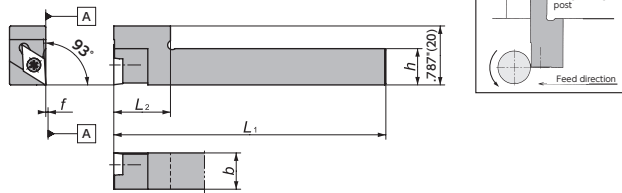


Figure-1

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SDNC

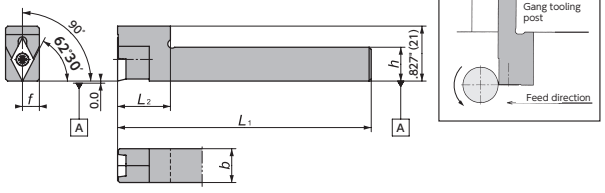
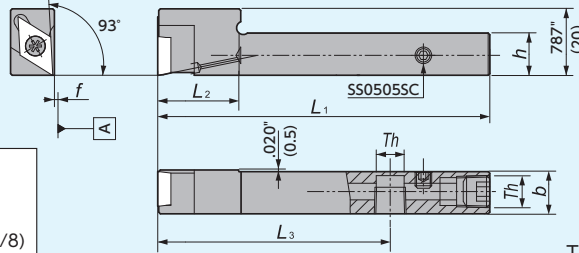


Figure-4

Takes Right-hand or Neutral insert

Y-SDJC-OH2 (Coolant through)

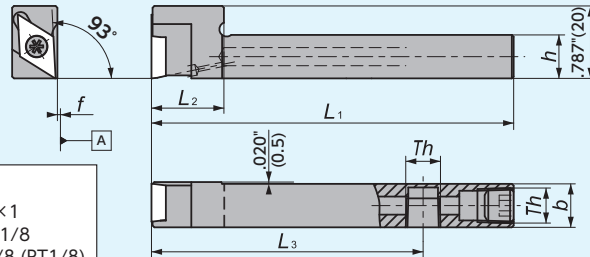


Th (Thread type)
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder : Rc1/8 (PT1/8)

Figure-2

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SDJC-OH (Coolant through)



Th (Thread type)
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder : Rc1/8 (PT1/8)

Figure-3

Right-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		h	b	L ₁	f	L ₂	L ₃	Th	Clamp Screw	Wrench
			R	L									
DC..21.5.. DC..21.5..WP	Y-SDJCR062-IN	1	●		3/8	3/8	4.724 120	0 0	.984 25	- -	-	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR082-IN	1	●		1/2	1/2	4.724 120	0 0	.984 25	- -	-	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR10-07S	1	○		.394 10.0	.394 10	4.724 120	0 0	.787 20	- -	-	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR12-07S	1	○		.472 12.0	.472 12	4.724 120	0 0	.787 20	- -	-	LRIS-2.5 × 7	CLR-15S
DC..32.5.. DC..32.5..WP	Y-SDJCR083-IN	1	●		1/2	1/2	4.724 120	0 0	.984 25	- -	-	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR103-IN	1	●		5/8	5/8	4.724 120	0 0	.984 25	- -	-	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR10-11MS	2	○		.394 10.0	.394 10	4.724 120	0 0	.866 22	- -	-	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR10-11S	2	○		.394 10.0	.394 10	4.724 120	0 0	.787 20	- -	-	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR12-11MS	2	○		.472 12.0	.630 16	4.724 120	0 0	.866 22	- -	-	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR12-11S	1	○		.472 12.0	.630 16	4.724 120	0 0	.787 20	- -	-	LRIS-4 × 10	LLR-25S-20 × 65
DC..21.5.. DC..21.5..WP	Y-SDJCR062H-IN-OH	3	●		3/8	3/8	3.937 100	0 0	.984 25	2.953 75	M6 × 1	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR082H-IN-OH	3	●		1/2	1/2	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR083H-IN-OH	3	●		1/2	1/2	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR083H-IN-OH2	2	●		1/2	1/2	3.937 100	0 0	.984 25	2.756 70	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR103H-IN-OH	3	●		5/8	5/8	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR1212H11S-OH	3	●		.472 12.0	.472 12.0	3.937 100	0 0	.787 20	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
DC..32.5.. DC..32.5..WP	Y-SDJCR1212H11S-OH2	2	●		.472 12.0	.472 12.0	3.937 100	0 0	.787 20	2.756 70	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR1616H11-OH	3	○		.630 16.0	.630 16.0	3.937 100	0 0	.984 25	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDNCN083-IN	4	●		1/2	1/2	4.724 120	1/4 6.35	.984 25	- -	-	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDNCN12-11S	4	○		.472 12.0	.472 12	4.724 120	.236 6.0	.787 20	- -	-	LRIS-4 × 10	LLR-25S-20 × 65
DC..32.5..	Y-SDNCN16-11S	4	○		.630 16.0	.630 16	4.724 120	.315 8.0	.787 20	- -	-	LRIS-4 × 10	LLR-25S-20 × 65

Inserts → Q20

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⊙ : Mirror finish
Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

NTK New and
Unique Swiss Tooling

VC.. Series - Toolholders

Y-SVJCR

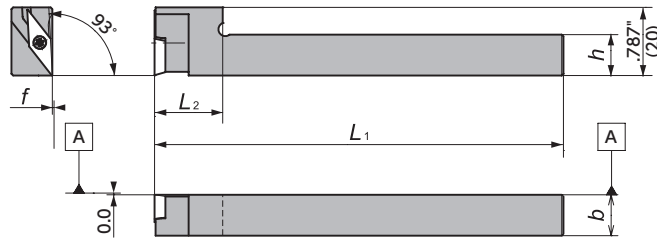


Figure-1

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SVJCR-OH2 (Coolant through)

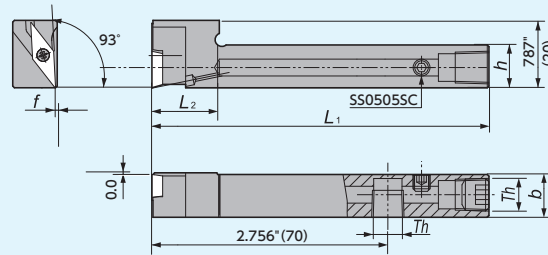


Figure-2

Th (Thread type)
Inch size holder: NPT1/8

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SVJCR-OH (Coolant through)

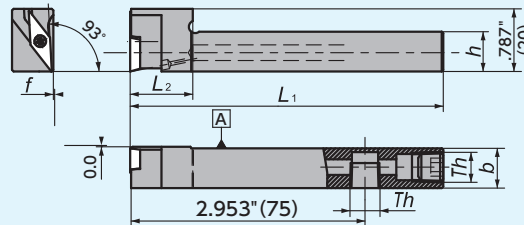


Figure-3

Th (Thread type)
Inch size holder: NPT1/8

Right-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		h		b		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
VC...22..	Y-SVJCR062-IN	1	●		3/8		3/8		4.724	120	0.0	0.0	.787	20	—	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR082-IN	1	●		1/2		1/2		4.724	120	0.0	0.0	.787	20	—	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR102-IN	1	●		5/8		5/8		4.724	120	0.0	0.0	.984	25	—	LRIS-2.5 × 7	CLR-15S
VC...22..	Y-SVJCR082HS-IN-OH	3	■		1/2		1/2		3.937	100	0.0	0.0	.787	20	NPT1/8	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR082HS-IN-OH2	2	●		1/2		1/2		3.937	100	0.0	0.0	.787	20	NPT1/8	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR102H-IN-OH	3	●		5/8		5/8		3.937	100	0.0	0.0	.984	25	NPT1/8	LRIS-2.5 × 7	CLR-15S
VC...22..	Y-SVJCR1212H11S-OH	3	□		.472	12	.472	12	3.937	100	0.0	0.0	.787	20	RC1/8(PT1/8)	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR1212H11S-OH2	2	●		.472	12	.472	12	3.937	100	0.0	0.0	.787	20	RC1/8(PT1/8)	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR1616H11S-OH	3	○		.630	16	.630	16	3.937	100	0.0	0.0	.787	20	RC1/8(PT1/8)	LRIS-2.5 × 7	CLR-15S

Inserts → Q27

Back Turning

TBP Series - Toolholders

Y-TBP

Screw accessible from both sides

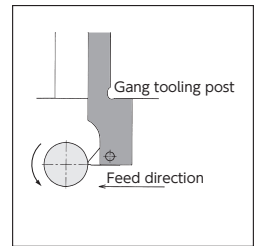
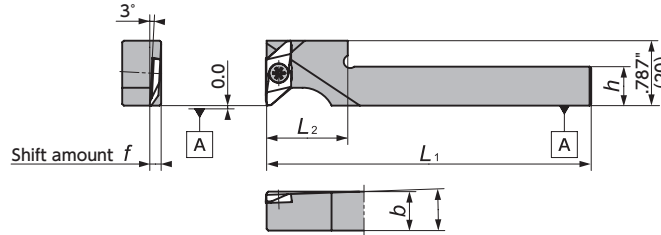


Figure-1

Right-Hand style shown
Takes Right-hand Insert

Y-TBP-OH2 (Coolant through)

Screw accessible from both sides

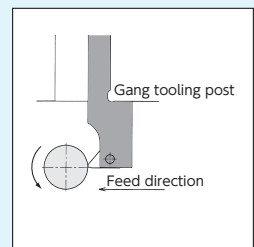
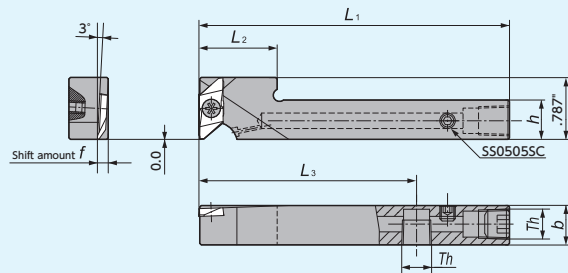


Figure-2

Right-Hand style shown
Takes Right-hand Insert

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Y-TBP-OH (Coolant through)

Screw accessible from both sides

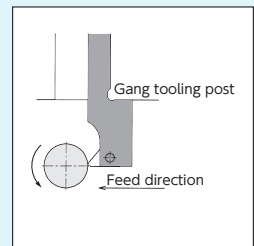
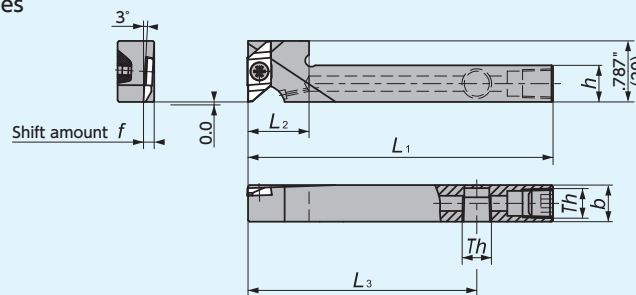



Figure-3

Right-Hand style shown
Takes Right-hand Insert

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

TBP Series - Toolholders

TBP

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
	Y-TBP% ₁ 06-IN	1	●		3/8	3/8	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LRIS-4 x 10PW CLR-15S
	Y-TBP% ₁ 08-IN	1	●		1/2	1/2	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 10-IN	1	●		5/8	5/8	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 10MS	1	○		.394 10	.394 10	—	4.724 120	.138 3.5	.866 22	—	—	—	—	LRIS-4 x 10PW CLR-15S
	Y-TBP% ₁ 10S	1	○		.394 10	.394 10	—	4.724 120	.138 3.5	.787 20	—	—	—	—	LRIS-4 x 10PW CLR-15S
	Y-TBP% ₁ 12MS	1	○		.472 12	.472 12	—	4.724 120	.138 3.5	.866 22	—	—	—	—	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 12S	1	○		.472 12	.472 12	—	4.724 120	.138 3.5	.787 20	—	—	—	—	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 08H-IN-OH	3	■		1/2	1/2	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	NPT1/8	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 08H-IN-OH2	2	●		1/2	1/2	—	3.937 100	.138 3.5	.984 25	—	—	2.756 70	NPT1/8	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 12HS-OH	3	■		.472 12	.472 12	—	3.937 100	.138 3.5	.787 20	—	—	2.953 75	Rc1/8(PT1/8)	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 12HS-OH2	2	●		.472 12	.472 12	—	3.937 100	.138 3.5	.787 20	—	—	2.756 70	Rc1/8(PT1/8)	LRIS-4 x 12PW CLR-15S
	Y-TBP% ₁ 16H-OH	3	○		.630 16	.630 16	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	Rc1/8(PT1/8)	LRIS-4 x 12PW CLR-15S

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
⊕ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⊕ : Coolant through

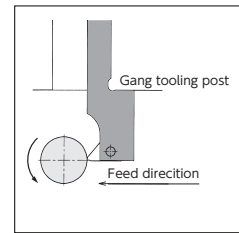
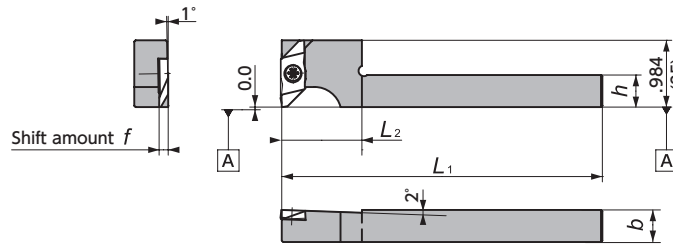
Ⓡ Ⓛ : 1-2 week delivery (Right / Left-hand only)
Ⓡ Ⓛ : 1-2 week delivery (Right / Left-hand only, Newly added)

NTK New and Unique Swiss Tooling

TBPA (CTPA) Series - Toolholders

Y-CTPA


Screw accessible from both sides



Right-Hand style shown
Takes Right-hand Insert

Figure-1

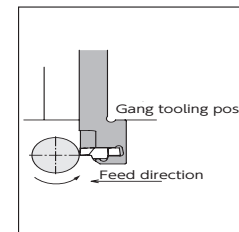
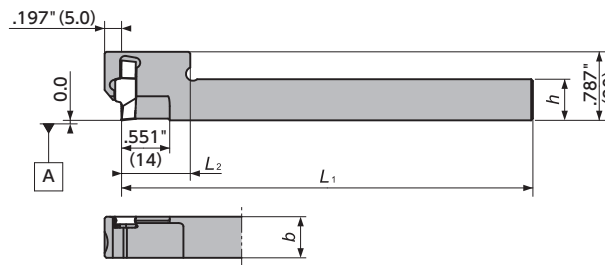
CTPA

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
 TBPA..	Y-CTPA%{08L-IN	1	●		1/2	1/2	— —	4.724 120	1.34 34	1.181 30	— —	— —	—	LRIS-4 × 12PW	CLR-15S

Inserts →R9

TBDP Series - Toolholders


Y-TBDP



Right-Hand style shown

Figure-1

TBDP

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Clamp Screw	Wrench
			R	L										
 TBDP..	Y-TBDPR12S	1	○		.472 12	.472 12	— —	4.724 120	.081 2.05	.787 20	— —	— —	LRIS-4 × 12	LLR-25S

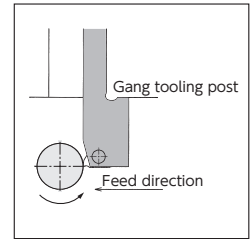
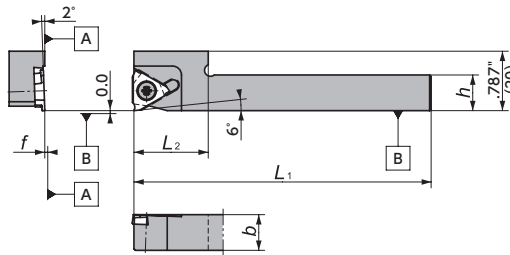
Inserts →R12

Grooving / Side turning / Back turning

GTT Series - Inserts

Y-GTT

Screw accessible from both sides

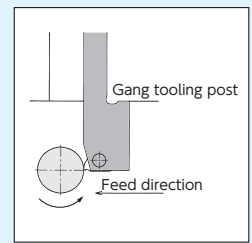
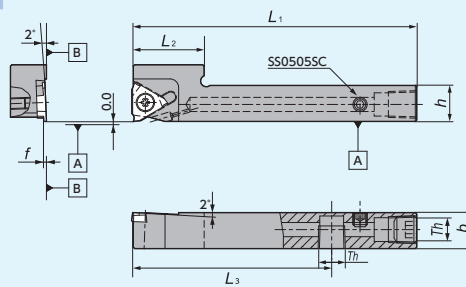


Right-Hand style shown
Takes Right-hand Insert

Figure-1

Y-GTT-OH2 (Coolant through)

Screw accessible from both sides



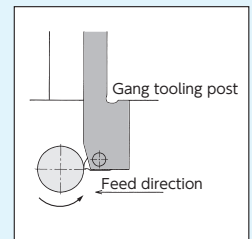
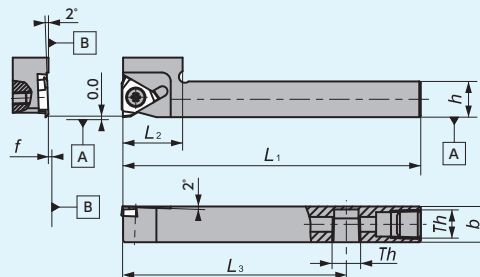
Right-Hand style shown
Takes Right-hand Insert

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-2

Y-GTT-OH (Coolant through)

Screw accessible from both sides



Right-Hand style shown
Takes Right-hand Insert

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-3

GTT

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	a _r (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
TBMH32..	Y-GTTR%{06-IN	1	●		3/8	3/8	-	4.724 120	.000 0	.984 25.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTTR%{08-IN	1	●		1/2	1/2	-	4.724 120	.000 0	.984 25.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTTR%{10-IN	1	●		5/8	5/8	-	4.724 120	.000 0	.984 25.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%{10MS	3	○		.394 10	.394 10	-	4.724 120	.000 0	.866 22.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%{10S	1	○		.394 10	.394 10	-	4.724 120	.000 0	.787 20.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%{12MS	3	○		.472 12	.472 12	-	4.724 120	.000 0	.866 22.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%{12S	1	○		.472 12	.472 12	-	4.724 120	.000 0	.787 20.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%{08H-IN-OH	3	■		1/2	1/2	-	3.937 100	.000 0	.984 25.0	.063 1.6	2.756 70	NPT1/8	LR-5-4×10PW	CLR-15S
	Y-GTT%{08H-IN-OH2	2	●		1/2	1/2	-	3.937 100	.000 0	.984 25.0	.063 1.6	2.953 75	NPT1/8	LR-5-4×10PW	CLR-15S
	Y-GTT%{12H00S-OH	3	■		.472 12	.472 12	-	3.937 100	.000 0	.787 20.0	.063 1.6	2.756 70	Rc1/8 (PT1/8)	LR-5-4×10PW	CLR-15S
	Y-GTT%{12H00S-OH2	2	●		.472 12	.472 12	-	3.937 100	.000 0	.787 20.0	.063 1.6	2.953 75	Rc1/8 (PT1/8)	LR-5-4×10PW	CLR-15S
	Y-GTT%{16H00-OH	3	○		.630 16	.472 16	-	3.937 100	.000 0	.984 25.0	.063 1.6	2.953 75	Rc1/8 (PT1/8)	LR-5-4×10PW	CLR-15S

Inserts →R20 · T12

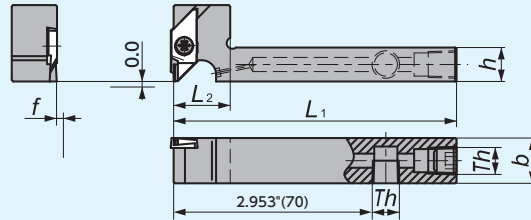
NTK New and Unique Swiss Tooling

Multi-functional Grooving for non-ferrous material

GTPA Series - Inserts

Y-GTPA-OH (Coolant through)

Screw Accessible from both sides



Th (Thread type)
Metric size holder:
Rc1/8 (PT1/8)

Figure-1

Right-Hand style shown

Y-GTPA

Screw Accessible from both sides

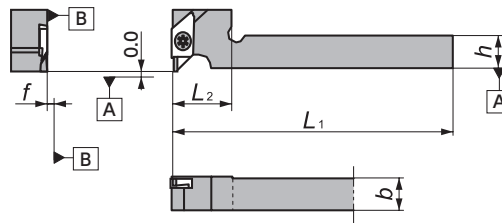





Figure-2

Right-Hand style shown

GTPA

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
 GTPA	Y-GTPA%1216HS-OH 	1	○		.472	12	.630	16	—	—	2.756	70	.004	0.1	.787	20	Rc1/8(PT1/8)	LR15-4 × 12PW	CLR-15S
	Y-GTPA%1216H-OH 	1	○		.630	16	.630	16	—	—	2.756	70	.004	0.1	.984	25	Rc1/8(PT1/8)	LR15-4 × 12PW	CLR-15S
	Y-GTPA%1216	2	○		.472	12	.630	16	—	—	4.724	120	.004	0.1	.787	20	—	LR15-4 × 12PW	CLR-15S

Inserts [→T22](#)

CUT MAX



Features

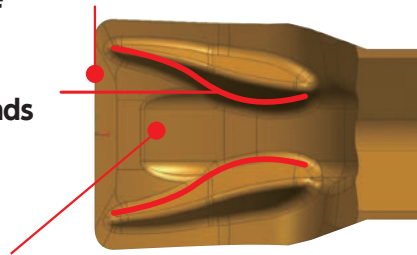
- New double-edge cut-off tools with 3mm width for max. cut-off diameter of 42mm
- Original 'S' shape chipbreaker provides controlled chip evacuation

NTK New and Unique Swiss Tooling

1 Chip control

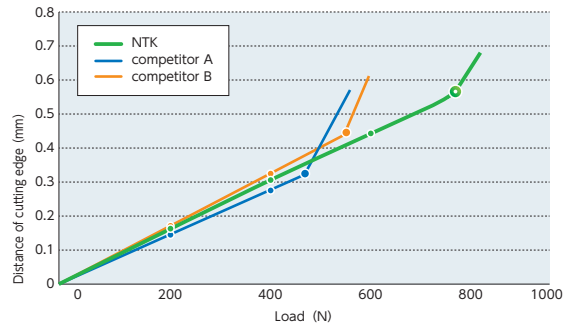
- Straight design improves toughness of cutting edge

- Folds chips from both ends strongly



- High rake angle for up-sharp edge

2 High rigidity



- Improved reliability and productivity on high-load cut-off application

Case study

Feed IPR	CUT MAX		Competitor A (3D molded low cutting force type chipbreaker)		Competitor B (3D molded rigid type chipbreaker)	
	Chip	Surface finish	Chip	Surface finish	Chip	Surface finish
.0012						
.0020						
.0039						
	Excellent machined surface finish		In high feed rate area, rough surface finish		In low feed rate area, rough surface finish	
Cutting condition : 330SFM WET Material : 1045 (φ 1.653") Holder : CTWPR2020K-3D42 Insert : GWPFM300N02-GT DM4						

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

DS-ACH Toolholders



Features

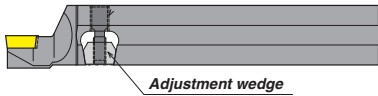
- Adjust centerline height simply with a wrench

1 Adjust centerline height easily Patented

- Eliminate center boss on end faces
- Provide constant OD dimension
- Adjust easily in machine



2 Adjustment wedge goes down

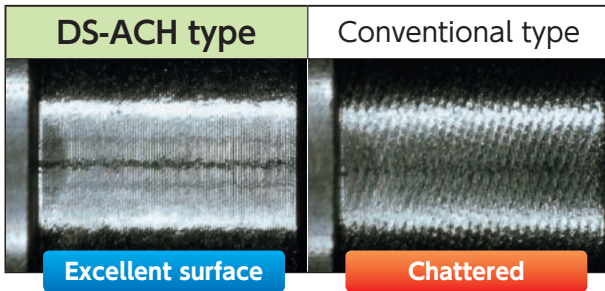


3 Insert edge moves up

Range of centerline height adjustment
0 - .008"

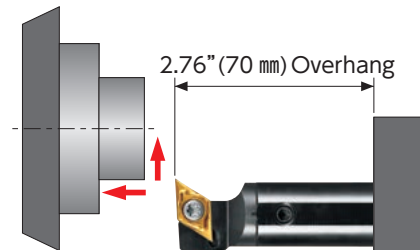
2 Optimized design reduces vibration

Improved chatter resistance.



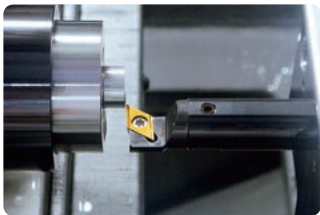
Tested cutting conditions (304 SS)

Work material : 304 SS
Holder : DS-SDUL19-11-ACH
Insert : DCGT32.508MCL TM4
Cutting condition : 250 SFM .002 IPR .079" DOC WET

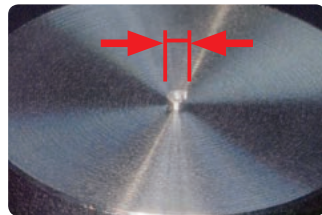


How to use

Insert moves in an upward direction only. (Loosen wedge screw before making any adjustment)



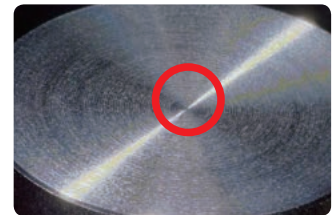
① Install the holder slightly below centerline. Then take a facing test cut.



② Measure the diameter of the centerboss.



③ Raise the center height by one half of the diameter of the boss. Adjustment references are available in the tool case.



④ Re-machine the end face.

*Adjustment instructions are supplied in the tool case

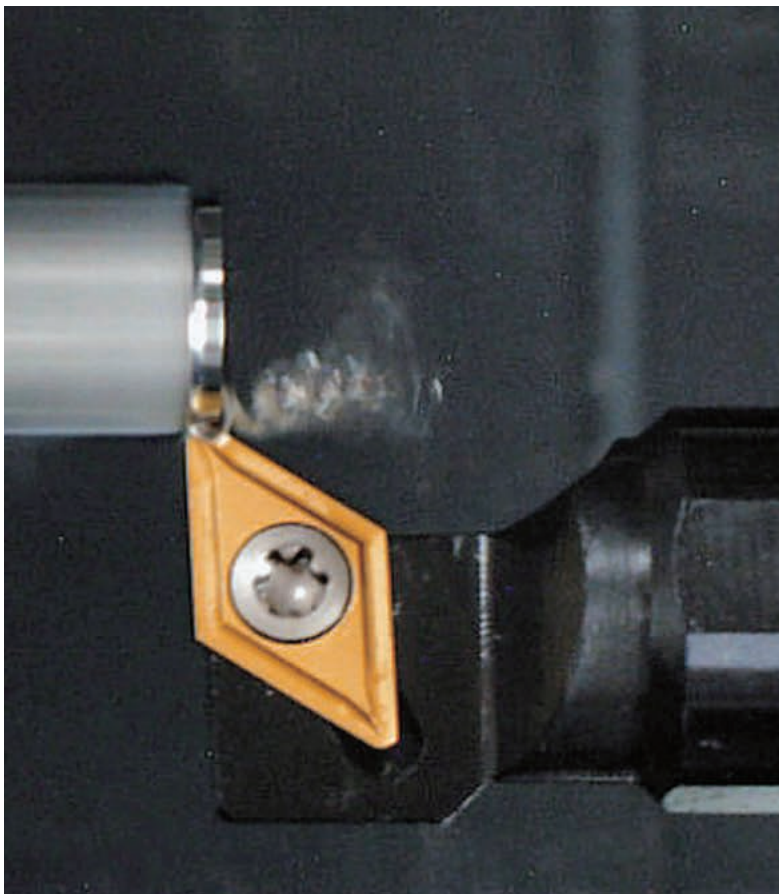
DS Toolholders

Make the most of vacant drill sleeves

DS / DS-ACH Toolholders



NTK New and
Unique Swiss Tooling



Are you satisfied with the number of tool positions in your machine?

NTK DS type toolholders are useful when additional tool positions are required

Front turning, Back turning, Grooving, Threading, and Small boring which fit into the machines' vacant drill sleeves

DS Series toolholders can be used with both Swiss or non-Swiss type CNC lathes

Features

- More turning tools without any hassle
- Available for Front turning, Back turning, Grooving, Threading, Micro-boring, and interchangeable tooling
- Available shank size range: from .511"(14mm) to 1"(25.4mm)

Front Turning

CC.. Series - Toolholders

DS-SCLL-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ .866" (22)		
φ 1" (25.4)		

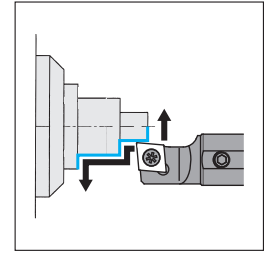
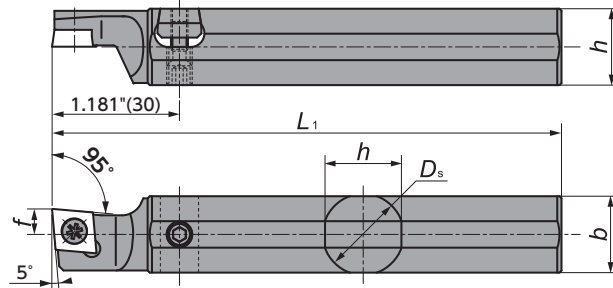


Figure-1

Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SCL

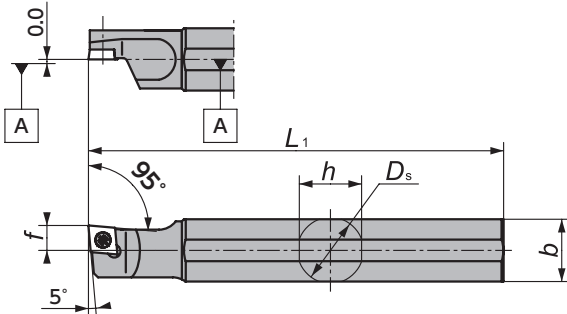


Figure-2

DS-SCL (Coolant through)

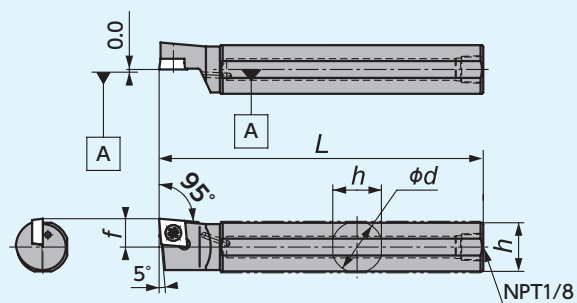


Figure-3

Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SCL (Takes right-hand or neutral insert)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CC..21.5..	DS-SCL%14F-06	2	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%15H-06	2	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%16F-06	2	○	○	.630	16.000	.591	15	.591	15	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%19-06	2	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%20X-06	2	○	○	.787	20.000	.748	19	.748	19	3.740	95	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%20-06	2	●	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%22-06	2	○	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%25-06MET	2	○	○	.984	25.000	.945	24	.945	24	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
DS-SCL%25-06	2	○	○	1	25.400	.945	24	.945	24	5.906	150	.236	6.0	LRIS-2.5 × 7	CLR-15S	
CC..32.5..	DS-SCL%14F-09	2	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%15H-09	2	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%16F-09	2	○	○	.630	16.000	.591	15	.591	15	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19GX-09	2	○	○	3/4	19.050	.709	18	.709	18	3.346	85	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09	2	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09-004	3	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.413	10.5	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20X-09	2	○	○	.787	20.000	.748	19	.748	19	3.740	95	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20-09	2	●	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09	2	●	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09-005	3	●	○	.866	22.000	.827	21	.827	21	4.724	120	.472	12.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09MET	2	○	○	.984	25.000	.945	24	.945	24	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09	2	○	○	1	25.400	.945	24	.945	24	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%32-09	2	○	○	1.260	32.000	1.181	30	1.181	30	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%16F-09-ACH	1	○	○	.630	16.000	.610	15.5	.610	15.5	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09-ACH	1	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20-09-ACH	1	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09-ACH	1	○	○	.866	22.000	.827	21.0	.827	21.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
DS-SCL%25-09MET-ACH	1	○	○	.984	25.000	.945	24.0	.945	24.0	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65	
DS-SCL%25-09-ACH	1	○	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65	

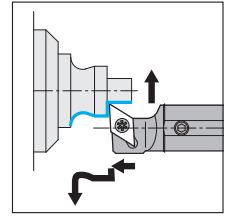
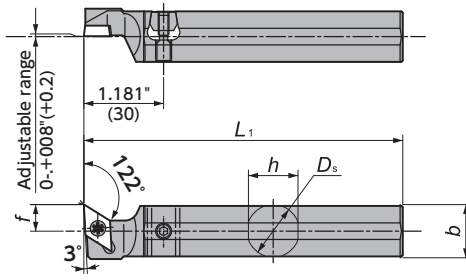
DC.. Series - Toolholders

DS-SDU-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ .866" (22)		
φ 1" (25.4)		

Figure-1



Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SDU

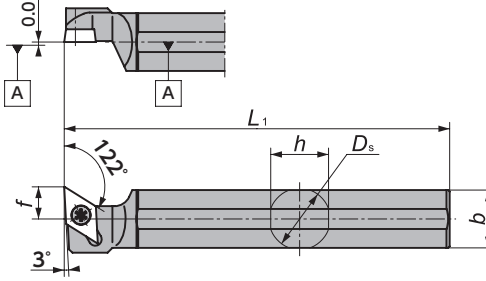
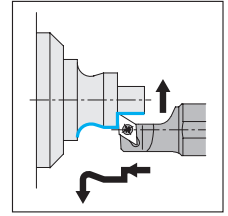


Figure-2



Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SDX / DS-SDX (Coolant through)

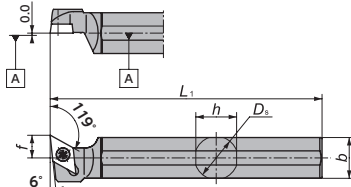


Figure-3

DS-SDXL22-11-006 (Coolant through)

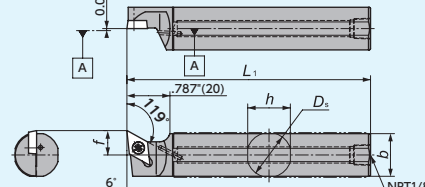
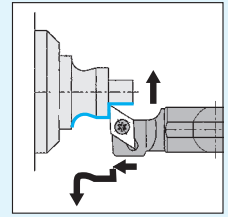


Figure-4



Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
DC..21.5.. DC..21.5..WP	DS-SDU%14F-07	2		○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%15H-07	2		○	.578	15.875	.591	15.0	.591	15.0	3.937	100	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%16F-07	2		○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%16X-07	2		○	.630	16.000	.591	15.0	.591	15.0	3.740	95	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%19-07	2		○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%20X-07	2		○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%20-07	2		●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
DS-SDU%22-07	2		●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S	
DC..32.5.. DC..32.5..WP	DS-SDU%14F-11	2		○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%16F-11	2		○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%19-11	2		●	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%19-11SPL	2		○	3/4	19.050	.709	18.0	.709	18.0	6.300	160	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%20X-11	2		○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%20-11	2		●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%22-11	2		●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%23-11-007	2		○	.906	23.000	.866	22.0	.866	22.0	2.756	70	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%25-11MET	2		●	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%25-11	2		●	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%25-11SPL	2		○	1	25.400	.945	24.0	.945	24.0	5.906	150	.492	12.5	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%16F-11-ACH	1	●	○	.630	16.000	.610	15.5	.610	15.5	3.150	80	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%19-11-ACH	1		●	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%20-11-ACH	1		●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%22-11-ACH	1		●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%25-11MET-ACH	1		●	.984	25.000	.945	24.0	.945	24.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDU%25-11-ACH	1		●	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDX%22-11-006	4	●	○	.866	22.000	.827	21.0	.827	21.0	4.724	120	.472	12.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDX%19-11	3		○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDX%20X-11	3		○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-SDX%20-11	3		○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
DS-SDX%25-11MET	3		○	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65	
DS-SDX%32-11	3		○	1.260	32.000	1.181	30.0	1.181	30.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65	

Inserts → Q20

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Mirror finish
Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

NTK New and
Unique Swiss Tooling

VC.. Series - Toolholders

DS-SVX

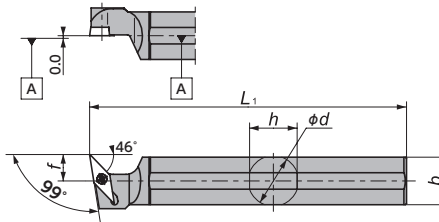


Figure-1

Gage Insert	Item Number	Figure	Stock		ϕd		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VC..22..	DS-SVX $\frac{1}{4}$ 14F-11	1	○	○	.551	14.000	.512	13	.512	13	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 15H-11	1	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 16F-11	1	●	○	.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 19-11	1	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 19-11SPL	1	○	○	3/4	19.050	.709	18	.709	18	6.299	160	.433	11.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 20X-11	1	○	○	.787	20.000	.748	19	.748	19	3.740	95	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 20-11	1	●	○	.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 22-11	1	●	○	.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 25-11MET	1	○	○	.984	25.000	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S
DS-SVX $\frac{1}{4}$ 25-11	1	●	○	1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S	

Inserts → Q27

VP..08 Series - Toolholders

DS-SVXP

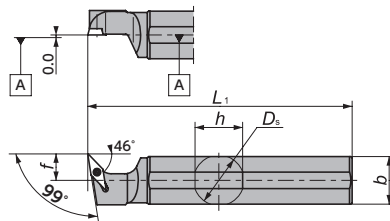


Figure-2

Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..0802	DS-SVXP $\frac{1}{4}$ 19-08	2	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP $\frac{1}{4}$ 20-08	2	○	○	.787	20.000	.748	19	.748	19	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP $\frac{1}{4}$ 22-08	2	○	○	.866	22.000	.827	21	.827	21	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP $\frac{1}{4}$ 25-08	2	○	○	1	25.400	.945	24	.945	24	5.906	150	.394	10	LRIS-2 × 6	CLR-13S

Inserts → Q29

VP..22 Series - Toolholders

DS-SVVP-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
$\phi .630"$ (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
$\phi 3/4"$ (19.05)		
$\phi .787"$ (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
$\phi .866"$ (22)		
$\phi 1"$ (25.4)		

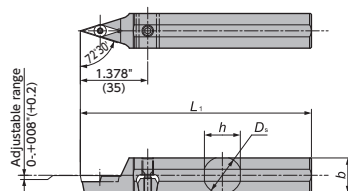


Figure-3

DS-SVVP

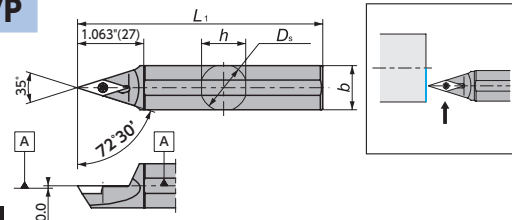


Figure-4

Gage Insert	Item Number	Figure	Stock	D_s		h		b		L_1		Clamp Screw	Wrench
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..22	DS-SVVPN19-11	4	○	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN22-11	4	○	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN16-11-ACH	3	●	.630	16.000	.610	15.5	.610	15	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN19-11-ACH	3	●	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN20-11-ACH	3	●	.787	20.000	.748	19.0	.748	19	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN22-11-ACH	3	●	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN25-11-ACH	3	●	1	25.400	.945	24.0	.945	24	5.906	150	LRIS-2.5 × 7	CLR-15S

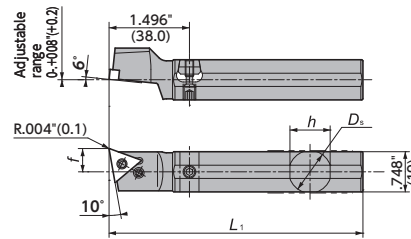
Inserts → Q30

TN.. Series - Toolholders

DS-PTX-ACH (Adjustable centerline height)

(Parts)		
Shank	Wedge	Screw for Wedge
φ.630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ.3/4" (19.05)		
φ.787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ.866" (22)		
φ.1" (25.4)		

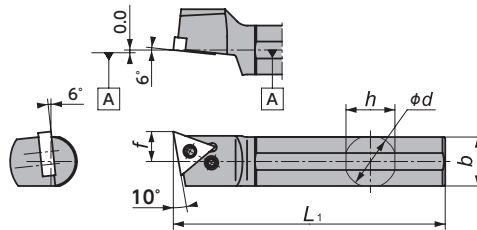
Shim	Clamp Pin	Spring
-	LCL33N	-



Left-Hand style shown
Takes Right-hand or Neutral insert.

Figure-1

DS-PTX



Shim	Clamp Pin	Spring
-	LCL33N	-

Left-Hand style shown
Takes Right-hand or Neutral insert.

Figure-2

DS-PTX / DS-PTX-ACH



Gage Insert	Item Number	Figure	Stock		D_s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
			R	L							
TN...33..	DS-PTX [®] 19-33	2	○	○	3/4 19.050	.709 18.0	.709 18	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX [®] 20-33	2	○	○	.787 20.000	.748 19.0	.748 19	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX [®] 22-33	2	○	○	.866 22.000	.827 21.0	.827 21	4.724 120	.472 12.0	LCS33	LW-2
	DS-PTX [®] 25M-33	2	○	○	1 25.400	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2
TN...33..	DS-PTX [®] 16-33-ACH	1	●	●	.630 16.000	.610 15.5	.591 15	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX [®] 19-33-ACH	1	●	●	3/4 19.050	.709 18.0	.709 18	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX [®] 20-33-ACH	1	●	●	.787 20.000	.748 19.0	.748 19	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX [®] 22-33-ACH	1	●	●	.866 22.000	.827 21.0	.827 21	4.724 120	.472 12.0	LCS33	LW-2
	DS-PTX [®] 25-33MET-ACH	1	●	●	1 25.000	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2
	DS-PTX [®] 25-33-ACH	1	●	●	1 25.400	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2

Inserts → Q36

Back Turning

TBP.. Series - Toolholders

DS-TBP

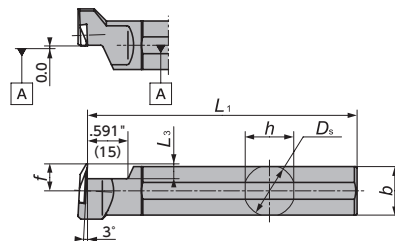


Figure-1

Left-Hand style shown
Takes Right-hand Insert

DS-TBP (Takes right-hand inserts)

Gage Insert	Item Number	Figure	Stock		D_s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	L_3 (Inch) (mm)	Clamp Screw	Wrench
			R	L								
TBP..FR..	DS-TBP [®] 19	1	○	○	3/4 19.050	.709 18	.709 18	4.724 120	.433 11.0	.217 5.5	LRIS-4 × 10	LLR-25S-20×65
	DS-TBP [®] 20	1	○	○	.787 20.000	.748 19	.748 19	4.724 120	.433 11.0	.217 5.5	LRIS-4 × 10	LLR-25S-20×65
	DS-TBP [®] 25	1	○	○	1.00 25.400	.945 24	.945 24	5.906 150	.512 13.0	.217 5.5	LRIS-4 × 10	LLR-25S-20×65

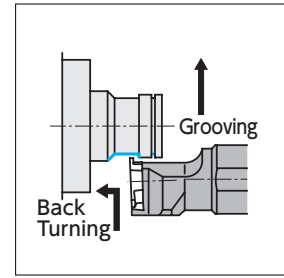
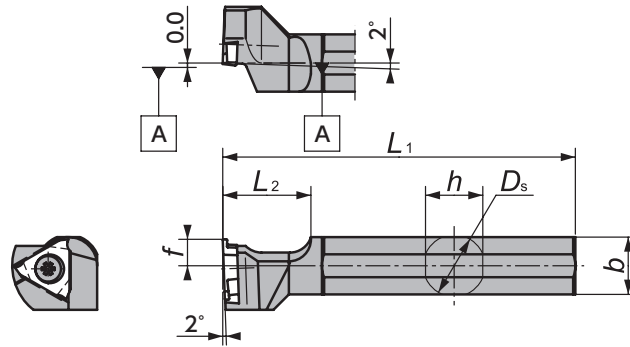
Inserts → R9

NTK New and Unique Swiss Tooling

Grooving / Side Turning / Back Turning

GTT.. Series - Toolholders


DS-GTT



Left-Hand style shown
Takes Right-hand Insert

Figure-1

DS-GTT

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		L_2		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TBMH32.. GTM.32 TMG32	DS-GTT $\frac{1}{4}$ 14F	1	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 15H	1	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 16X	1	●	○	.630	16.000	.591	15	.591	15	3.740	95	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 19	1	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 20	1	●	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 22	1	●	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 25-MET	1	○	○	.984	25.000	.945	24	.945	24	4.724	120	.394	10	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 25	1	●	○	1	25.400	.945	24	.945	24	5.906	150	.394	10	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 32	1	○	○	1.260	32.000	1.181	30	1.181	30	5.906	150	.394	10	.787	20	LR-5-4 × 9	RLR-20S

Inserts → R20 · T12

Face Grooving

FGV.. Series - Toolholders

DS-FGV

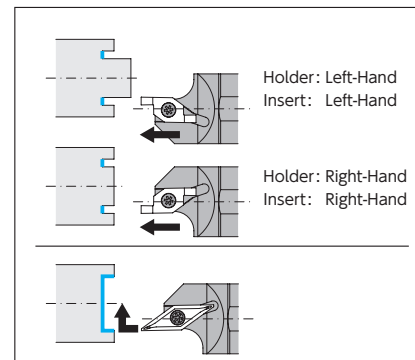
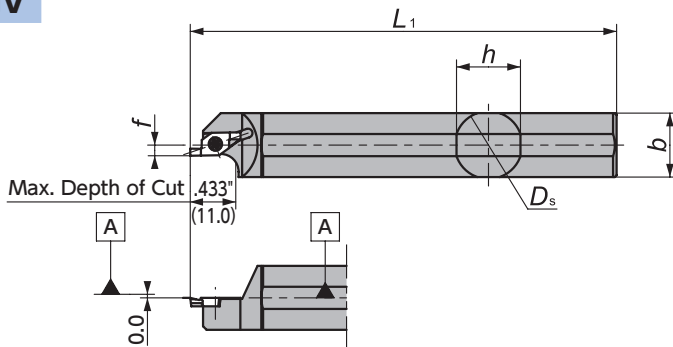



Figure-1

Right-Hand with FGV style shown

DS-FGV

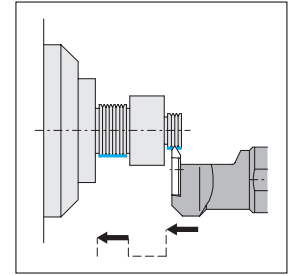
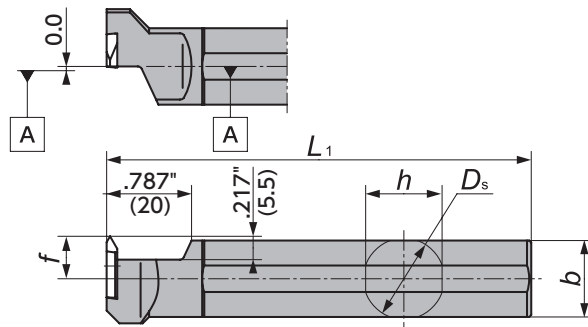
Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 FGV FBV	DS-FGV $\frac{1}{4}$ 16-012	1	○	○	.630	16.000	.591	15	.591	15	3.150	80	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 19	1	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 20	1	○	○	.787	20.000	.748	19	.748	19	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 22	1	○	○	.866	22.000	.827	21	.827	21	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 22M	1	○	○	.866	22.000	.827	21	.827	21	5.906	150	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 25-MET	1	○	○	.984	25.000	.945	24	.945	24	5.906	150	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 25	1	○	○	1	25.400	.965	24.5	.965	24.5	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S

Inserts → T21

Threading

TTP.. Series - Toolholders

DS-TTP



NTK New and Unique Swiss Tooling

Figure-1

Left-Hand style shown
Takes Right-Hand insert.

DS-TTP

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	DS-TTP $\frac{1}{4}$ 16F	1	○	○	.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 19	1	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 20	1	●	○	.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 22	1	●	○	.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 25-MET	1	○	○	.984	25.000	.945	24	.945	24	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 25	1	●	○	1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65

Inserts →U11

STTN.. Series - Toolholders

DS-STT

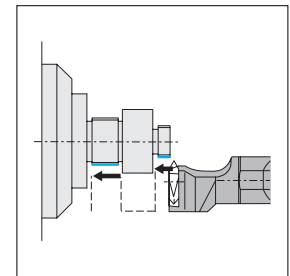
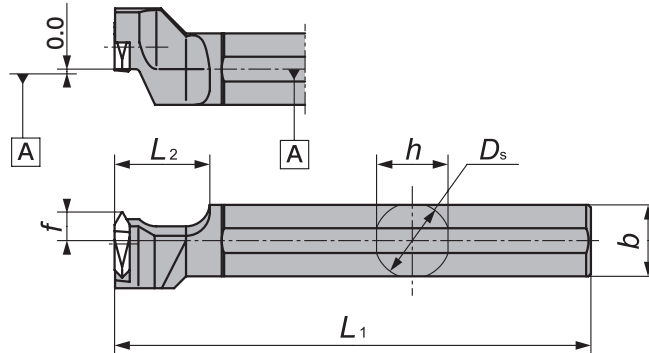


Figure-2

Left-Hand style shown
Takes Right-Hand insert.

DS-STT $\frac{1}{4}$

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	DS-STT $\frac{1}{4}$ 14F	2	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT $\frac{1}{4}$ 15H	2	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT $\frac{1}{4}$ 16X*	2	○	○	.630	16.000	.591	15	.591	15	3.346	85	.236	6.0	LR-S-4 × 9	RLR-20S

Inserts →U14

ID Boring

LBM.. Series - Toolholders

DS-LBMB

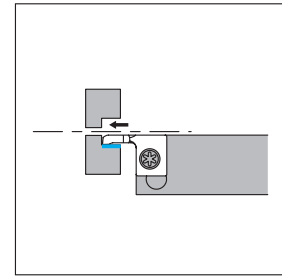
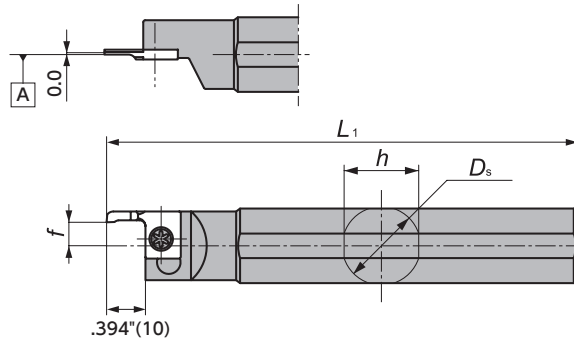



Figure-1

Left-Hand style shown

LBMAR / CH-TTPL

Gage Insert	Item Number	Figure	Stock		D_s		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 Long type	DS-LBMBL14F	1	○	○	.551	14.000	.512	13	.512	13	—	—	3.150	80 *1	*3	*3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL15H	1	○	○	5/8	15.875	.591	15	.591	15	—	—	3.937	100 *1	*3	*3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL16X	1	●	○	.630	16.000	.591	15	.591	15	—	—	3.740	95 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL19	1	●	○	3/4	19.050	.709	18	.709	18	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL20	1	●	○	.787	20.000	.748	19	.748	19	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL22	1	●	○	.866	22.000	.827	21	.827	21	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25-MET	1	○	○	.984	25.000	.945	24	.945	24	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25	1	○	○	1	25.400	.945	24	.945	24	—	—	5.906	150 *1	*2	*2	LRIS-4 × 10PW	CLR-15S

Inserts 

Interchangeable Tooling

CSV.. Series - Toolholders

DS-CSVL

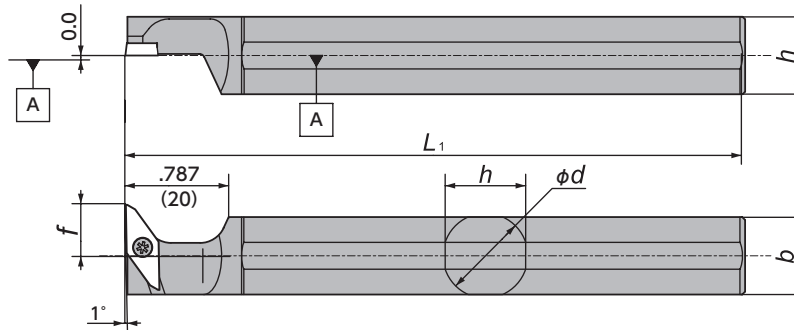



Figure-1

Left-Hand style shown
Takes right-hand inserts

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	1	●	○	5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

Inserts 

DS Sleeve

Features

- Prevents coolant and chips from damaging live tool stations
- Accepts DS Series holders to perform various back working
- Designed exclusively for 22mm(.866") and 34mm(1.339") round shank stations
- Compatible with 16mm(.630") / 22mm(.886") round shank DS Series holders

WATCH ON
YouTube



NTK New and
Unique Swiss Tooling

First Recommendation for Turning

✗

Coolant and chips sneak in.

When DS holders are used directly in live tool stations, coolant and chips sneak in from the flat of holders to damage the live stations

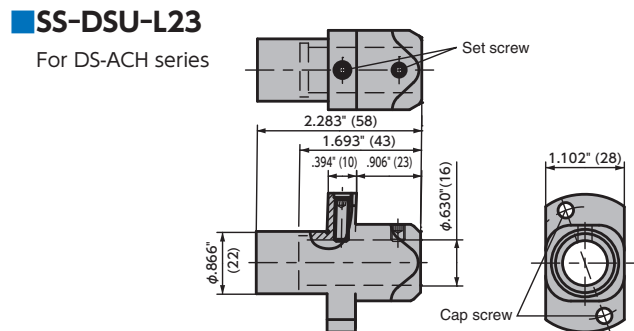
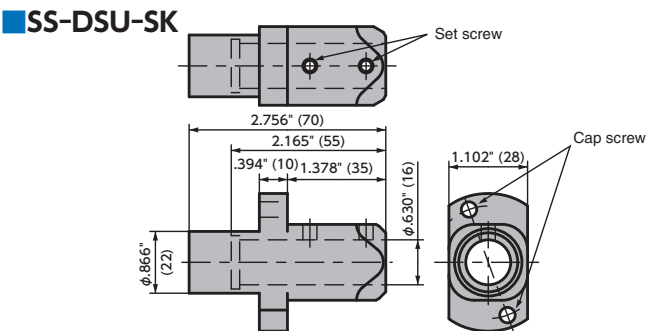
✓

How it works

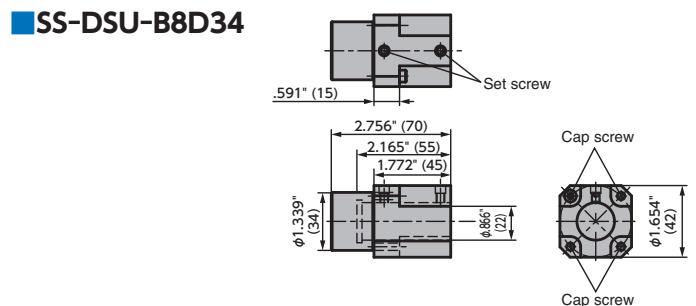
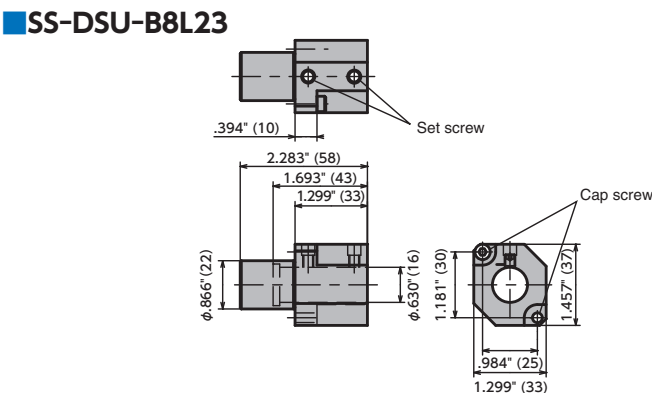
Stop coolant and chips from damaging live tool stations.

By using the DS Sleeve, you can use the DS Series holders without any worry about damaging live stations

For Back 4-spindle unit



For Back 8-spindle unit



Item number	Stock	Spare parts				Coment
		Cap screw	Wrench	Set screw	Wrench	
SS-DSU-SK	●	CS0520	LW-4	SS0506	LW-2.5	
SS-DSU-L23	●	CS0520	LW-4	SS0506 SS0515	LW-2.5	For DS-ACH Series
SS-DSU-B8L23	●	CS0420	LW-3	SS0506	LW-2.5	Can take DS-ACH Series
SS-DSU-B8D34	●	CS0425	LW-3	SS0506	LW-2.5	

Machine Information → Y29

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

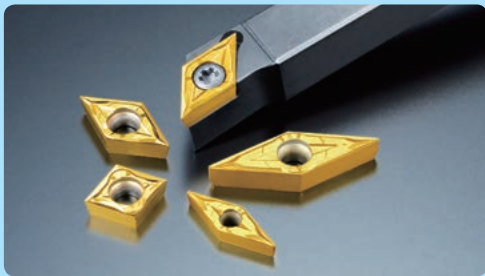
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Front Turning Chipbreaker Quartet

NTK New and Unique Swiss Tooling

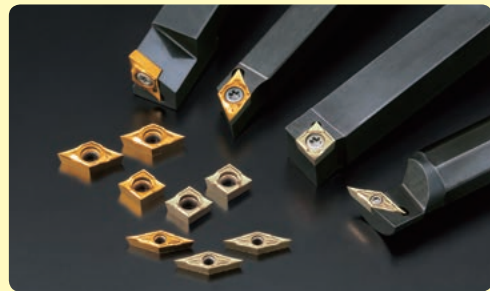
YL Chipbreaker



- Great combination of sharpness and toughness
- Covers extremely wide range
- Excellent chip control

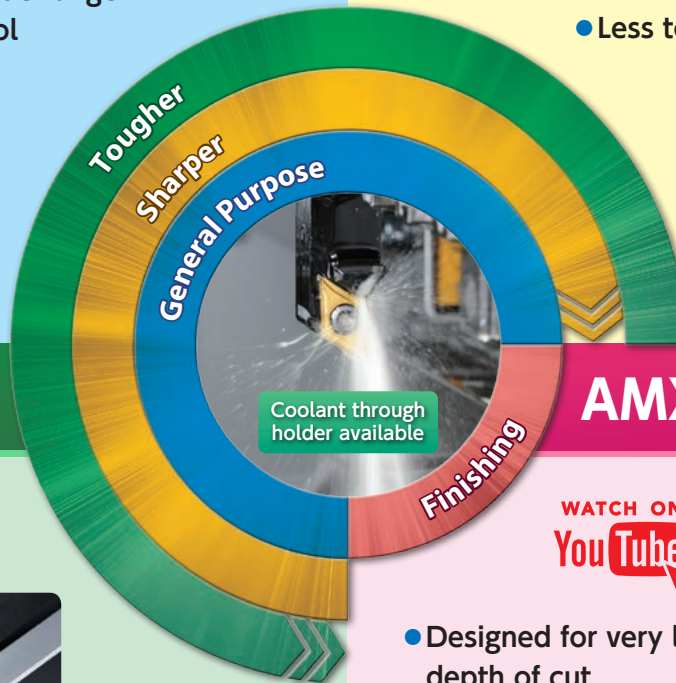
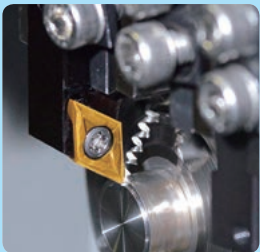
WATCH ON
YouTube

CL Chipbreaker



- Sharpest molded Chipbreaker
- Excellent chip control
- Less tool pressure

WATCH ON
YouTube



AM3 Chipbreaker

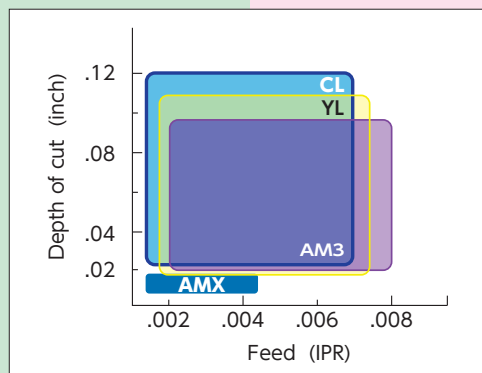
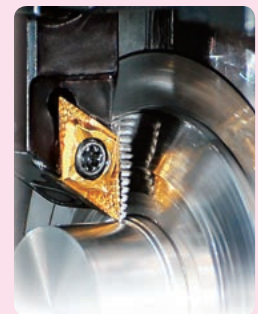


- All purpose chipbreaker
- Sharp edge with toughness

AMX Chipbreaker

WATCH ON
YouTube

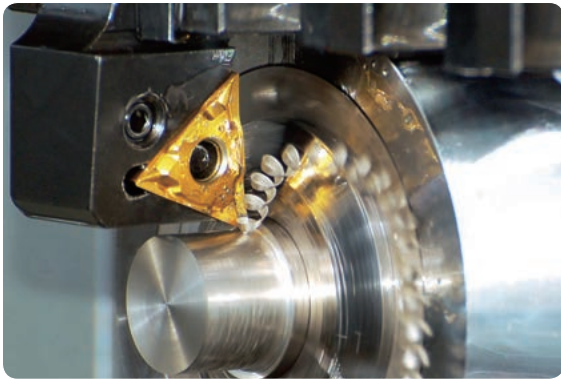
- Designed for very light depth of cut
- Exceptional sharpness



UL Chipbreaker

6 corner insert for Swiss machines

WATCH ON
YouTube

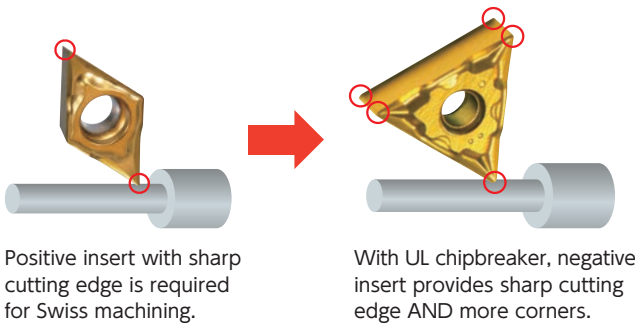


Features

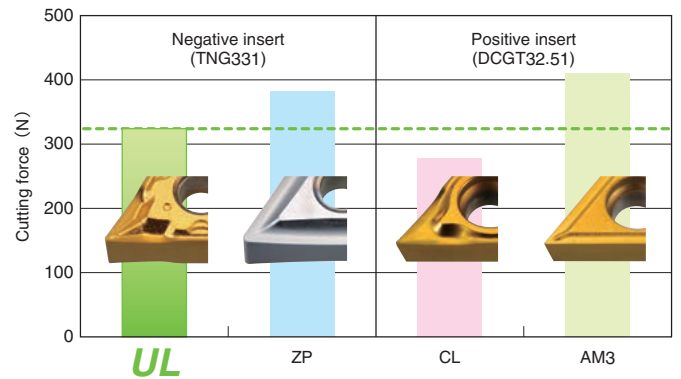
- First negative style insert designed for Swiss machines
- Less tool pressure and good chip control

NTK New and
Unique Swiss Tooling

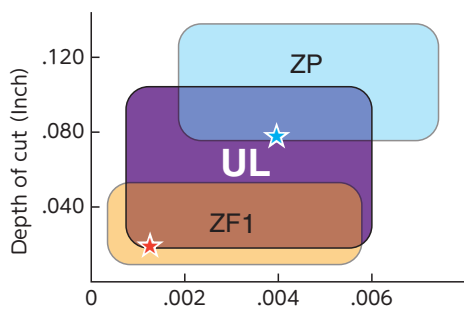
Reduce Cost in Swiss Machining



Cuts Like Positive Inserts



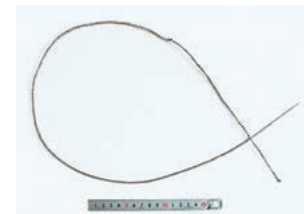
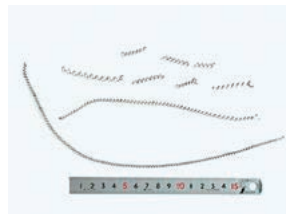
Covers a Wide Range of Cutting Conditions with Good Chip Control



《304 SS》 260 SFM WET

★ .001 IPR .020" DOC

★ .004 IPR .079" DOC

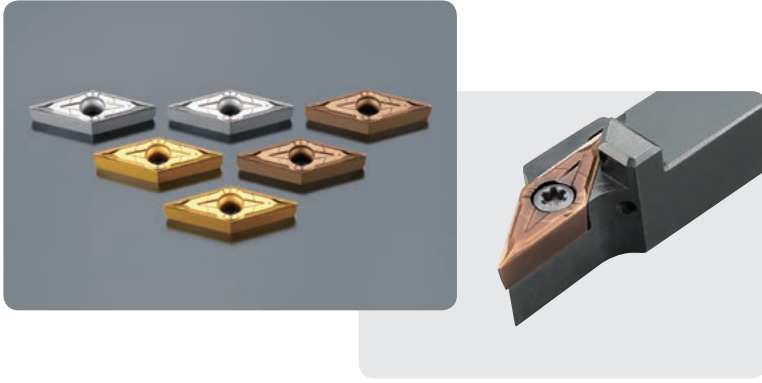


Toolholders for Swiss Machines



Available in ACH (Adjustable centerline height) toolholder

Holders → Q34
Inserts → Q36



Features

- NTK developed the "VB" style chipbreaker with a unique combination of both sharpness and toughness
- Excellent chip control and covers a wide range of cutting conditions
- "G" tolerance inserts provide great surface finishes and stable part tolerances

Wide Chip Control Range

304SS (φ .630") 260SFM		Feed (IPR)		
		.002"	.003"	.005"
Depth of cut (inch)	.118"			
	.079"			
	.039"			
	.020"			

Coolant Through Toolholders Available



- Evacuates chips away from the cutting edge
- Reduces cutting tool temperature and keeps edge sharp even large depth of cut conditions
- Improves part tolerance by steady coolant supply to the edge

* Left-hand holders (SVJBL) are designed for Right-hand machines

CSV Series

Tooling for small diameter parts

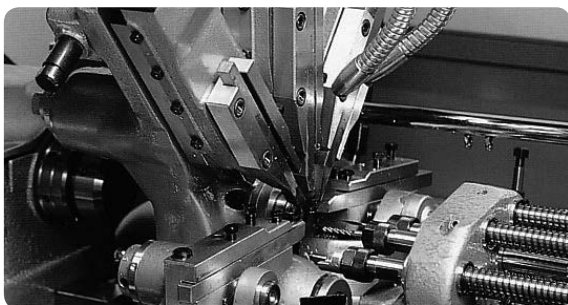
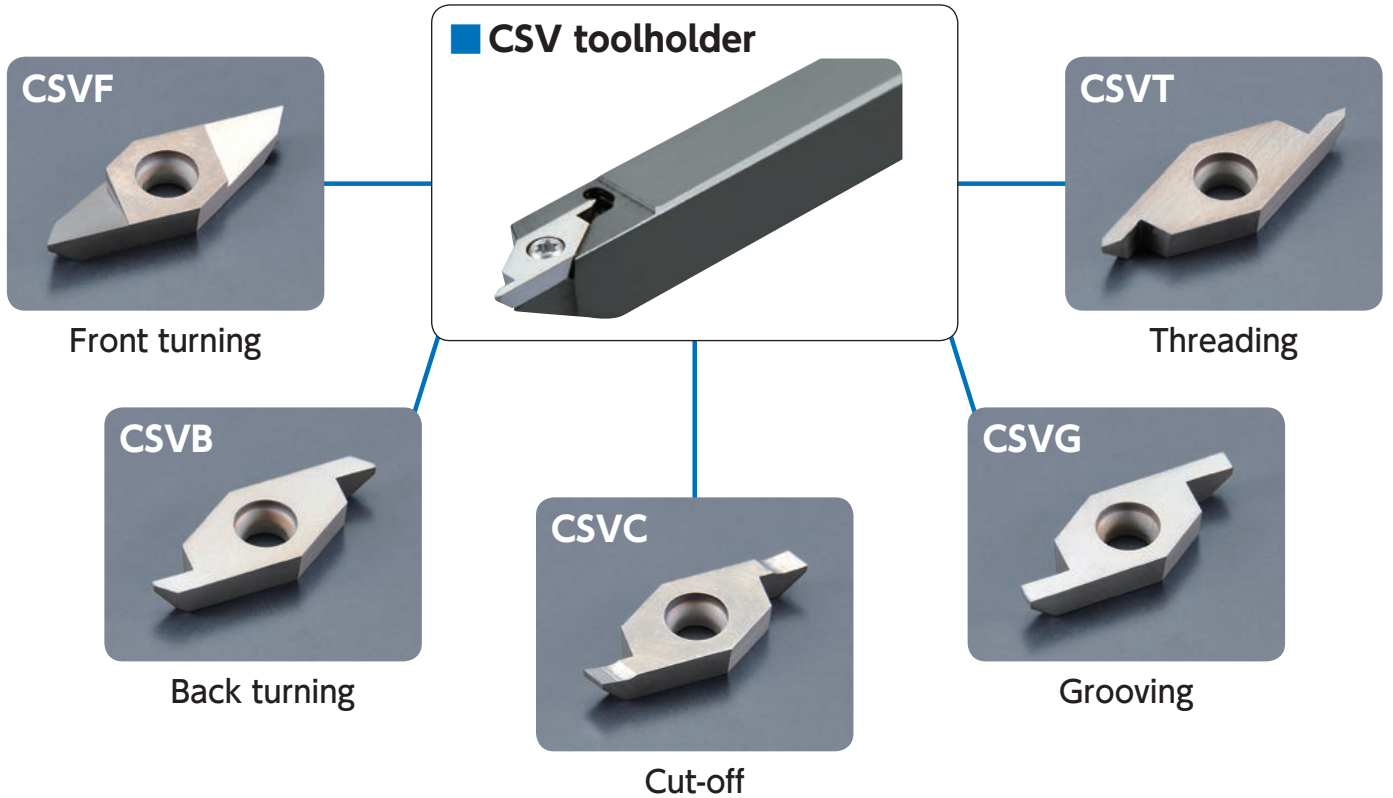
Best tool for up to .200" diameter materials



Features

- Very up- sharp edge with mirror finish provides superior precise machining
- Interchangeable tool :
All the inserts can use the same toolholder
- Specially designed edge shape for small diameter machining

NTK New and
Unique Swiss Tooling



- Holders for Cam-style machine also available

CSV Series - Toolholders

Best for up to .200" diameter material

CSV-NC

For Gang-style machine

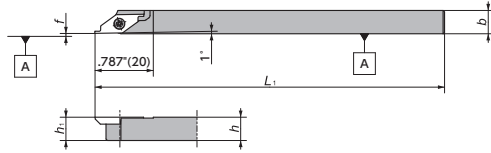


Figure-1

Right-Hand style shown

CSV

For Cam-style machine

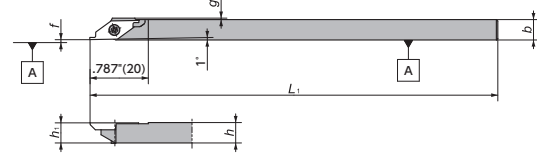


Figure-2

Right-Hand style shown

DS-CSVL

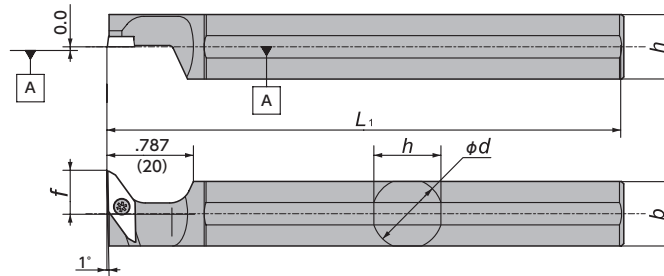



Figure-3


Left-Hand style shown
Takes right-hand inserts

CSV Series - Toolholders

CSV^{R/L} / CSV^{R/L}-NC

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)		g (Inch) (mm)		Clamp Screw	Wrench
			R	L					(Inch)	(mm)	(Inch)	(mm)		
	CSV% _L 06-IN-NC	1	●	●	3/8	3/8	3/8	4.724 120	.004 0.1	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	
	CSV% _L 08-IN-NC	1	●	●	1/2	1/2	1/2	4.724 120	.004 0.1	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	
	CSV% _L 08NC	1	○	○	.315 8	.315 8	.315 8	4.724 120	.004 0.1	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	
	CSV% _L 08NC-F	1	○	○	.315 8	.315 8	.315 8	4.724 120	0-.004 0.0-0.1	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	
	CSV% _L 10GXNC	1	○	○	.394 10	.394 10	.394 10	3.346 85	.004 0.1	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	
	CSV% _L 10NC	1	○	○	.394 10	.394 10	.394 10	4.724 120	.004 0.1	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	
	CSV% _L 12NC	1	●	●	.472 12	.472 12	.472 12	4.724 120	.004 0.1	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	
	CSV% _L 07GX	2	○	○	.275 7	.275 7	.275 7	3.346 85	.004 0.1	.020 0.5	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV% _L 07	2	○	●	.275 7	.275 7	.275 7	5.512 140	.004 0.1	.020 0.5	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV% _L 08GX	2	○	○	.315 8	.315 8	.315 8	3.346 85	.004 0.1	0.0 0.0	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV% _L 08	2	●	●	.315 8	.315 8	.315 8	5.512 140	.004 0.1	0.0 0.0	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV% _L 095	2	○	○	.374 9.5	.374 9.5	.374 9.5	5.512 140	.004 0.1	0.0 0.0	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV% _L 10	2	○	●	.394 10	.394 10	.394 10	5.512 140	.004 0.1	0.0 0.0	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV% _L 12GX	2	○	○	.472 12	.472 12	.472 12	3.346 85	.004 0.1	0.0 0.0	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S
CSV% _L 12	2	●	●	.472 12	.472 12	.472 12	5.512 140	.004 0.1	0.0 0.0	0.0 0.0	0.0 0.0	LRIS-2.5 × 7	CLR-15S	

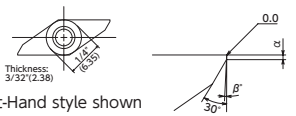
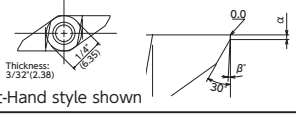
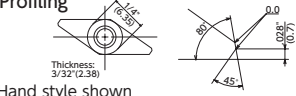
DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D _s		h (Inch) (mm)	b (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)		Clamp Screw	Wrench
			R	L	(Inch)	(mm)				(Inch)	(mm)		
	DS-CSVL15	3	●		5/8	15.875	.591 15	.591 15	4.724 120	.394 10		LRIS-2.5 × 7	CLR-15S

CSV Series - Inserts

Front turning

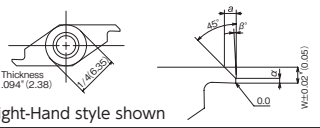
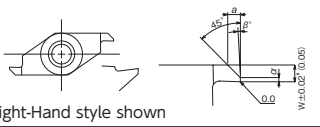

CSVF Mirror finish

Shape	Item Number	Chip-breaker	Max Depth of Cut		Edge Geometry ($\alpha \times \beta^\circ$)		Coated Carbide					
			(Inch)	(mm)	(Inch)	(mm)	DT4		VM1		ZM3	
							R	L	R	L	R	L
 <p>Right-Hand style shown</p>	CSVF11F%LV M	No	—	—	.012 × 5°	0.3 × 5°			○	○		
	CSVF11F%LV-A M		—	—	.012 × 2°	0.3 × 2°			○			
	CSVF11F%LV-M M		●	●	●	○						
	CSVF11F%LV-C M				○							
 <p>Right-Hand style shown</p>	CSVF11F%LVB M	Yes	.118	3	.012 × 5°	0.3 × 5°			●	○		
	CSVF11F%LVB-A M		.118	3	.012 × 2°	0.3 × 2°			○			
	CSVF11F%LVB-M M		.118	3	.006 × 2°	0.15 × 2°	●	●	●	○		
	CSVF11F%LVB-C M		.118	3	.006 × 5°	0.15 × 5°			○			
 <p>Left-Hand style shown</p>	CSVF11F%LVX M	No	—	—							○	

Note: All angles shown are obtained when insert is set in the holder

Back turning

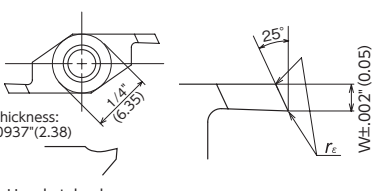
CSVB Mirror finish

Shape	Item Number	Chip-breaker	Length of Blade		Max Depth of Cut		W		Edge Geometry ($\alpha \times \beta^\circ$)		Coated Carbide					
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	DT4		VM1		ZM3	
											R	L	R	L	R	L
 <p>Right-Hand style shown</p>	CSVB11F%LV M	No	.028	0.7	.079	2.0	.039	1.00	.012 × 5°	0.3 × 5°			○	○		
	CSVB11F%LV-A M	No	.028	0.7	.079	2.0	.039	1.00	.012 × 2°	0.3 × 2°			○			
	CSVB11F%LV-M M	No	.028	0.7	.079	2.0	.039	1.00	.006 × 2°	0.15 × 2°	●	●	○	○		
	CSVB11F%LV-C M	No	.028	0.7	.079	2.0	.039	1.00	.006 × 5°	0.15 × 5°			○			
	CSVB11F%LV12 M	No	.031	0.8	.079	2.0	.047	1.20	.012 × 5°	0.3 × 5°			○			
	CSVB11F%LV14 M	No	.039	1.0	.079	2.0	.055	1.40	.012 × 5°	0.3 × 5°			○			
 <p>Right-Hand style shown</p>	CSVB11F%LVB M	Yes	.028	0.7	.079	2.0	.039	1.00	.012 × 5°	0.3 × 5°			○			
	CSVB11F%LVB-A M	Yes	.028	0.7	.079	2.0	.039	1.00	.012 × 2°	0.3 × 2°			○			
	CSVB11F%LVB-M M	Yes	.028	0.7	.079	2.0	.039	1.00	.006 × 2°	0.15 × 2°	●	●	○	○		
	CSVB11F%LVB-C M	Yes	.028	0.7	.079	2.0	.039	1.00	.006 × 5°	0.15 × 5°			○			
	CSVB11F%LVB12 M	Yes	.031	0.8	.079	2.0	.047	1.20	.012 × 2°	0.3 × 5°			○			
	CSVB11F%LVB14 M	Yes	.039	1.0	.079	2.0	.055	1.40	.012 × 2°	0.3 × 5°			○			
 <p>Left-Hand style shown</p>	CSVB11F%LVX M	No	—	—	—	—	—	—							○	

Note: All angles shown are obtained when insert is set in the holder

Cut-off

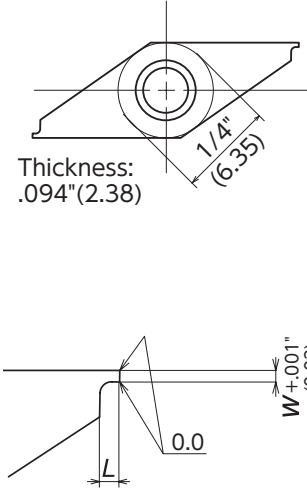
CSVC Mirror finish

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		r_e		VM1	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L
 <p>Right-Hand style shown</p>	CSVC11F%LV06 M	No	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	
	CSVC11F%LV07 M	No	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	●
	CSVC11F%LV08 M	No	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	○
	CSVC11F%LV09 M	No	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	
	CSVC11F%LV10 M	No	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	●
	CSVC11F%LV13 M	No	.197	5.0	.051	1.3	.118	3.0	0	0.0	●	○
 <p>Right-Hand style shown</p>	CSVC11F%LVB06 M	Yes	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	
	CSVC11F%LVB07 M	Yes	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	
	CSVC11F%LVB08 M	Yes	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	
	CSVC11F%LVB09 M	Yes	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	
	CSVC11F%LVB10 M	Yes	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	
	CSVC11F%LVB13 M	Yes	.197	5.0	.051	1.3	.118	3.0	0	0.0	○	
CSVC11F%LVB15 M	Yes	.197	5.0	.059	1.5	.118	3.0	0	0.0	○		

Note: All angles shown are obtained when insert is set in the holder

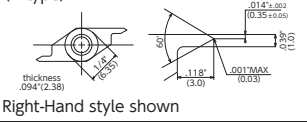
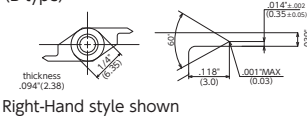
Grooving

■ CSVG **Mirror finish**

Shape	Item Number	Chip-breaker	Groove Width <i>W</i>		Max Depth of Cut		<i>L</i>		<i>r_ε</i>		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	
											R	L
 <p>Thickness: .094" (2.38)</p> <p>W ± .001" (0.03)</p> <p>Right-Hand style shown</p>	CSVG11F%V025	No	.010	0.25	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F%V030	No	.012	0.30	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F%V035	No	.014	0.35	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F%V040	No	.016	0.40	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F%V045	No	.018	0.45	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F%V050	No	.020	0.50	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F%V055	No	.022	0.55	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F%V060	No	.024	0.60	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F%V065	No	.026	0.65	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F%V070	No	.028	0.70	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F%V075	No	.030	0.75	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F%V080	No	.031	0.80	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F%V085	No	.033	0.85	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F%V090	No	.035	0.90	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F%V095	No	.037	0.95	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F%V100	No	.039	1.00	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F%V110	No	.043	1.10	.102	2.60	.102	2.60	0.0	0.0	●	
	CSVG11F%V120	No	.047	1.20	.102	2.60	.102	2.60	0.0	0.0	●	○
CSVG11F%V130	No	.051	1.30	.102	2.60	.102	2.60	0.0	0.0	●		
CSVG11F%V140	No	.055	1.40	.102	2.60	.102	2.60	0.0	0.0	●		
CSVG11F%V150	No	.059	1.50	.102	2.60	.102	2.60	0.0	0.0	●		

Threading

■ CSVT **Mirror finish**

Shape	Item Number	Chip-breaker	<i>r_ε</i>		Pitch		Coated Carbide	
			(TPI)	(mm)	(TPI)	(mm)	VM1	
							R	L
(A type)  <p>thickness .094" (2.38)</p> <p>Right-Hand style shown</p>	CSVT11F%P60-035A	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●
(B type)  <p>thickness .094" (2.38)</p> <p>Right-Hand style shown</p>	CSVT11F%P60-035B	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●

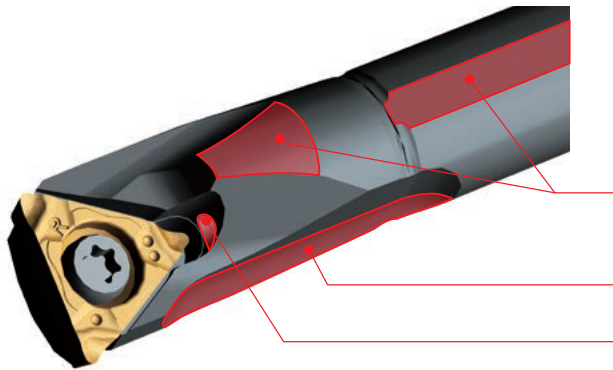
Note: All angles shown are obtained when insert is set in the holder

Mogul Bar

High rigidity boring bars



NTK New and Unique Swiss Tooling

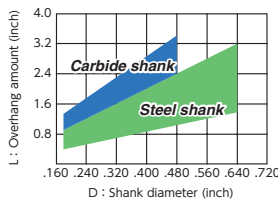


Features

- **High rigidity + Minimal flat widths**
Reduce vibration
- **Large clearance for improved chip evacuation**
- **All Mogul Bar boring bars are coolant through**

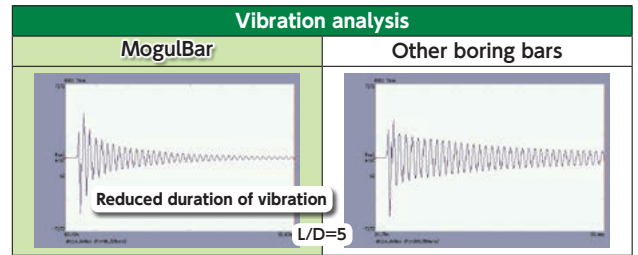
Recommended amount of overhang

- Steel Shank **L/D ≤ 5**
- Carbide Shank **L/D ≤ 7**



L : Overhang
D : Shank diameter

[Cutting condition example]
Work materials: Alloy steel, stainless
260 SFM, .002 - .004 IPR, .004" - .020" DOC WET



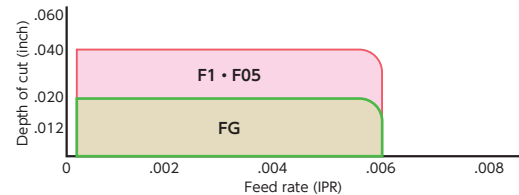
Note: Assuming a 100N load is applied. An equal amount of force was applied to both bars for vibration analysis.
Boring bar used in above analysis: S08H-STUPR09D10-OH

F Chipbreakers - Evacuate chips BACKWARD









- F chipbreakers allow chips to evacuate backward
- Combination of the F-chipbreakers and Mogul Bar delivers the best performance



Recommended Cutting Condition Range



F Chipbreakers - Features

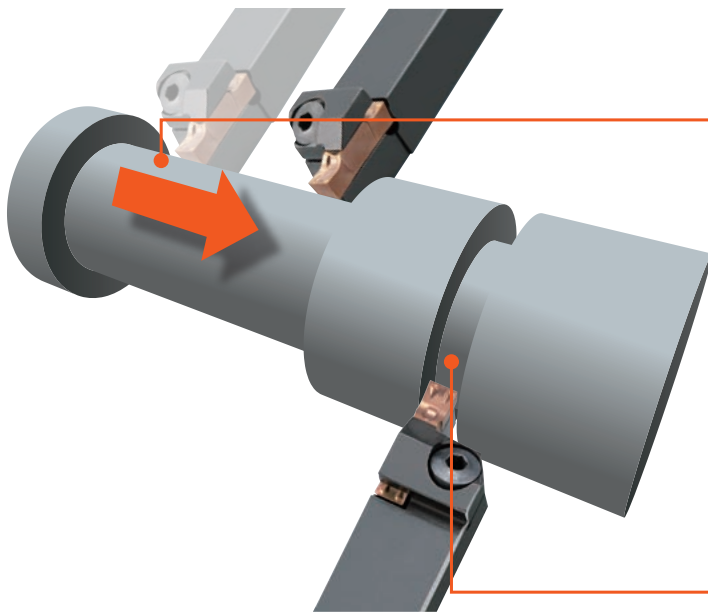
	DOC (inch)	Feed (IPR)	
		.002	.004
FG Chipbreaker <ul style="list-style-type: none"> • Best for finishing • Works for small DOC (.020" or less) • High rake angle 	.004		
	.012		
F1/F05 Chipbreakers <ul style="list-style-type: none"> • Cover wide condition range • Ground chipbreaker 	.020		
	Note: Right-hand inserts with FG and F1 chipbreakers should be used with right-hand holders		[Cutting condition example] 4140 Carbon Steel Diameter : φ.472" 260 SFM Depth of Bore : .787" Wet Holder : S10K-STUPR11D12-OH Insert : TPGH221

Holders →V22



Features

- Grooving and side turning tools with highly rigid design
- 3D design chipbreakers result in less tool pressure and excellent chip control



Side-turning

	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : 4135, 5005FM, .004IPR, .040DOC

Grooving

	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : 4135, 5005FM, .004IPR, .275DOC

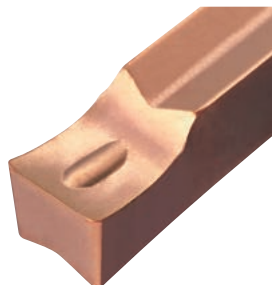
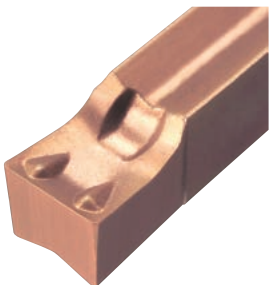
Chipbreaker

For Grooving / Side-turning

Less tool pressure

GW

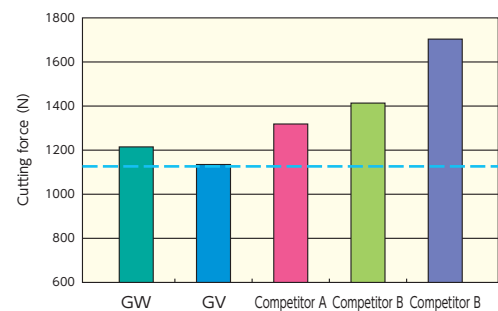
GV



- Excellent chip control
- Good sharpness
- Side turning capability

- Superior sharp edge

Tool pressure comparison when grooving



Shifted Toolholders Toolholders for extended guide-bushing

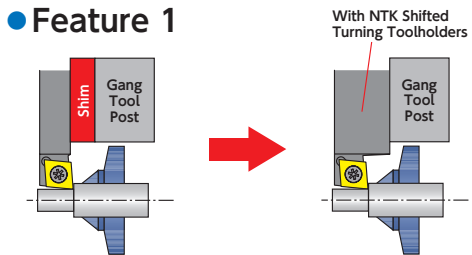
WATCH ON
YouTube



Two Major Features

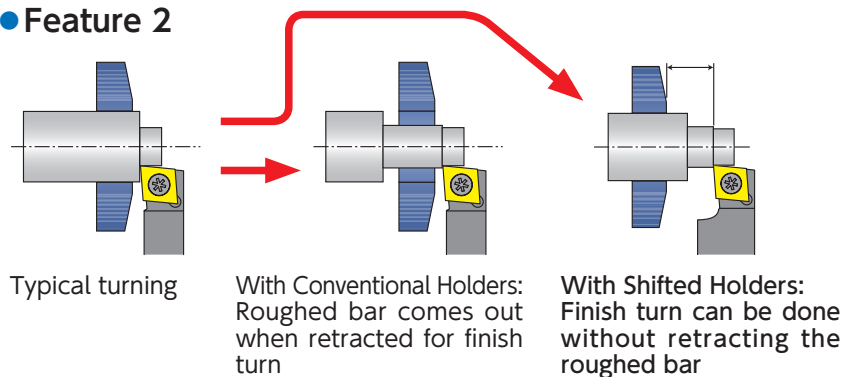
1. Eliminate shims for turning holders when extended guide bushing is used (especially in thread whirling)
2. Performs finish cut without retracting roughed section (bar) from guide bushing

● Feature 1



No shims required during thread whirling operation with an extended guide bushing

● Feature 2



→Q10·Q16·Q24

NTK New and
Unique Swiss Tooling

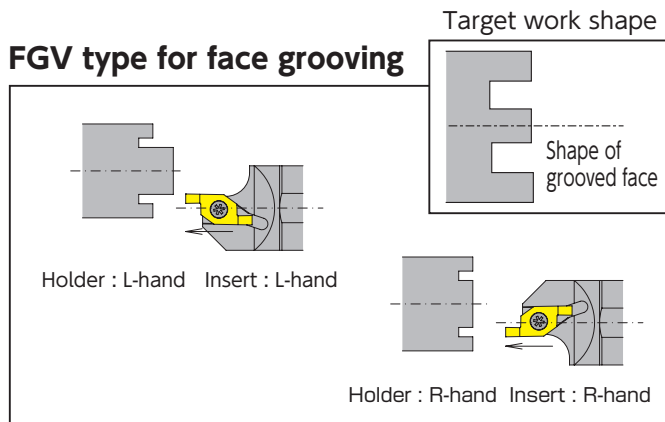
SATURN DUO Face turning / grooving tools

WATCH ON
YouTube

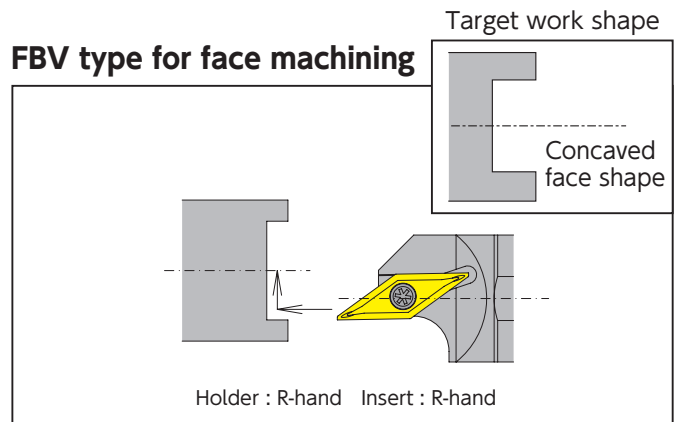


Features

- FGV type for face grooving and FBV type for face machining
- Economical double-corner specification
- Improved tool rigidity by optimizing the overhang and holder shape
- Selection includes : gang-type, front-gang-type and sleeve holder type



- Grooving possible under a wide range of cutting conditions due to strengthened rigidity of both insert and holder
- Minimum machining diameter of $\phi .236"$, and groove width of $.039"$
- Left-hand types available for machining work with a boss



- Further improved face machining efficiency
- Minimum machining diameter of $\phi .315"$

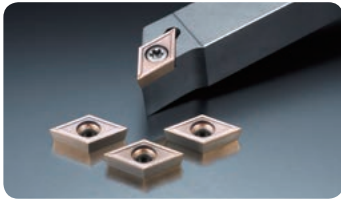
→T18

WP Series

Wiper insert with ISO style



NTK New and Unique Swiss Tooling



Features

- Wiper shape provides superior surface finish
- Higher feed rate brings shorter cycle time and good chip control
- AM3 chipbreaker is now available on DCGT style

DCGT-WP(55°) <TFD style>

* Can be used in SDJC and SDUC toolholders ● : 1st Choice ● : 2nd choice

(inch)	IC	T
DC..21.5	1/4	3/32
DC..32.5	3/8	5/32

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating	Depth of cut (inch) Feed (IPR)	
					PVD Coated														
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
wiper insert	DCGT 32.502 AM3-WP*	TFD 11FR05AM3	3/8	.002															
	DCGT 32.506 AM3-WP*	TFD 11FR15AM3	3/8	.006															
wiper insert	DCGT 21.502 R/2 S-WP*	TFD 07F1/2 05	1/4	.002															
	DCGT 21.506 R/2 S-WP*	TFD 07F1/2 15	1/4	.006															
	DCGT 32.502 R/2 S-WP*	TFD 11F1/2 05	3/8	.002															
	DCGT 32.506 R/2 S-WP*	TFD 11F1/2 15	3/8	.006															
wiper insert	DCGT 21.502 R/2 U-WP*	TFD 07F1/2 05U	1/4	.002															
	DCGT 21.506 R/2 U-WP*	TFD 07F1/2 15U	1/4	.006															
	DCGT 32.502 R/2 U1-WP*	TFD 11F1/2 05U1	3/8	.002															
	DCGT 32.506 R/2 U1-WP*	TFD 11F1/2 15U1	3/8	.006															
wiper insert	DCGW 21.502RH-WP*	TFD 07FR05H	1/4	.002															-
	DCGW 32.502RH-WP*	TFD 11FR05H	3/8	.006															

VC GT-WP(35°) <TFV style>

* Can be used in SVAC toolholders ● : 1st Choice ● : 2nd choice

(inch)	IC	T
VC..22	1/4	1/8

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating	Depth of cut (inch) Feed (IPR)	
					PVD Coated														
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
wiper insert	VC GT 2202 R/2 S-WP*	TFV 11F 1/2 05SX	1/4	.002															
	VC GT 2204 R/2 S-WP*	TFV 11F 1/2 10SX	1/4	.004															
wiper insert	VC GT 2202 R/2 U-WP*	TFV 11F1/2 05U	1/4	.002															
	VC GT 2204 R/2 U-WP*	TFV 11F1/2 10U	1/4	.004															

TCGT-WP(60°) <TFT style>

* Can be used in STAC toolholders ● : 1st Choice ● : 2nd choice

(inch)	IC	T
TC..21	1/4	3/32
TC..73	7/32	3/32

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating	Depth of cut (inch) Feed (IPR)	
					PVD Coated														
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
wiper insert	TCGT 7302 R/2 S-WP*	TFT 09F1/2 05	7/32	.002															
	TCGT 7306 R/2 S-WP*	TFT 09F1/2 15	7/32	.006															
	TCGT 21.502 R/2 S-WP*	TFT 11F1/2 05	1/4	.002															
	TCGT 21.506 R/2 S-WP*	TFT 11F1/2 15	1/4	.006															
wiper insert	TCGT 7302 R/2 U-WP*	TFT 09F1/2 05U	7/32	.002															
	TCGT 7306 R/2 U-WP*	TFT 09F1/2 15U	7/32	.006															
	TCGT 21.502 R/2 U1-WP*	TFT 11F1/2 05U1	1/4	.002															
	TCGT 21.506 R/2 U1-WP*	TFT 11F1/2 15U1	1/4	.006															

P



Tooling for Swiss-type Lathes

- **NTK's Recommendation for Swiss Tooling ... P2**
- **Tooling P4**
- **Grade Introduction P7**
- **Recommended Insert Grade
and Cutting Conditions P16**
- **Chipbreaker Introduction P20**

NTK's Recommendation for Swiss Tooling

Specific Application

304SS

ST4 Coating



For up to .200" diameter material

CSV Series



PEEK / Non-ferrous material

KM1 insert



Double / Triple lead Screw

Thread Whirling



HEXALOBULAR / HEX / SQUARE socket

Shaper Duo



General Tooling for Popular Materials

- Titanium
- 304SS
- Ti-6Al-4V
- 316SS
- Carbon steels
- Alloy steels
- Cobalt Chrome
- HRSA materials

Front Turning

Cutting Conditions →P16

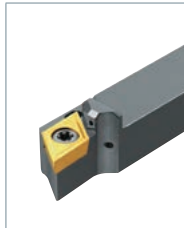
General Purpose

DM4-YL



Splash Series

Y-axis with Coolant Through



- DM4 has excellent heat resistance. It is the best grade to machine for Titanium Alloys, Cobalt Chrome, and HRSA materials.
- YL chipbreaker is designed for both sharpness and chip control. It can hold dimensions very well and evacuate chips smooth.
- AMX chipbreaker is optimized for very small DOC operations. It can perform very well in thin chip control situations.
- Use with a coolant through tool holder to help with chip evacuation. Y-axis coolant through toolholder is the best solution for chip control problems.

Up to .020 DOC

DM4-AMX



Cut-Off

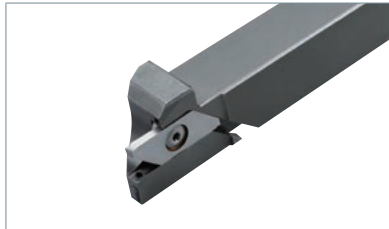
Cutting Conditions →P17

Up to .472"

DM4-CTP-CX



Splash series



- CTP/CTPA style cut-off tool is a best-seller in the Swiss market. They have excellent rigidity and sharpness. Now NTK added the CX chipbreaker to them. 3D shaped CX chipbreaker can control chips extremely well.
- Use with coolant through toolholder for better chip evacuation.
- CTP style is designed for up to .472" material and CTPA is for up to .630".

Up to .630"

DM4-CTPA-CX



Up to 1.00"

CUT DUO



Splash series



- NTK recently added another coolant through cut-off toolholder for larger diameter materials.
- CTDP-OH toolholder can cut up to 1" materials and can control chips very well.

Back Turning Cutting Conditions →P16

General Purpose

DM4-TBP / TBPA-BM



Splash Series



Y-axis with Coolant through



- NTK's TBP/TBPA back turning tools are solid and can provide stable machining even with heavy DOC operations.
- Now, NTK added a 3D chipbreaker named BM to this series. BM chipbreaker can manage chip direction. Just one pass is needed to get excellent face/OD finish.
- Use with coolant through tool holder to help with chip evacuation and the Y-axis coolant through toolholder is the best solution for chip problems.

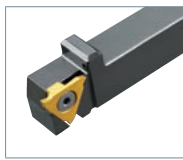
Grooving Cutting Conditions →P18

General Purpose

DM4-GX



Splash Series



Y-axis with Coolant through



- NTK is expanding its triangle style grooving tools. Now NTK accommodates wide grooving widths from .012" to .125".
- GX chipbreaker can control chips very well, not only for grooving but also side-turning operations.
- Use with coolant through tool holder to help with chip evacuation and the Y-axis coolant through toolholder is the best solution for chip problems.

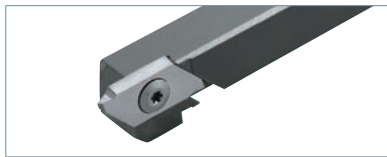
Threading Cutting Conditions →P19

General Purpose

QM3-TTP



TTP



- NTK's side-clamping TTP inserts are rigid and produces high quality good threads. Various lineups are available for each specific threading operations.
- QM3 has good wear resistance and toughness and can cut most materials.

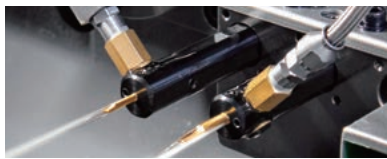
ID Boring Cutting Conditions →P19

General Purpose

STICK DUO Hyper



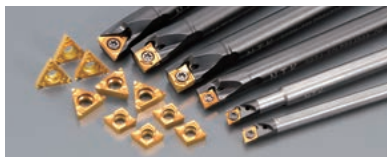
STICK DUO SPLASH



- Stick Duo Splash are coolant through sleeves for ID operations. NTK has a variety of ID tooling inserts, bars for ID boring, ID back turning, ID grooving and ID threading to use with Stick Duo Splash.
- The sleeves are equipped with an adjustable overhang mechanism that allow you to index bars easily without length adjustment.



Mogul Bar



- Mogul Bar is a series name for boring tools with indexable inserts. The series starts from .197" minimum bore diameter and ID and use with F-style chipbreaker which makes chip evacuate backward.
- They include a coolant through system that ensures better chip evacuation.

Endmill Cutting Conditions →X4

General Purpose

DM4-BL

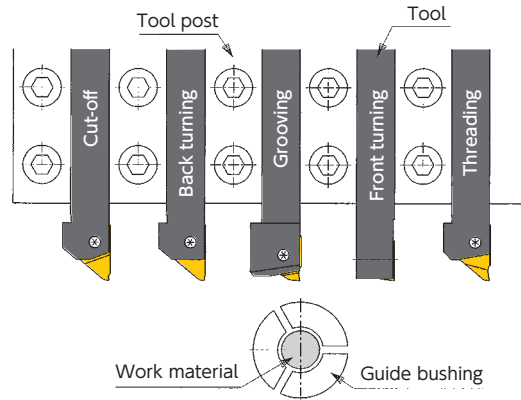
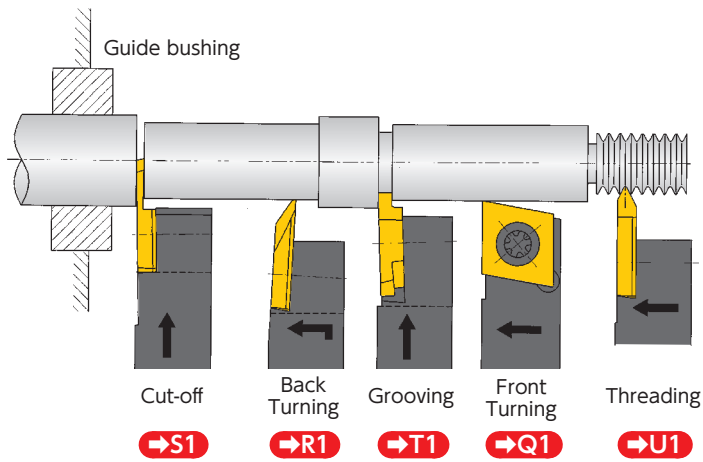


Indexable Endmill



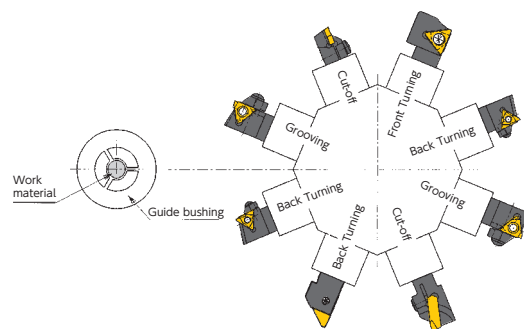
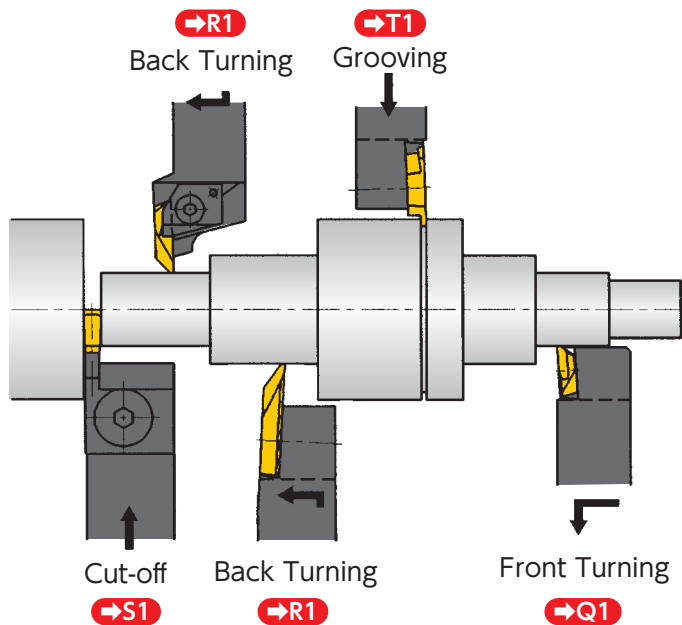
- NTK has a variety of indexable type endmill tools for Swiss machines. The big head endmills can cut in close proximity to the Guide-bushing and provide excellent rigidity. Due to the big diameter, you can also run faster than small diameter endmills.

Tooling example for a small CNC automatic lathe (gang type)



Tooling for gang type tool post

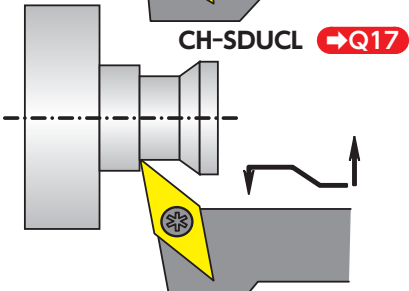
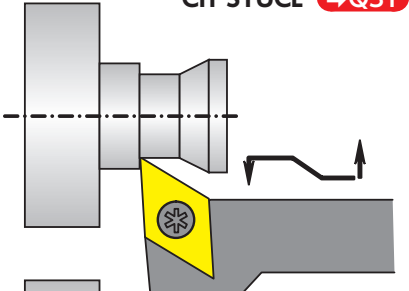
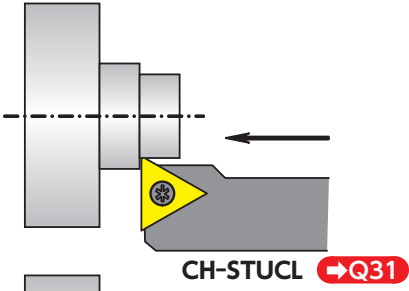
Tooling example for a small CNC automatic lathe (turret type)



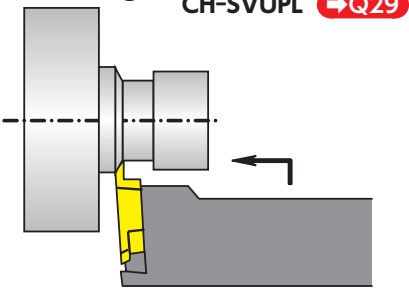
Tooling for turret type tool post

Tooling example for a small CNC automatic lathe (horizontal gang style)

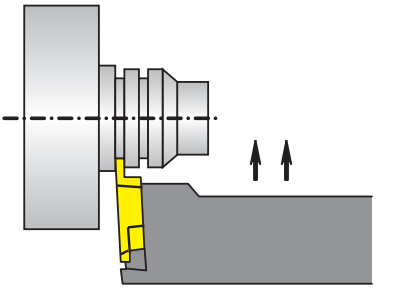
■ Front Turning



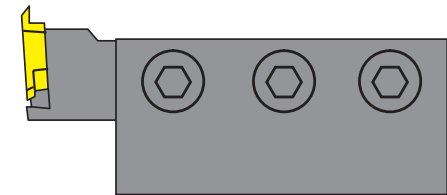
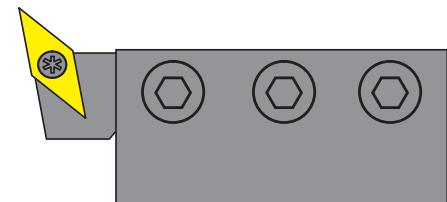
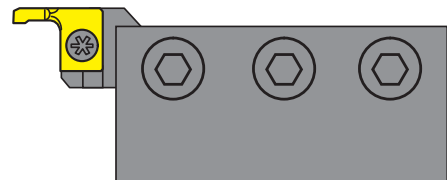
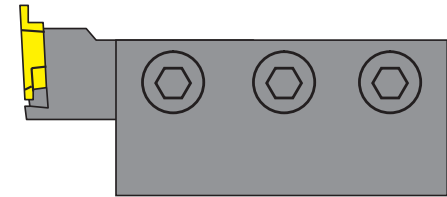
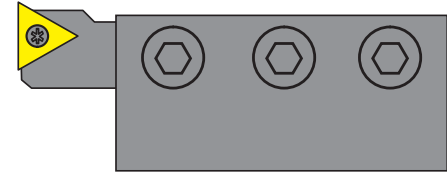
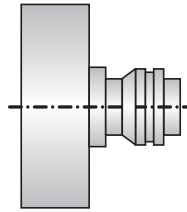
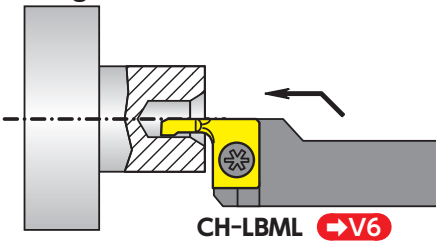
■ back Turning



■ Grooving



■ ID Boring



Micro-grain Carbide and PVD/CVD-coated Carbide

Micro-grain Carbide and PVD/CVD-coated Carbide



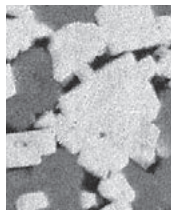
Excellence in precision machining and machining of hard-to-cut materials

These material grades use WC micro-grain carbide, the hard layer of which is granulated to a micro size $1\mu\text{m}$ as the substrate. Furthermore, the substrate is coated by the PVD method with TiN, TiCN, and/or TiAlN. The end results are materials that are suitable for precision machining and machining of difficult-to-cut materials. Inserts in these grades are tougher and harder than carbide and come with precision sharp cutting edges. They even have superior toughness and sharper cutting edges than ultra micro-grain carbide grades, with excellent wear resistance and thermal crack resistance.

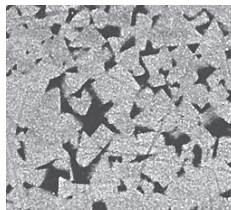
The result of intensive research and development for improving carbide grades

The NTK carbide grade series shows very stable performance under a wide range of conditions. NTK uses micro-grain carbide well balanced between wear resistance and toughness, as substrate.

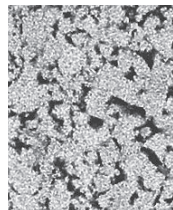
Carbide grade



General carbide structure

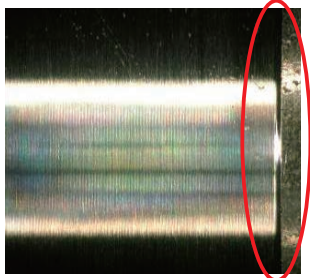


Micro-grain carbide structure



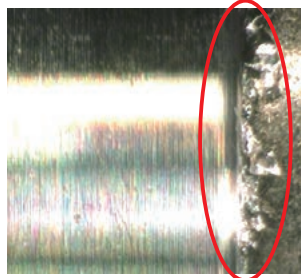
Super micro-grain carbide structure

Features Superior cutting performance



No burrs

Machined with our insert with a sharp cutting edge



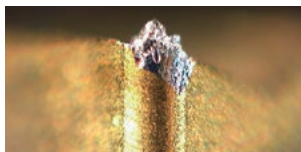
Burrs

Machined with a competitor's product with a honed cutting edge

Relentless pursuit of better cutting performance

NTK takes pride in its carbide grade series for their outstanding cutting performance as a result of grinding ultra sharp cutting edges. This outstanding cutting performance benefits in better burr control, lower tool pressure, stabilized dimensions and improved work hardening control.

Features Precise analysis on insert wear patterns



Build-up edge



Chipping / fracture



Flank wear



Wear on rake

Continuous research on insert tool life

Damage to insert cutting edges varies depending on the machining process and the work material. There are various types of coatings that reduce such damage to prolong the tool life. NTK carbide series offers a variety of coated insert grades which have been developed to improve their resistance characteristics, including wear, fracture, adhesion, oxidation and the like, by utilizing our state-of-the-art technologies.

	Grade / Coating	Applications / Features	Physical properties*					Applications map	
			Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K		Thermal conductivity W/m·K
PVD coated	ST4 NEW Micro-grain carbide + Thick CrAlN coat	P M S H • Best grade for 304 SS	14.4	91.0	3000	580	5.8	63	<p>Correlation chart 1</p> <p>Correlation chart 2</p> <p>Aluminum / Brass</p>
	DM4 Micro-grain carbide + Thick TiN-TiCN-TiAlN coat	P M S H • Best oxidation resistance enable high temperature machining	14.4	91.0	3000	580	5.8	63	
	DT4 Micro-grain carbide + Thin TiN-TiCN-TiAlN coat	P M S H • Excellent oxidation resistance for Swiss-type lathes	14.4	91.0	3000	580	5.8	63	
	TM4 Micro-grain carbide + Thin TiN-TiCN-TiN coat	P M N S • Best combination of wear resistance and toughness and adhesion resistance for Swiss-type lathes	14.4	91.0	3000	580	5.8	63	
	ZM3 Micro-grain carbide + Thick TiN coat	P M N • Best Adhesion resistance enables high accuracy machining	14.4	91.0	3000	580	5.8	63	
	QM3 Micro-grain carbide + Thick TiCN coat	P M S H • Best wear resistance enable stable machining	14.4	91.0	3000	580	5.8	63	
	VM1 Micro-grain carbide + Thin TiCN coat	P M N • Best edge sharpness and good wear resistance	14.8	92.0	2500	640	5.7	84	
	AC3 NEW Micro-grain carbide + Thin TiAlCrN-TiAlN coat	P M N S • Developed for solid carbide endmill	14.2	91.0	3000	560	6.1	49	
	UC1 Micro-grain carbide + Diamond coat	N • Pure and hard diamond coating.	14.8	92.0	2500	640	5.7	84	
Uncoated	KM1 Micro-grain carbide	P M N • Best for non-ferrous material with mirror finish	14.8	92.0	2500	640	5.7	84	

*For products with coating, the values of the base material are indicated.

NEW **ST4**

Best grade for 304SS



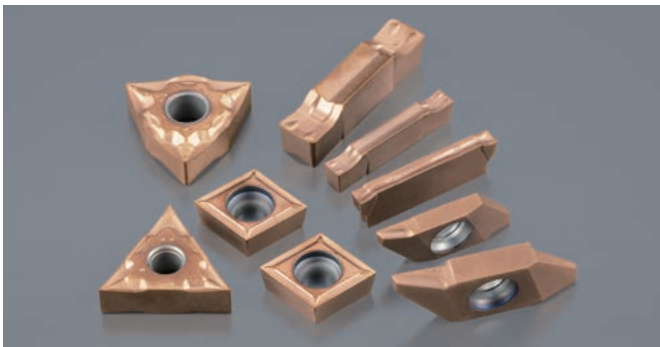
Features

- Best grade for 304SS thanks to New ST coating
- Excellent adhesion and wear resistance

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Stainless steels 	Conventional lathes Swiss-type lathes	Adhesion resistance

DM4

Excellent oxidation resistance



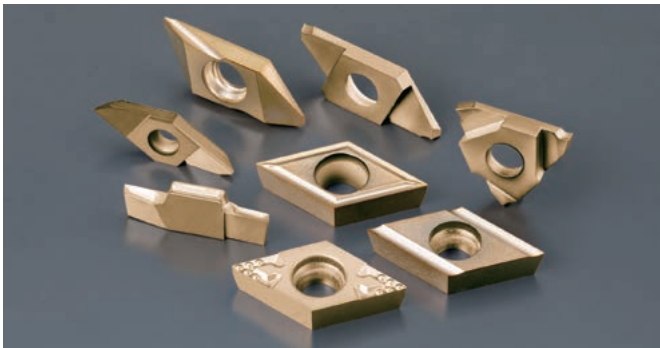
Features

- Best oxidation resistance for high temperature machining
- Optimized for Conventional / Swiss-type lathes

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Conventional lathes Swiss-type lathes	Oxidation Heat resistance

DT4

Excellent heat resistance for Swiss-type lathes



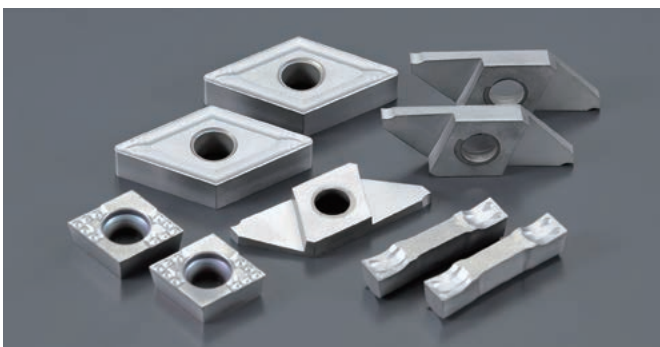
Features

- Excellent oxidation resistance for Swiss-type lathes

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Swiss-type lathes	Oxidation Heat resistance

QM3

Superb wear resistance and fracture resistance in interrupted cutting



Features

- Excellent toughness and wear resistance for wide speed range
- Stable interrupted machining of steel

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Heat resistant alloys 	Swiss-type lathes Conventional lathes	Wear resistance

TM4 Next generation standard insert grade for Swiss-type lathes

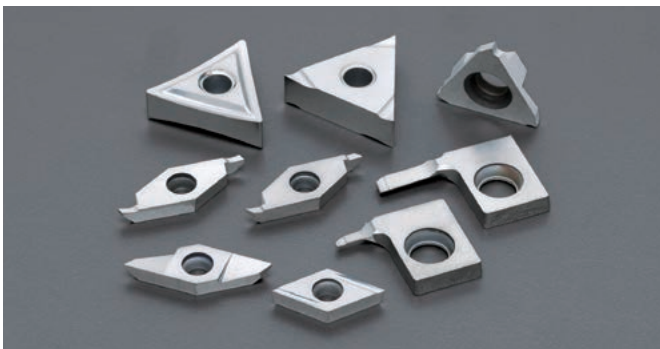


Features

- Excellent dimensional stability and tool life thanks to triple titanium layers with excellent adherence to insert substrate

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Balance

VM1 High precision machining of small diameter parts

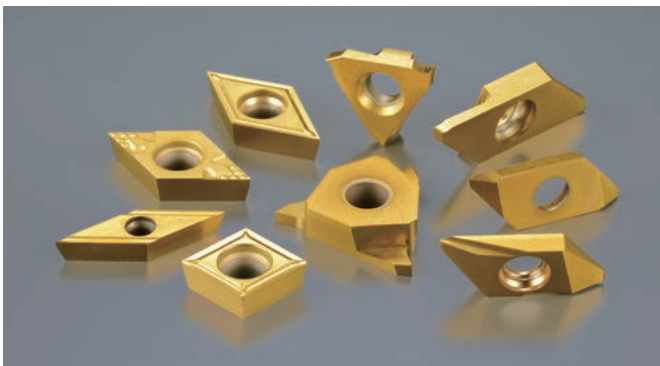


Features

- Especially for machining free cutting steels (SUM materials)
- For high-precision machining with longer tool life even in the high-speed machining range

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Edge sharpness

ZM3 The best selling grade for Swiss-type lathes



Features

- Stabilizes machining dimensions thanks to the coating being firmly adhered to the substrate
- A wide range of cutting tools in various sizes available for Swiss-type lathes

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Non-ferrous materials 	Swiss-type lathes Conventional lathes	Adhesion resistance

NEW AC3 Developed for solid carbide endmill

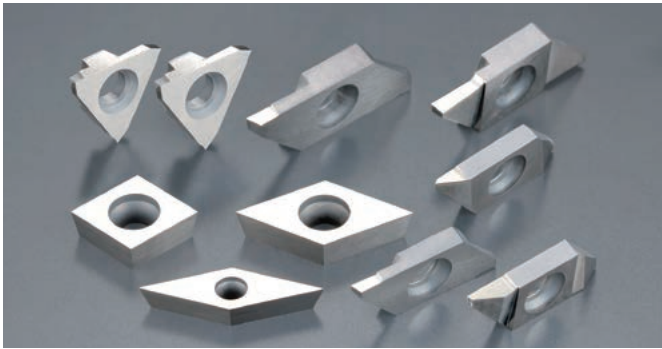


Features

- Newly developed for Carbide endmill
- Excellent sharpness and great wear resistance

KM1

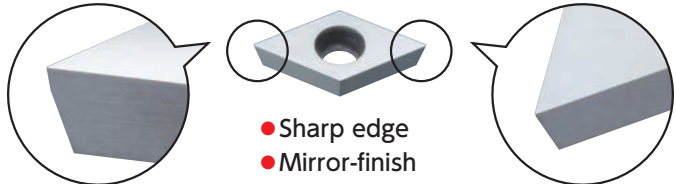
Good for non-ferrous materials like PEEK, Brass, Aluminum and Copper



Features

- **Very sharp cutting edges with uncoated Micro-grain carbide**
- **Excellent adhesion resistance because of mirror-finish**
- **A wide range of cutting tools in various types available for Swiss-type lathes**

Spool machining		
5056 (Aluminium)		
300 ~ 560 SFM		
.0016 IPR		
.02"-.20" DOC		
WET		
NTK : KM1	300 pcs	
Competitor's PVD-coated carbide	200 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Aluminium • Plastic • Non-ferrous materials 	Swiss-type lathes	Edge sharpness



PVD Coatings for Turning

NEW ST4 ST-Coat

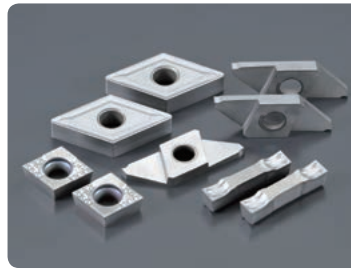


Best grade for 304SS

- Stainless steel

→P8

QM3 Q-Coat

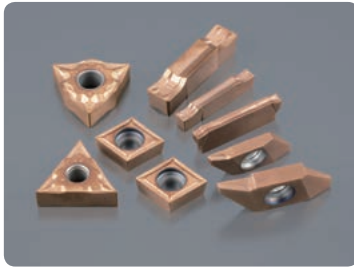


Best wear resistance

- Stainless steel
- Carbon steel
- Alloy steel

→P8

DM4 DM-Coat



Best heat resistance

- Heat resistant alloy
- Stainless steel
- Hardened material

→P8

DT4 DT-Coat



Best balance of heat resistance and sharp edges

- Titanium alloy
- Heat resistant alloy
- Stainless steel
- Hardened material

→P8

TM4 TM-Coat

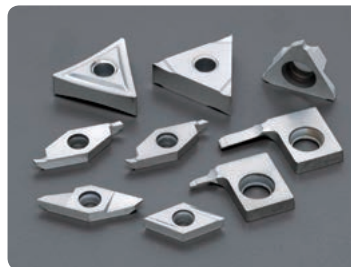


Best balance of wear resistance and adhesion resistance

- For small part machining in general

→P9

VM1 V-Coat



Best edge sharpness

- Titanium alloy
- Non-ferrous material
- Stainless steel
- Plastic

→P9

ZM3 Z-Coat



Best adhesion resistance

- General purpose machining

→P9

Coating Specifications

	ST-Coat	Q-Coat	DM-Coat	DT-Coat	TM-Coat	V-Coat	Z-Coat
Thickness	Thick	Thick	Thick	Thin	Thin	Thin	Thick
Wear Resistance	○	◎	○	○	○	○	
Heat Resistance	○		◎	◎			○
Adhesion Resistance	○				○		◎
Edge Sharpness				○	○	◎	
Composition	CrAlN	TiCN	Multilayer	Multilayer	Multilayer	TiCN	TiN

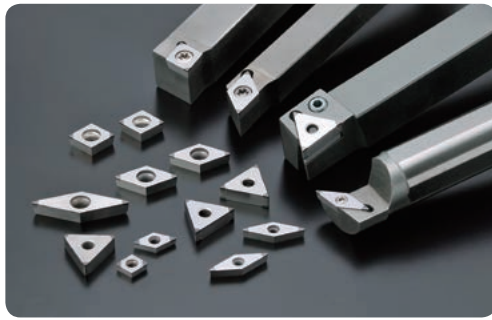
◎1st choice ○2nd choice

Tooling for Swiss-type Lathes

[Carbide]

EZCUBE

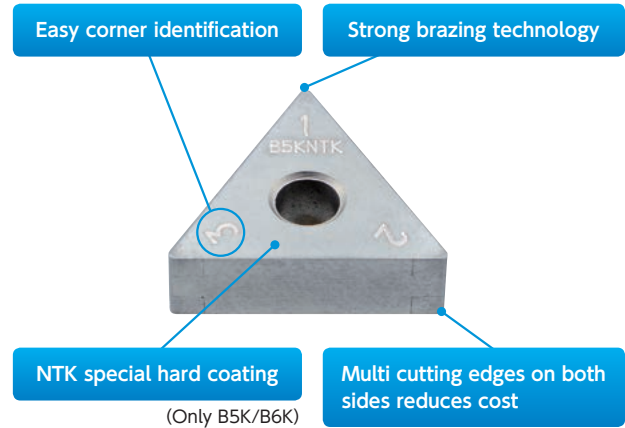
Excellent performance with superb versatility at a low price



CBN (Cubic Boron Nitride)

Features

- Seven grades available to cover a variety of work materials
- A wide selection in geometries
- Multiple corners on both insert sides contributes to cost reduction



• NTK EZCUBE / EZ CUBE

Material grade	Main binder	CBN content	Major application
B23	Ti-base	90%	High-speed semi roughing of cast iron/sintered alloys
B30	Ti-base	95%	High-speed finishing of cast iron
B6K/B36	TiCN-base	65%	Semi-interrupted to interrupted machining of hardened materials
B40	TiN-base	65%	Interrupted machining of highly hardened materials
B5K/B52	TiC-base	50%	Finishing of ductile cast iron and continuous machining of highly hardened materials

B23

Features

- Excellent wear resistance thanks to high CBN content
- Ideal for roughing cast iron and machining sintered materials

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Cast iron	Turning	Rough Semi finish	1300-3300	.004-.020	.008-.080	○	●
Sintered alloy	Turning	Rough-Finish	150-1000	.001-.008	.002-.020	●	●

Brake rotor	
Gray cast iron	
820 SFM	
.0079 IPR	
.079" DOC	
WET	
NTK : B23		210 pcs
Competitor's CBN	70 pcs

B30

Features

- Excellent wear resistance thanks to high CBN content
- Designed for finishing cast iron

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Cast iron	Turning	Semi finish Finish	1300-3300	.004-.020	.008-.080	○	●

Cylinder block	
Cast iron	
2600 SFM	
.012 IPR	
.004" DOC	
WET	
NTK : B30		800 pcs
Competitor's CBN	500 pcs

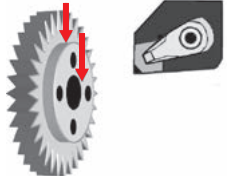
B6K/B36

Features

- **Excellent combination of wear resistance and toughness due to special TiCN binders**
- **Best for semi-interrupted cutting of hardened materials**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Hardened material	Turning (Light interrupted)	Rough-Finish	130-800	.002-.008	.004-.040	●	●

Gear (HRC61-65)	
5120H	
430 SFM	
.006 IPR	
.004" DOC	
DRY	
NTK : B36	50 pcs
Competitor's CBN	20 pcs

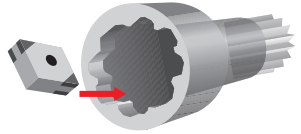
B40

Features

- **Exceptional toughness thanks to special TiN binders**
- **Designed for severely interrupted cutting of hardened materials**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Hardened material	Turning (Heavy interrupted)	Rough-Finish	100-500	.002-.008	.004-.040	●	○

Universal joint (HRC62)	
1055	
360 SFM	
.0055 IPR	
.0059" DOC	
DRY	
NTK : B40	2300 pcs
Competitor's CBN	1500 pcs

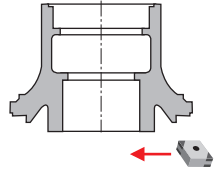
B5K/B52

Features

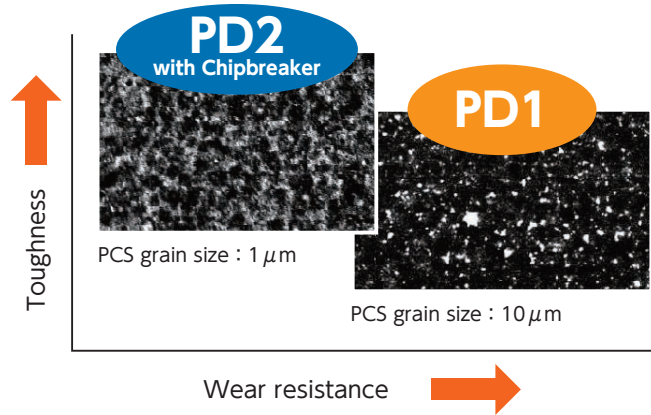
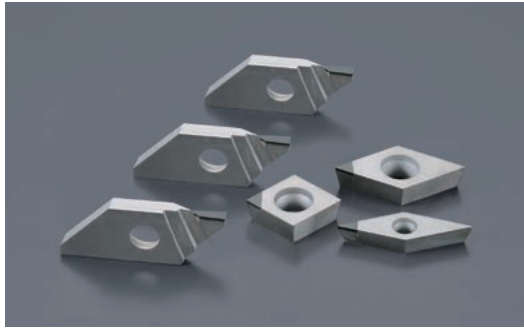
- **Excellent wear resistance due to optimum CBN content with special TiC binders**
- **Ideal for finishing ductile cast iron and continuous cuts for finishing hardened materials**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Ductile cast iron	Turning	Finish	300-1600	.004-.016	.012-.080	○	●
Hardened material	Turning (Continuous)	Rough-Finish	300-1000	.004-.020	.004-.040	○	●

Hub	
Ductile cast iron	
1150-1130 SFM	
.003 IPR	
.0079" DOC	
WET	
NTK : B52	60 pcs
Competitor's CBN	30 pcs

PCD (Polycrystalline Diamond)



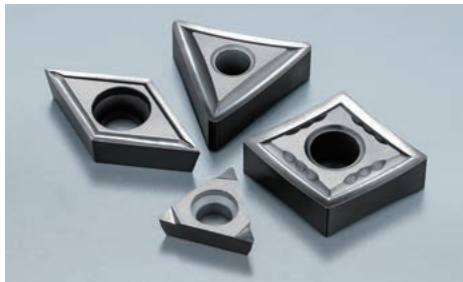
Features

- **Faster cutting speed than carbide**
- **Recommended for cutting aluminum and copper alloys thanks to its excellent adhesion resistance**
- **Incorporates a very sharp cutting edge**
- **Available for general turning and cut-off as well as inserts for milling cutters**

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR/IPT)	Depth of cut (inch)	DRY	WET
Aluminum alloy Non-ferrous material	Turning	Rough-Finish	-6500	-.006	-.200		●
	Milling	Rough-Finish	-25000	-.008	-.200		●

UC1 (Diamond Coating)



	DLC	PCD	UC1
Crystal structure	Amorohous	Diamond	Diamond
Binder	None	Co, Ni	None
Diamond grain size	Amorohous	10 μm	<0.1 μm
Diamond surface roughness	0.25	0.25	25
Hardness (GPa)	10	75	90

Features

- **Pure and hard fine particle diamond coating, so it has better wear resistance compared to past PCD tools**
- **NTK's carbide base material and state of the art surface treatment ensures good coating adherence to reduce flaking which provides stable cutting and long tool life.**
- **Molded chipbreakers provide excellent chip control reducing machine downtime**
- **Multiple insert edges reduces machining costs**

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR/IPT)	Depth of cut (inch)	DRY	WET
Aluminum alloy Non-ferrous material	Turning	Rough-Finish	-5000	-.010	-.160		●
Copper	Turning	Rough-Finish	-3000	-.010	-.160		●
Carbon	Turning	Rough-Finish	-1000	-.010	-.160	○	●

PD1

Features

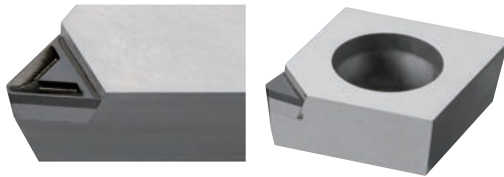
- Sharp cutting edges
- Enables high precision and stable machining by controlling the potential for built-up edge

Spool		
①Rough	②Finish	
A6061	A6061	
660 SFM	660 SFM	
.004 IPR	.002 IPR	
.200 DOC	.008 DOC	
①NTK : PD1		30,000 pcs
②NTK : PD1		30,000 pcs

PD2

Features

- Super micro grain PCD maintains sharp cutting edges with increased chipping resistance
- Good chip control due to the high rake angle on the insert
- 3D Chipbreaker is now available



Spool		
A6061		
560 SFM		
.002 IPR		
.006 DOC		
NTK : PD2		15,000 pcs
Competitor's PCD		10,000 pcs

UC1

Features

- Improved wear resistance due to the sharp standard chipbreaker, and long tool life
- Multiple insert edges contributes to cost reduction

Carbon Plate		
Carbon		
1000 SFM		
.004-.016 IPR		
.040 DOC		
DRY		
NTK : UC1		4 pcs/corner
Competitor's diamond coating		3 pcs/corner

Recommended Insert Grade and Cutting Conditions

Front Turning

CSVF / CC.. / DC.. / VC.. / VB.. / TN.. / TF

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4			ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4 / QM3			QM3 / VM1		QM3	TM4 / DM4 / DT4	
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	150 300 500		
	≤.004 DOC	AMX KHG .0004 .0008 .0012				AMX KHG .0004 .0012 .0016			
	.004 to .060 DOC	YL CL AM3 S .0008 .0016 .0024				YL CL AM3 AZ7 S U/U1 UL .0008 .0020 .0032			
	≥ .060 DOC	YL CL AM3 S .0008 .0015 .0025				YL CL AM3 ZP .0012 .0024 .0040			

Back Turning

CSVB

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	DM4 / DT4					VM1		
	2nd choice	VM1					DM4 / DT4		
Cutting Speed (SFM)		75 125 225	100 200 275			100 200 300			
Feed Rate (IPR)	X Direction	.0004 .0008 .0012							
	Z Direction	.0004 .0012 .0016							

TBDP / TBMH / TBP / TBPA / TBVC

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4			ST4 DM4	DM4 DT4 QM3	TM4	QM3	
	2nd choice	TM4 / QM3			VM1		QM3	TM4 / DM4 / DT4	
Cutting Speed (SFM)		75 125 225	100 200 275			150 300 500			
Feed Rate (IPR)	X Direction	.0004 .0008 .0012				.0004 .0008 .0016			
	Z Direction	.0008 .0016 .0024				.0008 .0016 .0031			

TB32 / TB43

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	ZM3					ZM3		
	2nd choice	ZM3					ZM3		
Cutting Speed (SFM)		50 100 150				ZM3 150 300 425 Z15 400 600 800			
Feed Rate (IPR)	X Direction	.0004 .0012 .0020				.0004 .0012 .0020			
	Z Direction	.0016 .0020 .0031				.0016 .0031 .0059			

Tooling for
Swiss-type Lathes

[Recommended cutting conditions]

Cut Off

CSV

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	DM4 / DT4					VM1		
	2nd choice	VM1					DM4 / DT4		
Cutting Speed (SFM)		100 160 230				100 200 300			
Feed Rate (IPR)		.0004 .0008 .0012				.0004 .0012 .0020			

CTP / CTPA / CTPS / CTPW

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4			ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4			QM3 / VM1		QM3	TM4 / DM4 / DT4	
Cutting Speed (SFM)		100 160 230				100 200 300			
Feed Rate (IPR)		.0008 .0012 .0020				.0008 .0016 .0024			

CTDP / CTWP / CTV

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4			ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4 / QM3					QM3	TM4 / DM4	
Cutting Speed (SFM)		100 160 230				100 200 300			
Feed Rate (IPR)		.0012 .0020 .0031				.0016 .0031 .0047			

Recommended Insert Grade and Cutting Conditions

Grooving

CSV / GTG / GTMH / GTMT / GTMX / SBG

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels		
					Hard to cut	Free cutting				
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	DM4 / DT4			ST4 DM4	DM4 DT4	TM4	QM3		
	2nd choice	TM4 / QM3			QM3 / VM1		QM3	TM4 / DM4 / DT4		
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	150 300 500			
Feed Rate (IPR) A. Grooving B. Side turning*	Width .010-.020	A. .0002 - .0012								
		B. .0001 - .0002								
	.020-.040	A. .0008 - .0024						A. .0008 - .0028		
		B. .0002 - .0004						B. .0002 - .0004		
	.040-.080	A. .0012 - .0028						A. .0012 - .0031		
B. .0008 - .0020						B. .0012 - .0024				
> .080	A. .0012 - .0079									
		B. .0012 - .0024								

*When side turning, Max. DOC is under .0079". Under .016" width side turning impossible

GVW / Groove Duo

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	QM3							
	2nd choice	QM3							
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	150 300 500		
Feed Rate (IPR) A. Grooving B. Side turning*	Width .118-.157	A. .0020 - .0059							
	.157-.197	A. .0039 - .0079					A. .0039 - .0098		
							B. .0059 - .0118		
> .197	A. .0059 - .0138								

*Max DOC is 80% of width

GTPA

Work Material		Aluminum Alloy
Common Name		ASTM 5056 ASTM 6061
Grade	1st choice	PD1
	2nd choice	KM1
Cutting Speed (SFM)		PD1 330 650 1000 KM1 160 330 650
Feed Rate (IPR) A. Grooving B. Side turning		A. .0020 - .0079 B. .0039 - .0079

Threading

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	VM1		VM1 / ZM3		QM3		
	2nd choice	ZM3		QM3		VM1 / ZM3		
Cutting Speed (SFM)		75 125 225	100 200 275	130 230 330	150 300 600	150 300 500		

*Unless your machine is equipped with high speed threading program, please set the feed rate to 80 IPM or lower to prevent making incomplete threads

ID Boring

diameter ≤ .240" (LBM / STICK DUO)

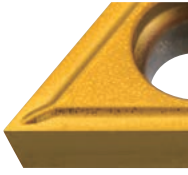
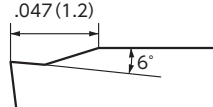
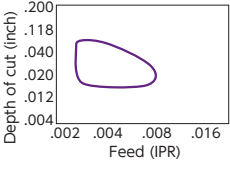


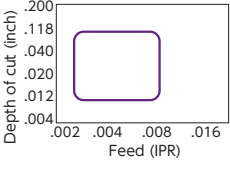

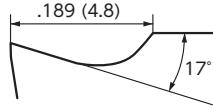
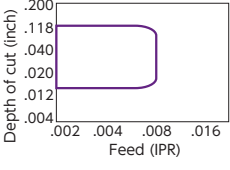

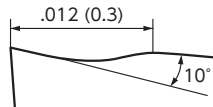
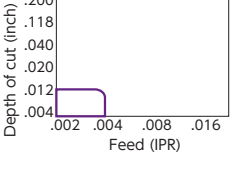

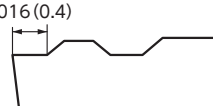
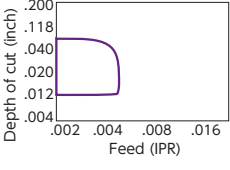

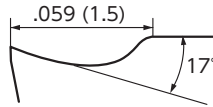
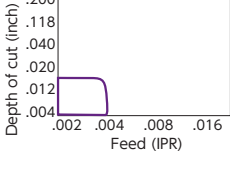
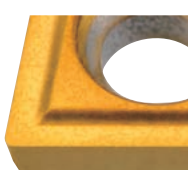
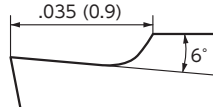
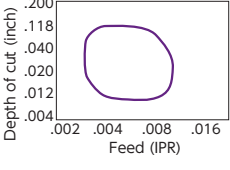
Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	DM4 / DT4					VM1 / TM4		
	2nd choice	VM1 / ZM3					ZM3		
Cutting Speed (SFM)		60 160 230				100 200 300			
Feed Rate (IPR)		.0004 .0012 .0020							
Depth Of Cut (DOC)		.0020 .0031 .0039							

diameter > .240"

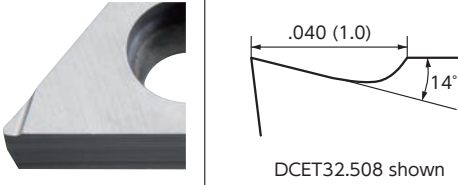
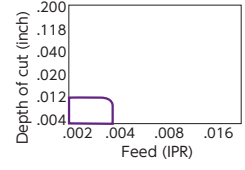
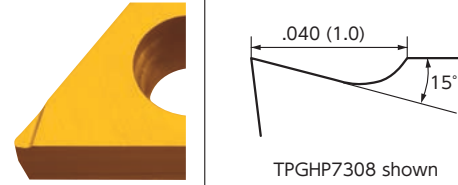
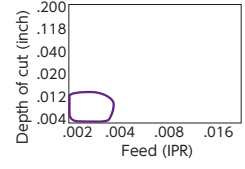
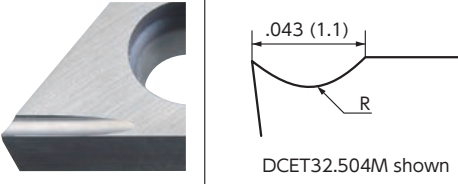
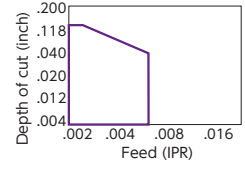
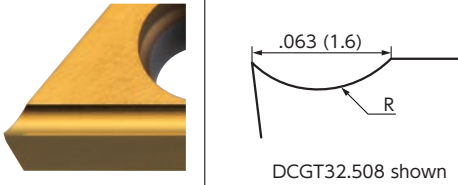
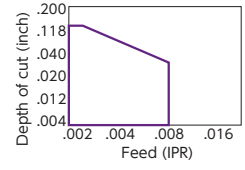
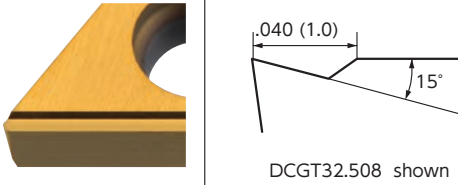
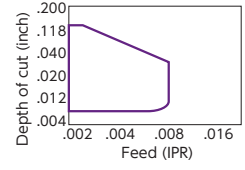
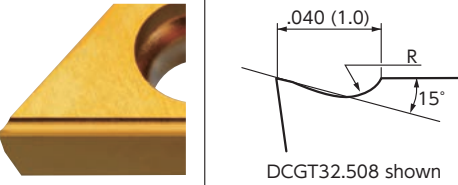
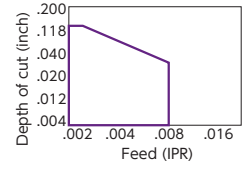

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4			ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4			QM3 / TM4		QM3	TM4 / DT4	
Cutting Speed (SFM)		150 230 330			130 230 330	150 300 600	150 300 500		
Feed Rate (IPR)		.0008 .0024 .0047							
Depth Of Cut (DOC)		.0039 .0197 .0787							

Chipbreakers for Positive Inserts

Molded Chipbreakers for Positive Inserts

Name	Chipbreaker Geometry	Features	Chip Control Range
AM3	  <p>DCGT32.508 shown</p> <p>→O48</p>	<ul style="list-style-type: none"> ● All purpose chipbreaker ● Sharp edge with toughness 	
YL	  <p>DCGT11T302MYL</p> <p>WATCH ON YouTube →O48</p>	<ul style="list-style-type: none"> ● Great combination of sharpness and toughness ● Covers extremely wide range ● Excellent chip control 	
CL	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →O48</p>	<ul style="list-style-type: none"> ● Sharpest molded Chipbreaker ● Excellent chip control ● Less tool pressure 	
AMX	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →O48</p>	<ul style="list-style-type: none"> ● Designed for very light depth of cut ● Good sharpness 	
AZ7	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube</p>	<ul style="list-style-type: none"> ● Excellent chip control at light feed and light depth of cut 	
FG	  <p>TPGH221 shown</p> <p>→O55</p>	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD at light depth of cut ● Sharp cutting edge with high rake angle 	
AM5	  <p>CPGH21.508 shown</p>	<ul style="list-style-type: none"> ● Chipbreaker for boring ● Provides both good cutting performance and chip control 	

Ground Chipbreakers for Positive Inserts

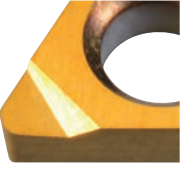
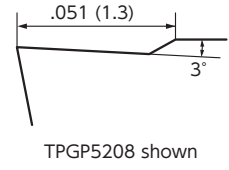
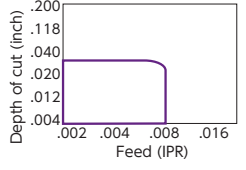
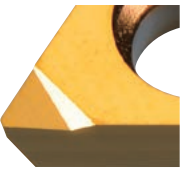
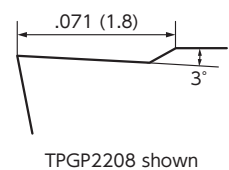
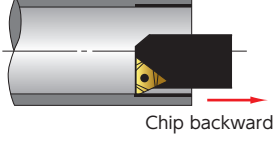
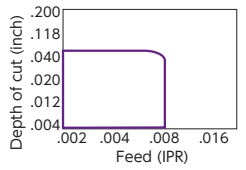
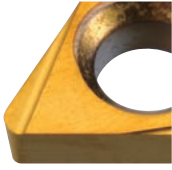
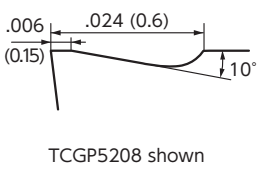
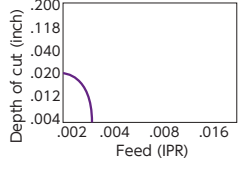
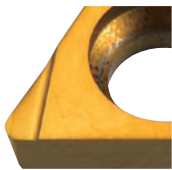
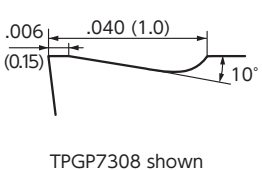
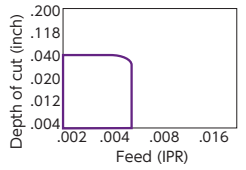

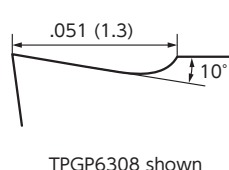
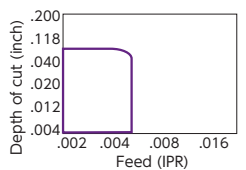
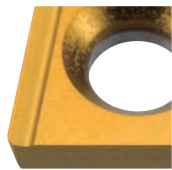
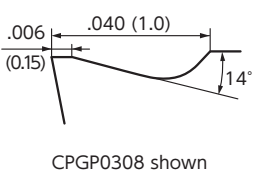
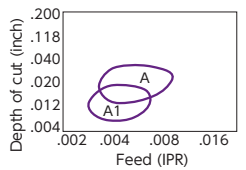

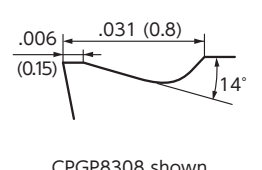

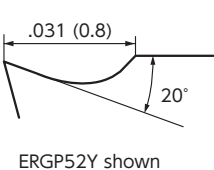
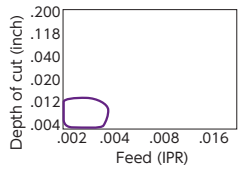
Name	Chipbreaker Geometry	Features	Chip Control Range
KHG	 <p>DCET32.508 shown</p>	<ul style="list-style-type: none"> ● Excellent chip control on finishing cuts ● For super high-precision machining <p>* Precision tolerance in corner radius: $\pm .0004''$</p>	
K	 <p>TPGHP7308 shown</p>	<ul style="list-style-type: none"> ● Superb chip control on finishing applications ● Sharp cutting edge with the high rake angle 	
UHG	 <p>DCET32.504M shown</p>	<ul style="list-style-type: none"> ● Sharp cutting edge ● Covers wide cutting condition range <p>* Precision tolerance in corner radius: $\pm .0004''$</p>	
U/U1	 <p>DCGT32.508 shown</p>	<ul style="list-style-type: none"> ● Sharp cutting edge prevents materials from work hardening 	
S	 <p>DCGT32.508 shown</p>	<ul style="list-style-type: none"> ● Standard ground chipbreaker with wide cutting condition coverage ● Sharp cutting edge with excellent chip control 	
AT	 <p>DCGT32.508 shown</p>	<ul style="list-style-type: none"> ● Excellent adhesion resistance with dimensional stability ● Best for small diameter parts and for machining low carbon steels 	
VPH	<p>Top side</p>  <p>Flank side</p>	<ul style="list-style-type: none"> ● Very up-sharp edge with mirror finish <p>V: Mirror finish on Top and Flank side with R0 nose radius P: Mirror finish on Top and Flank side H: Mirror finish on Top side</p>	<p>—</p>

Chipbreakers for Positive Inserts



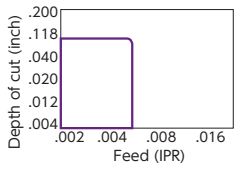


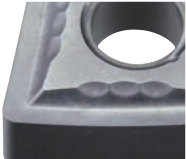

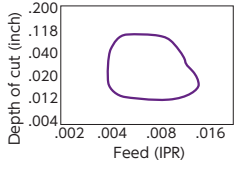

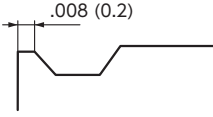
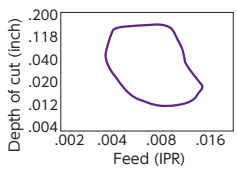
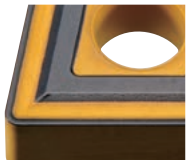
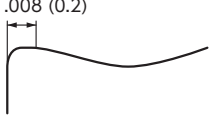
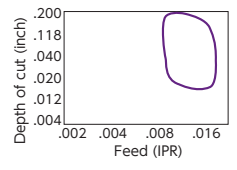
Ground Chipbreakers for Positive Inserts (continued)

Tooling for Swiss-type Lathes

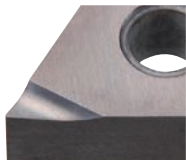
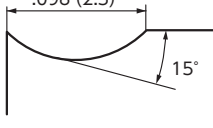
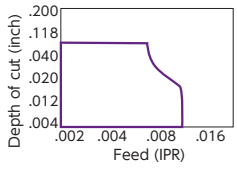
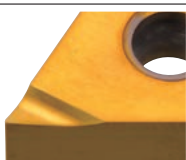
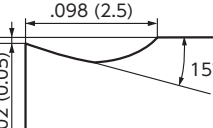
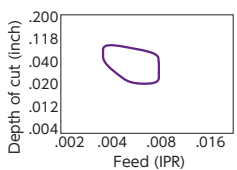
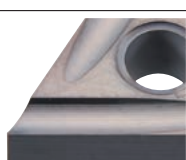
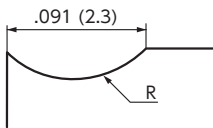
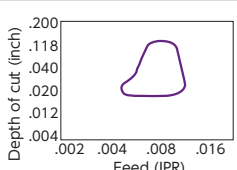

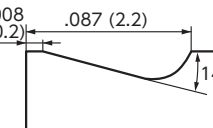
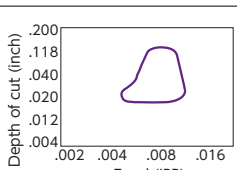
[Ground Chipbreakers for Positive Inserts]

Name	Chipbreaker Geometry		Features	Chip Control Range
F05		 TPGP5208 shown	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD ● Excellent choice for blind hole machining 	
F1		 TPGP2208 shown	 Chip backward	
B1		 TCGP5208 shown		
B2		 TPGP7308 shown	<ul style="list-style-type: none"> ● Stable cutting when boring thanks to sharp and tough cutting edge 	
B3		 TPGP6308 shown		
A		 CPGP0308 shown	<ul style="list-style-type: none"> ● Tough cutting edge and good chip control 	
A1		 CPGP8308 shown	<ul style="list-style-type: none"> ● General-purpose ID chipbreaker 	
A2		 ERGP52Y shown	<ul style="list-style-type: none"> ● Control chips at light feed and light depth of cut ● Sharp cutting edge due to large rake angle 	

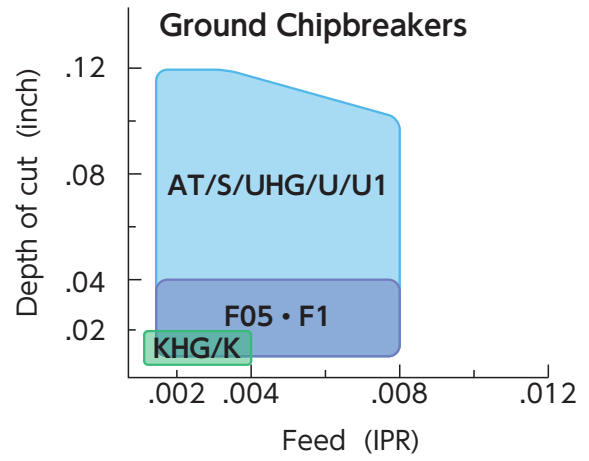
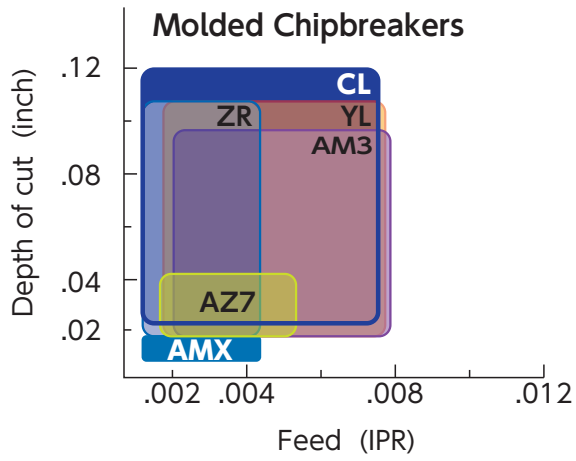
Molded Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
UL			<ul style="list-style-type: none"> ● Negative insert with a positive insert's chipbreaker ● Reduced burr ● Improved microfinish ● Superb advantage in cost per corner over positive inserts 	
	 	TNGG3304M shown		
ZP			<ul style="list-style-type: none"> ● Double-positive rake and sharp cutting edge ● Low tool pressure even at heavy depth of cut 	
		CNMG432 shown		
Z5			<ul style="list-style-type: none"> ● Very tough insert ● Designed for machining with heavy interruption 	
		CNMG432 shown		
G			<ul style="list-style-type: none"> ● Tough chipbreaker for roughing with exceptional stability 	
		CNMG432 shown		

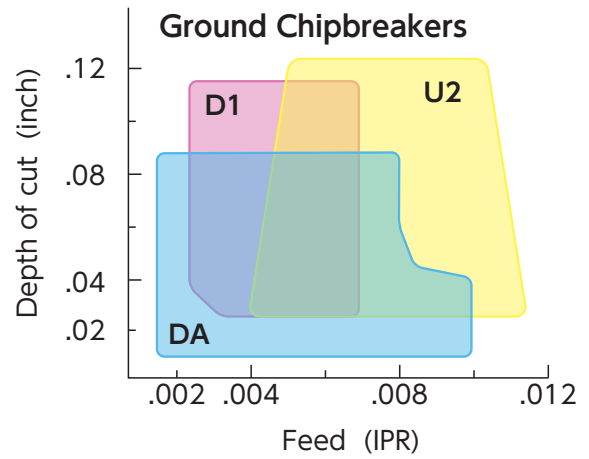
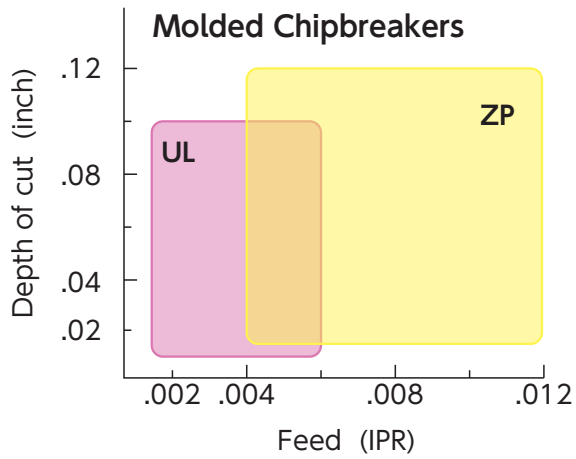
Ground Chipbreakers for Negative Inserts

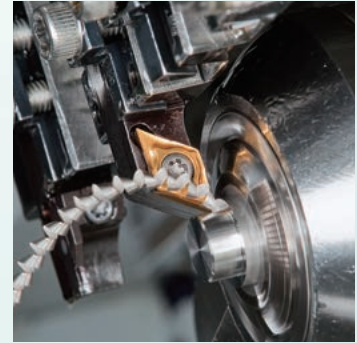
Name	Chipbreaker Geometry		Features	Chip Control Range
DA			<ul style="list-style-type: none"> ● Excellent chip control and sharp cutting edge 	
		TNGG3304 shown		
D1				
		TNEG3308 shown		
U2			<ul style="list-style-type: none"> ● Reduced burr and work hardening due to high rake design 	
		TNGG3308 shown		
C			<ul style="list-style-type: none"> ● General-purpose chipbreaker with excellent toughness and chip control 	
		TNGG3308 shown		

Positive Inserts



Negative Inserts

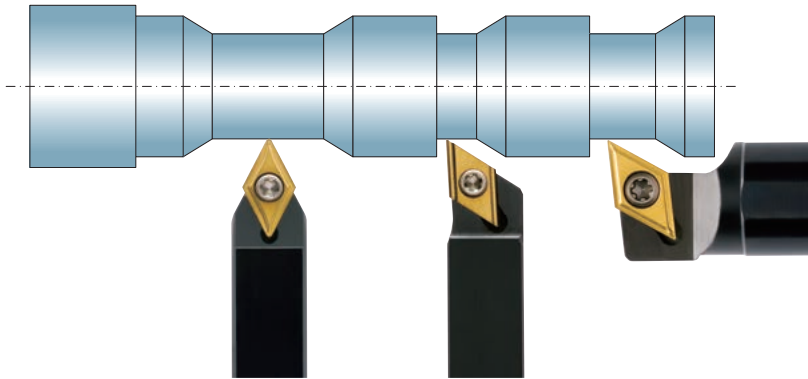




General Turning / Front Turning

- **Front Turning Tools** Q2
- **Recommended Cutting Conditions**..... Q4
- **General Information** Q4
- **ANSI / ISO Insert Nomenclature** Q6
- **Tool List** Q8
 - CSV Series Q8
 - CC.. Series..... Q10
 - DC.. Series Q16
 - VB.. Series..... Q23
 - VC.. Series Q24
 - VP.. Series..... Q29
 - TC.. Series..... Q31
 - TFT Series Q32
 - TN.. Series..... Q34
 - CN.. Series Q38
 - DN.. Series Q40

NTK General / Front Turning Tools - Product Lines



Insert	CSVF →Q9	
	CSV	DS-CSV
Holder		

Insert	CC..21/32.5.. →Q13					
	SCAC	SCLC	SCLC-OH2/OH	SCLC-F	DS-SCLL	DS-SCLL-ACH
Holder						
			Coolant through	Shifted		DS-ACH

Insert	DC..21/32.5..			DC..21/32.5..WP.. →Q20		
	SDJC	SDJC-OH2/OH	SDJC-F	Y-SDJC	Y-SDJC-OH2/OH	CH-SDUC
Holder						
		Coolant through	Shifted	Y-axis	Y-axis w/ Coolant through	

Insert	DC..21/32.5..WP.. →Q20		DC..21/32.5.. →Q20				
	DS-SDUL	DS-SDUL-ACH	SDXC	DS-SDX	SDQC	SDNC	Y-SDNC
Holder							
		DS-ACH					Y-axis

Insert	VB..33 →Q23	VC..22..-WP					VC..22.. →Q27
	SVJB-OH2/OH	SVAC	SVJC	SVJC-OH2/OH	SVJC-F	Y-SVJC	Y-SVJC-OH2/OH
Holder	→Q23	→Q24	→Q24	→Q24	→Q24	→Q26	→Q26
	Coolant through			Coolant through	Shifted	Y-axis	Y-axis w/ Coolant through

Insert	VC..22.. →Q27				VCGT21.5.. →Q28
	SVXC	DS-SVXC	SVQC	SVVCN	SVAC-1L
Holder	→Q25	→Q26	→Q25	→Q25	→Q28

Insert	VP..08020.. →Q29			VP..22.. →Q30		
	SVQP	CH-SVUP	DS-SVXP	SVXP	DS-SVVPN	DS-SVVPN-ACH
Holder	→Q29	→Q29	→Q29	→Q30	→Q30	→Q30
						DS-ACH

Insert	TFX33..	TF33.. →Q38	TC..73../..21..-WP		TC..73../..21.. →Q31	CN..43.. →Q38	DN..43.. →Q40
	TFX-OH	TFT	STAC	CH-STUC	PCLN	PDJN	
Holder	→Q33	→Q33	→Q31	→Q31	→Q38	→Q40	

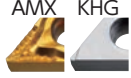
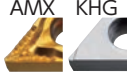
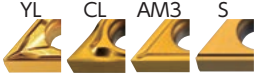

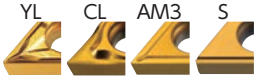
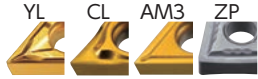
Insert	TN..33.. →Q36					
	PTXN	STXN	DS-PTX	DS-PTX-ACH	PTAN	PTLN
Holder	→Q34	→Q34	→Q34	→Q34	→Q34	→Q34
				DS-ACH		

Front Turning

Recommended Insert Grade and Cutting Conditions

Front Turning

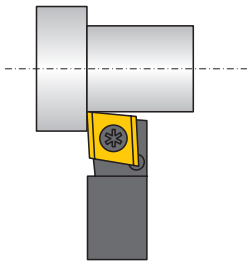
CSVF / CC.. / DC.. / VC.. / VB.. / TN.. / TF

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels			Alloy Steels	Carbon Steels
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4			ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4 / QM3			QM3 / VM1		QM3	TM4 / DM4 / DT4	
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600		150 300 500	
Recommended Chipbreaker Feed Rate (IPR)	≤.004 DOC	AMX KHG 				AMX KHG 			
		.0004 .0008 .0012				.0004 .0012 .0016			
	.004 to .060 DOC	YL CL AM3 S 				YL CL AM3 AZ7 S U/U1 UL 			
		.0008 .0016 .0024				.0008 .0020 .0032			
	≥ .060 DOC	YL CL AM3 S 				YL CL AM3 ZP 			
		.0008 .0015 .0025				.0012 .0024 .0040			

General Turning Inserts Explained

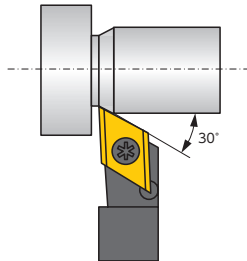
Advantage for each geometry

CC.. Style (80°)



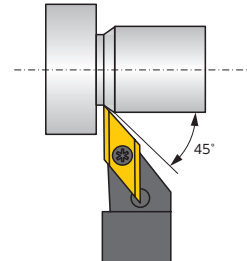
- Increased toughness. Cutting edge is close to insert pocket.
- Not applicable to undercut

DC.. Style (55°)



- Versatile geometry. Toughness of CC.. with flexibility of VC..
- Up to 30 deg. undercuts

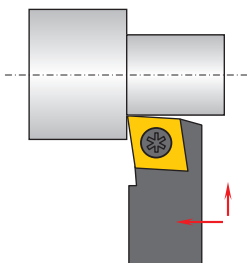
VB / VC / VP Style (35°)



- Wide coverage in work geometry.
- Up to 45 deg. undercuts

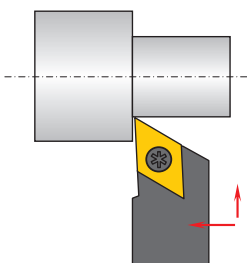
Chip Control and Finish

SCLCR →Q10



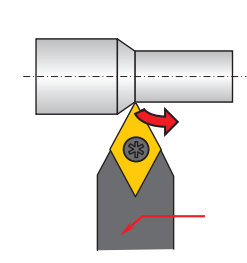
Rigid clamping
High dimensional repeatability

SDJCR →Q16



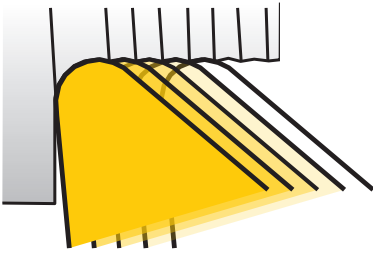
Increased room for chip evacuation
creates better surface finish

SDNCN →Q17

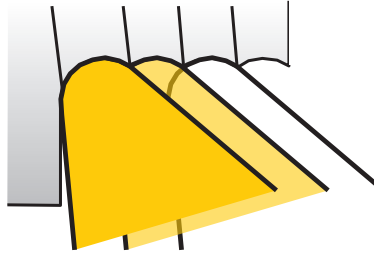


Chips flow away from the work

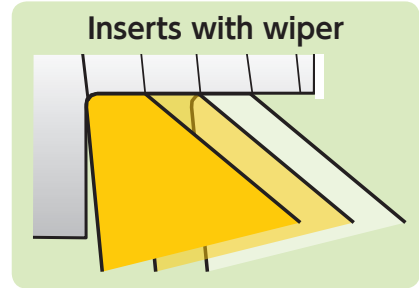
Surface Finish in General Turning Using Inserts with Wiper Flat



Slower feed rates create better finishes but sacrifices cycle time, chip control, and tool life.



Fast feed rates improve chip control but produce a bad surface finish.



Inserts with a wiper flat create good chip control and surface finish when feed rates are increased.

Wiper Flat Insert - WP series

DCGT.. -WP (TFD) →Q20·Q21



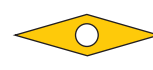
for SDJC toolholders

TCGT.. -WP (TFT) →Q31



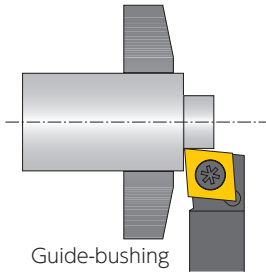
for STAC toolholders

VCGT.. -WP (TFV) →Q27



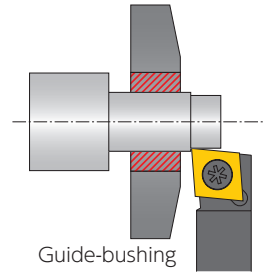
for SVAC toolholders

Roughing and Finishing Long Work on Swiss Lathes



Guide-bushing

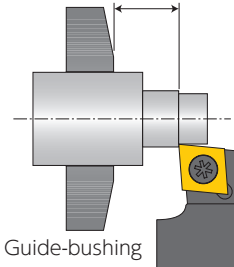
Single pass machining is common in Swiss front turning operations.



Guide-bushing

Conventional toolholders are not suitable for roughing or finishing of long parts. The guide-bushing cannot hold machined bar stock.

Shifted Holders



Guide-bushing

Shifted Holders make a finishing process possible without worrying about the bar stock coming out of the guide-bushing.

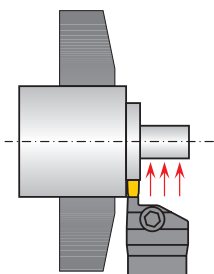
Coolant flows effectively which improves chip control thanks to the increased room between the tools and guide-bushing.

SCLC-N-F →Q10

SDJC-N-F →Q16

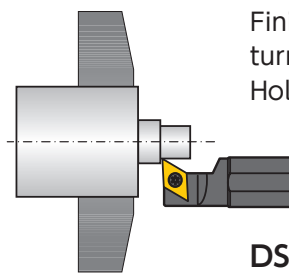
SVJC-N-F →Q24

Combination of Grooving Tool and DS Holders



Rough with grooving tool for good chip control

GTWP Holders →T9

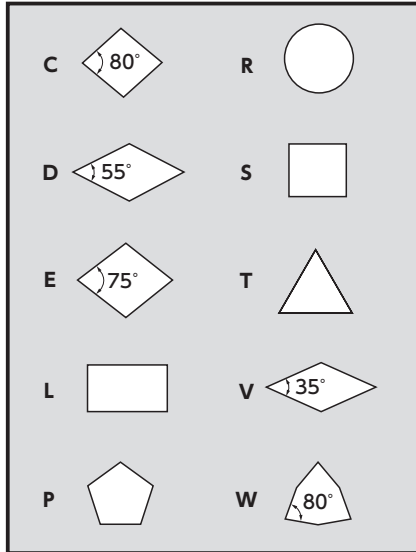


Finish by using general turning inserts with DS Holders

DS Holders

ANSI / ISO Insert Nomenclature

1 Shape



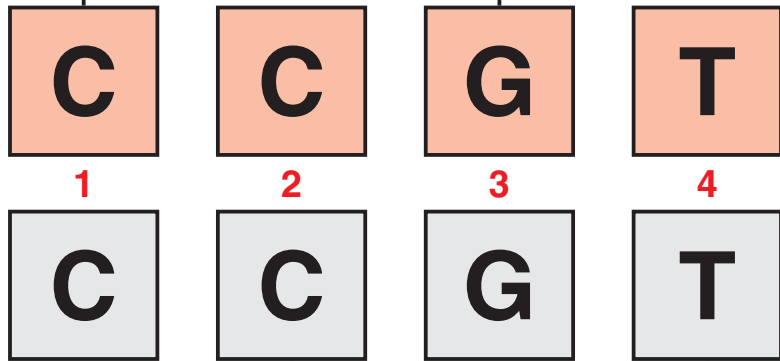
3 Tolerance Class

Symbol	d (inch)	m (inch)	s (inch)
A	±.0010	±.0002	±.0010
F	±.0050	±.0002	±.0010
C	±.0010	±.0005	±.0010
H	±.0050	±.0005	±.0010
E	±.0010	±.0010	±.0010
G	±.0010	±.0010	±.0050
J	±.0020	±.0020	±.0050
K	±.002 ~ ±.005	±.0005	±.0010
L	±.002 ~ ±.005	±.0010	±.0010
M	±.002 ~ ±.005	±.003 ~ ±.007	±.0050
N	±.002 ~ ±.005	±.003 ~ ±.007	±.0010
U	±.003 ~ ±.010	±.005 ~ ±.015	±.0050

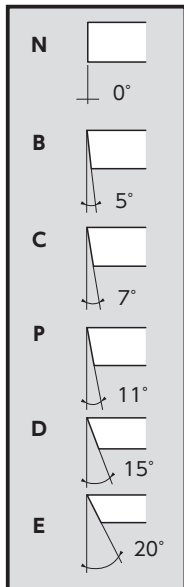
Inscribed Circle	M tolerance	
	d (inch)	m (inch)
1/4	±.002	±.003
3/8	±.002	±.003
1/2	±.003	±.005
5/8	±.004	±.006
3/4	±.004	±.006
1	±.005	±.007

Inscribed Circle	M tolerance	
	d (inch)	m (inch)
1/4	±.002	±.004
3/8	±.002	±.004
1/2	±.003	±.006
5/8	±.004	±.006
3/4	±.004	±.007

Inch



2 Clearances



4 Type

Type	Symbol	Type	Symbol
	N (E)		H
	F		B
	R		
	A		T
	G		
	M		
Special design	X		W

6 Thickness

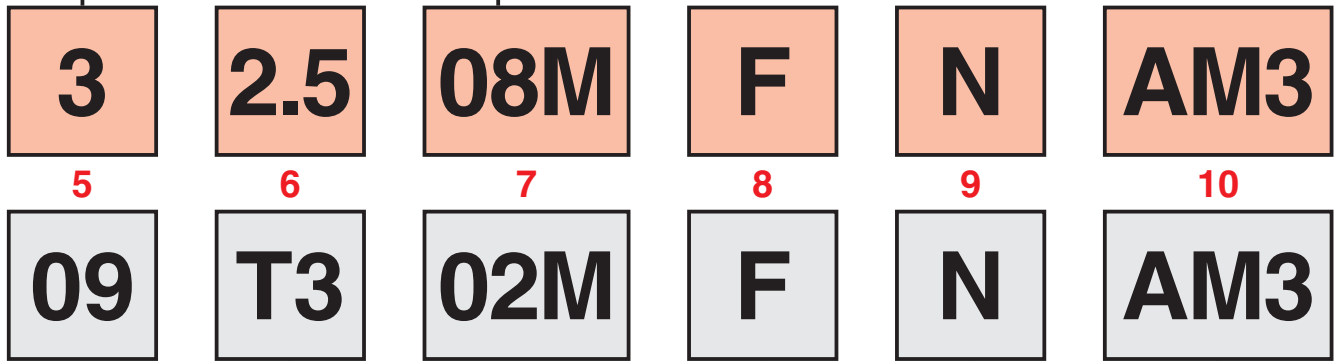
Thickness S(inch)	Inch	Metric
3/32	1.5	02
1/8	2	03
5/32	2.5	T3
3/16	3	04
1/4	4	06
5/16	5	07
3/8	6	09
1/2	8	12

5 Cutting Edge Length

Inch		Metric					
Inscribed Circle							
1/4	2	06	07	06	11	11	04
3/8	3	09	11	09	16	16	06
1/2	4	12	15	12	22	22	08
5/8	5	16	19	15	27	27	10
3/4	6	19	23	19	33	33	13
1	8	25	31	25	44	44	17

7 Nose Radius

Corner Radius	Inch	Metric
	.001	01
	.003	04M
	.004	04
	.007	08M
	.008	08
	.015	1M
	.016 (1/64)	1
	.031 (1/32)	2



8 Edge Sharpness

F	Up-sharp edge (without any edge preparation)
(Blank)	Non up-sharp edge

9 Hand of Chipbreaker

N	Neutral*
R	Right-hand
L	Left-hand

* Omitted when edge is not "up-sharp"

10 Type of Chipbreaker

See page P20 to P23 for chipbreaker information

11 Wiper insert

"-WP" after chipbreaker

Front Turning

CSV Series

Best for up to .200" diameter material

CSV-NC

For Gang-style machine

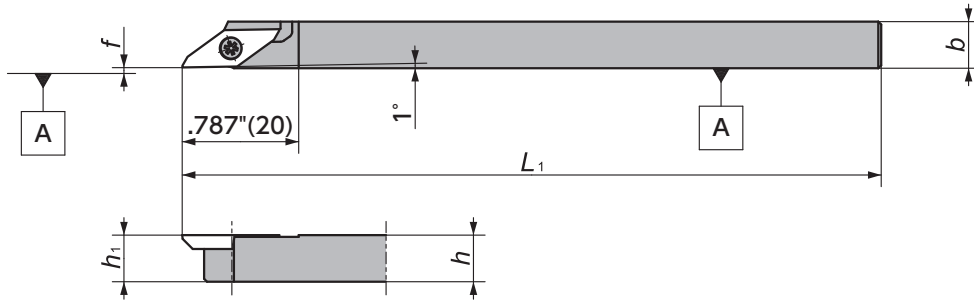


Figure-1

Right-Hand style shown

CSV

For Cam-style machine

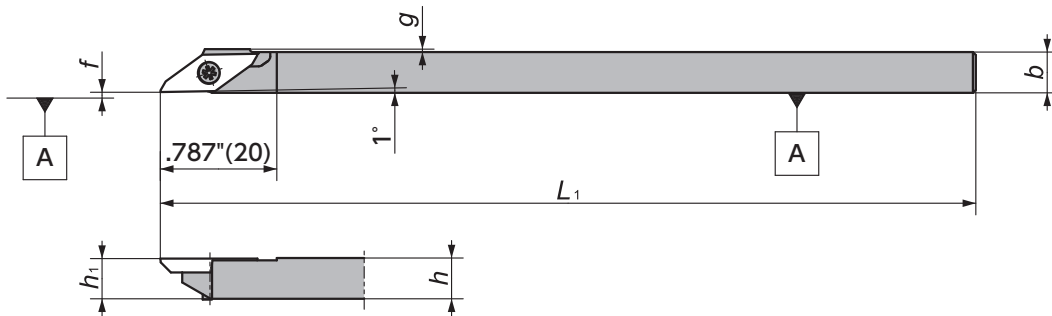


Figure-2

Right-Hand style shown

DS-CSVL

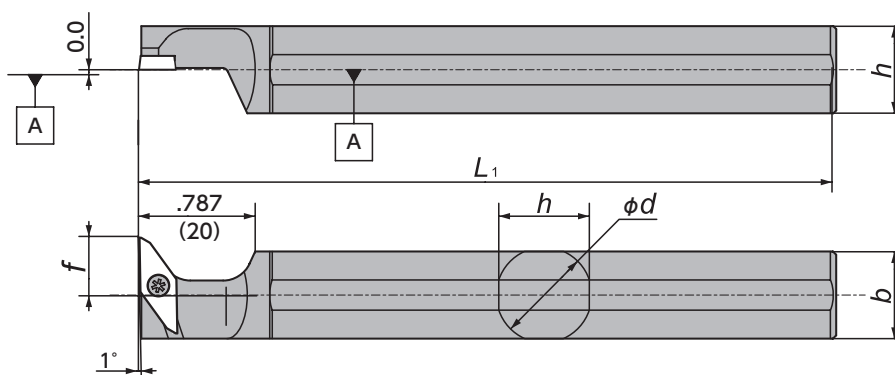



Figure-3


Left-Hand style shown
Takes Right-hand insert

CSV Series - Toolholders

CSV^{R/L} / CSV^{R/L}-NC

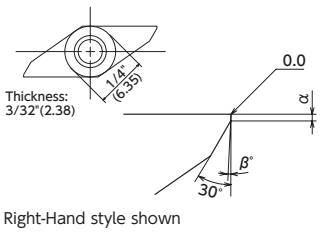
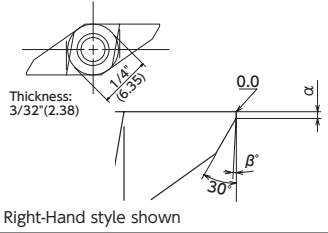
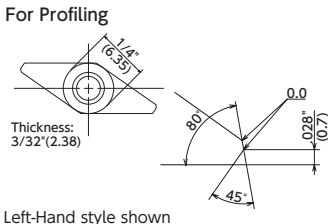
Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV ^{R/L} 06-IN-NC	1	●	●	3/8		3/8		3/8		4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08-IN-NC	1	●	●	1/2		1/2		1/2		4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 12NC	1	●	●	.472	12	.472	12	.472	12	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08	2	●	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 10	2	●	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV ^{R/L} 12	2	●	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	3	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

CSV Series - Inserts

CSVF - Front Turning Mirror finish

Shape	Item Number	Chip-breaker	Max Depth of Cut		Edge Geometry (α × β°)		Coated Carbide					
			(Inch)	(mm)	(Inch)	(mm)	DT4		VM1		ZM3	
							R	L	R	L	R	L
 <p>Thickness: 3/32" (2.38)</p> <p>Right-Hand style shown</p>	CSVF11F ^{R/L} V M	No	—	—	.012 × 5°	0.3 × 5°			○	○		
	CSVF11F ^{R/L} V-A M		—	—	.012 × 2°	0.3 × 2°			○			
	CSVF11F ^{R/L} V-M M		—	—	.006 × 2°	0.15 × 2°	●		●	●	○	
	CSVF11F ^{R/L} V-C M		—	—	.006 × 5°	0.15 × 5°			○			
 <p>Thickness: 3/32" (2.38)</p> <p>Right-Hand style shown</p>	CSVF11F ^{R/L} VB M	Yes	.118	3	.012 × 5°	0.3 × 5°			●	○		
	CSVF11F ^{R/L} VB-A M		.118	3	.012 × 2°	0.3 × 2°			○			
	CSVF11F ^{R/L} VB-M M		.118	3	.006 × 2°	0.15 × 2°	●		●	●	○	
	CSVF11F ^{R/L} VB-C M		.118	3	.006 × 5°	0.15 × 5°			○			
 <p>Thickness: 3/32" (2.38)</p> <p>Left-Hand style shown</p>	CSVF11F ^{R/L} VX M	No	—	—							○	

Note: All angles shown are obtained when insert is set in the holder

CSV series →O51

Cutting condition →Q4

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

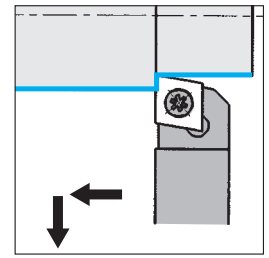
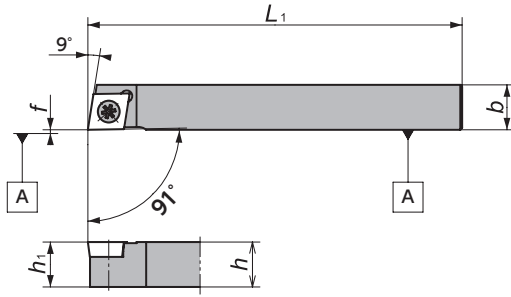
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Toolholders for CC.. Inserts

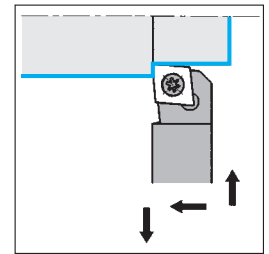
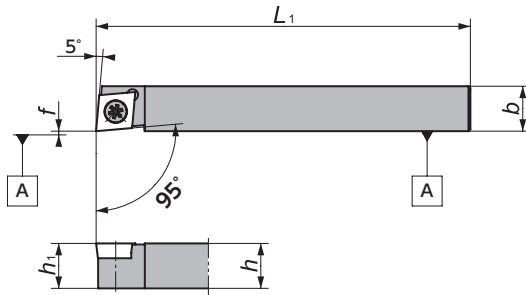
SCAC-N



Right-Hand style shown

Figure-1

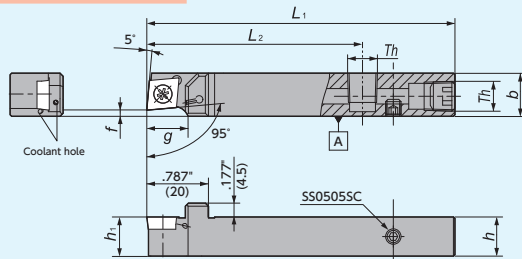
SCLC-N



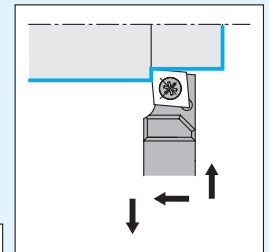
Right-Hand style shown

Figure-2

SCLC-N-OH2 (Coolant through)



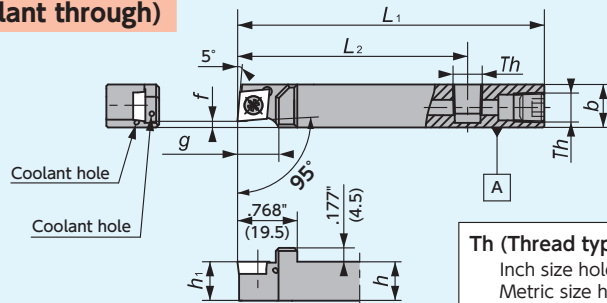
Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



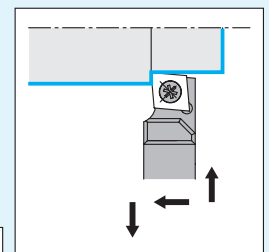
Right-Hand style shown

Figure-3

SCLC-N-OH (Coolant through)



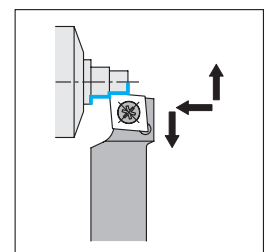
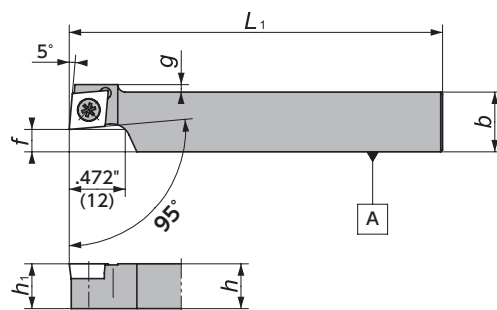
Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown

Figure-4

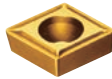
SCLC-N-F (Shifted)



Right-Hand style shown

Figure-5

CC.. Series - Toolholders



SCAC

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CC..21.5..	SCAC%10808X06N	1	○	○	.315	8	.315	8	.315	8	4.724	120	0.0	0.0	-	-	LRIS-2.5 × 7	CLR-15S
	SCAC%11010X06N	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	-	-	LRIS-2.5 × 7	CLR-15S
CC..32.5..	SCAC%11212GX09N	1	○	○	.472	12	.472	12	.472	12	3.346	85	0.0	0.0	-	-	LRIS-4 × 10	LLR-25S
	SCAC%11212X09N	1	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	-	-	LRIS-4 × 10	LLR-25S

SCLC

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		g		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
CC..21.5..	SCLC%1-062C	2	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-2.5 × 7	CLR-15S
	SCLC%1-082C	2	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-2.5 × 7	CLR-15S
	SCLC%10808X06N	2	○	●	.315	8	.315	8	.315	8	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-2.5 × 7	CLR-15S
	SCLC%11010X06N	2	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-2.5 × 7	CLR-15S
CC..32.5..	SCLC%1-083C	2	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-4 × 10	LLR-25S
	SCLC%1-103C	2	●	●	5/8	5/8	5/8	5/8	5/8	5/8	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-4 × 10	LLR-25S
	SCLC%11010H09N	2	○	○	.394	10	.394	10	.394	10	3.937	100	0.0	0.0	-	-	-	-	-	LRIS-4 × 10	LLR-25S
	SCLC%11010X09N	2	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-4 × 10	LLR-25S
	SCLC%11212GX09N	2	○	○	.472	12	.472	12	.472	12	3.346	85	0.0	0.0	-	-	-	-	-	LRIS-4 × 10	LLR-25S
	SCLC%11212X09N	2	●	●	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-4 × 10	LLR-25S
	SCLC%11616X09N	2	○	○	.630	16	.630	16	.630	16	4.724	120	0.0	0.0	-	-	-	-	-	LRIS-4 × 10	LLR-25S
CC..21.5..	SCLC%1082H-F079-OH	4	●	●	1/2	.551	14	1/2	1/2	3.937	100	.079	2	2.953	75	.472	12	NPT1/8	LRIS-2.5 × 7	CLR-15S	
CC..32.5..	SCLC%1083H-F079-OH	4	■	■	1/2	.551	14	1/2	1/2	3.937	100	.079	2	2.953	75	.472	12	NPT1/8	LRIS-4 × 10	LLR-25S	
	SCLC%1083H-F079-OH2	3	●	●	1/2	.551	14	1/2	1/2	3.937	100	.079	2	2.756	70	.472	12	NPT1/8	LRIS-4 × 10	LLR-25S	
	SCLC%1103HL-F079-OH	4	●	●	5/8	5/8	14	5/8	5/8	5/8	3.937	100	.079	2	2.953	75	.697	17.7	NPT1/8	LRIS-4 × 10	LLR-25S
	SCLC%1103XL-F079-OH2	3	●	●	5/8	5/8	14	5/8	5/8	5/8	4.724	120	.079	2	2.953	75	.697	17.7	NPT1/8	LRIS-4 × 10	LLR-25S
	SCLC%11014F09N-F02OH	4	○	○	.394	10	.551	14	.394	10	3.150	80	.079	2.0	2.165	55	.472	12	M6 × 1	LRIS-4 × 10	LLR-25S
	SCLC%11214H09N-F02OH	4	□	□	.472	12	.551	14	.472	12	3.937	100	.079	2.0	2.953	75	.472	12	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SCLC%11214H09N-F02OH2	3	●	●	.472	12	.551	14	.472	12	3.937	100	.079	2.0	2.756	70	.472	12	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SCLC%11616H09N-F02OH	4	○	○	.630	16	.630	16	.630	16	3.937	100	.079	2.0	2.953	75	.697	17.7	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SCLC%11616X09N-F02OH2	3	●	●	.630	16	.630	16	.630	16	4.724	120	.079	2.0	2.953	75	.697	17.7	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SCLC%1083C-F250	5	●	●	1/2	.984	25	1/2	1/2	1/2	4.724	120	1/4	-	-	0	0	-	-	LRIS-4 × 10	LLR-25S
	SCLC%1083C-F500	5	●	●	1/2	.984	25	1/2	1/2	1/2	4.724	120	1/2	-	-	0	0	-	-	LRIS-4 × 10	LLR-25S
	SCLC%11015X09N-F05	5	○	○	.394	10	.591	15	.394	10	4.724	120	.197	5	-	-	.079	2	-	LRIS-4 × 10	LLR-25S
	SCLC%11020X09N-F10	5	○	○	.394	10	.787	20	.394	10	4.724	120	.394	10	-	-	.079	2	-	LRIS-4 × 10	LLR-25S
	SCLC%11218X09N-F06	5	●	●	.472	12	.709	18	.472	12	4.724	120	.236	6	-	-	0	0	-	LRIS-4 × 10	LLR-25S
	SCLC%11224X09N-F12	5	●	●	.472	12	.945	24	.472	12	4.724	120	.472	12	-	-	0	0	-	LRIS-4 × 10	LLR-25S

Front Turning

● : Stock
 ● : Stock (Newly added)
 ■ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 ® : 1-2 week delivery (Right / Left-hand only)
 ® : 1-2 week delivery (Right / Left-hand only, Newly added)

Inserts → Q13 Cutting condition → Q4

Toolholders for CC.. Inserts

DS-SCL

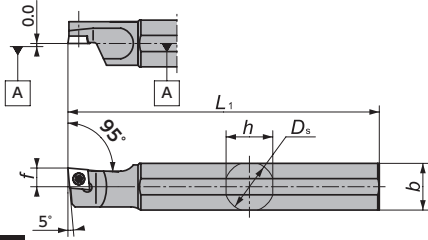


Figure-1

DS-SCL (Coolant through)

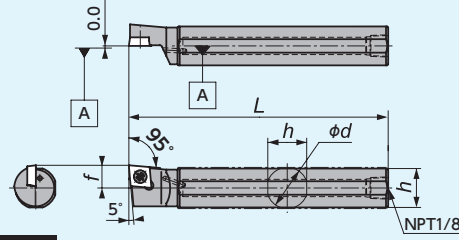
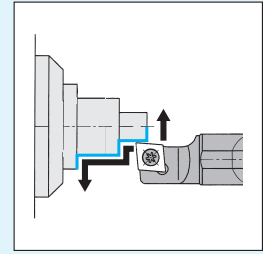


Figure-2



Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SCLL-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)		
φ .866" (22)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ 1" (25.4)		

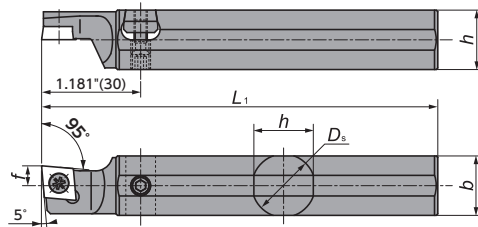
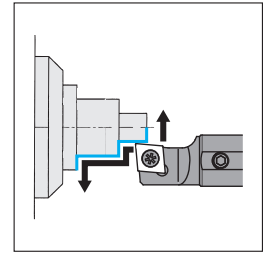


Figure-3



Left-Hand style shown
Takes Right-hand or Neutral insert

CC.. Series - Toolholders



DS-SCL (Takes right-hand or neutral insert)

Gage Insert	Item Number	Figure	Stock		D_s (mm)		h (mm)		b (mm)		L_1 (mm)		f (mm)		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CC..21.5..	DS-SCL%14F-06	1	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%15H-06	1	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%16F-06	1	○	○	.630	16.000	.591	15	.591	15	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%19-06	1	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%20X-06	1	○	○	.787	20.000	.748	19	.748	19	3.740	95	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%20-06	1	●	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%22-06	1	○	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%25-06MET	1	●	○	.984	25.000	.945	24	.945	24	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%25-06	1	●	○	1	25.400	.945	24	.945	24	5.906	150	.236	6.0	LRIS-2.5 × 7	CLR-15S
CC..32.5..	DS-SCL%14F-09	1	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%15H-09	1	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%16F-09	1	○	○	.630	16.000	.591	15	.591	15	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19GX-09	1	○	○	3/4	19.050	.709	18	.709	18	3.346	85	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09	1	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCLL19-09-004	2	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.413	10.5	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20X-09	1	○	○	.787	20.000	.748	19	.748	19	3.740	95	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20-09	1	●	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09	1	●	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09-005	2	●	○	.866	22.000	.827	21	.827	21	4.724	120	.472	12.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09MET	1	○	○	.984	25.000	.945	24	.945	24	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09	1	●	○	1	25.400	.945	24	.945	24	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%32-09	1	○	○	1.260	32.000	1.181	30	1.181	30	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%16F-09-ACH	3	●	○	.630	16.000	.610	15.5	.610	15.5	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09-ACH	3	●	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20-09-ACH	3	●	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09-ACH	3	●	○	.866	22.000	.827	21.0	.827	21.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09MET-ACH	3	●	○	.984	25.000	.945	24.0	.945	24.0	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09-ACH	3	●	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65

Inserts → Q13

Cutting condition → Q4

CC.. inserts - Carbide

(inch)	IC	T
CC..21.5	1/4	3/32
CC..32.5	3/8	5/32

[Molded Chipbreakers]

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	Graph	
					PVD Coated													
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1				
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	
	CCGT 32.501 YL	CCGT 09T300 YL	3/8	.001	●	●	●	●	●	●	●	●	●	●	●	●		
	CCGT 32.504M YL	CCGT 09T301M YL	3/8	.003	●	●	●	●	●	●	●	●	●	●	●	●		
	CCGT 32.508M YL	CCGT 09T302M YL	3/8	.007	●	●	●	●	●	●	●	●	●	●	●	●		
	CCGT 32.51M YL	CCGT 09T304M YL	3/8	.015	●	●	●	●	●	●	●	●	●	●	●	●		
	CCGT 32.52M YL	CCGT 09T308M YL	3/8	.031	●	●	●	●	●	●	●	●	●	●	●	●		
	CCGT 21.504M CL	CCGT 060201M CL	1/4	.003	○	○	●	●	●	○	○	○	○	○	○	○		
	CCGT 21.508M CL	CCGT 060202M CL	1/4	.007	○	○	●	●	●	○	○	○	○	○	○	○		
	CCGT 32.501 CL	CCGT 09T300 CL	3/8	.001	○	○	●	●	●	○	○	○	○	○	○	○		
	CCGT 32.504M CL	CCGT 09T301M CL	3/8	.003	○	○	●	●	●	○	○	○	○	○	○	○		
	CCGT 32.508M CL	CCGT 09T302M CL	3/8	.007	○	○	●	●	●	○	○	○	○	○	○	○		
CCGT 32.51M CL	CCGT 09T304M CL	3/8	.015	○	○	●	●	●	○	○	○	○	○	○	○			
	CCGT 21.501 FNAM3	CCGT 060200 FNAM3	1/4	.001	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 21.504M FNAM3	CCGT 060201M FNAM3	1/4	.003	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 21.508M FNAM3	CCGT 060202M FNAM3	1/4	.007	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 21.508 FNAM3	CCGT 060202 FNAM3	1/4	.008	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 21.51M FNAM3	CCGT 060204M FNAM3	1/4	.015	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 32.501 FNAM3	CCGT 09T300 FNAM3	3/8	.001	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 32.504M FNAM3	CCGT 09T301M FNAM3	3/8	.003	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 32.508M FNAM3	CCGT 09T302M FNAM3	3/8	.007	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 32.508 FNAM3	CCGT 09T302 FNAM3	3/8	.008	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 32.51M FNAM3	CCGT 09T304M FNAM3	3/8	.015	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 32.51 FNAM3	CCGT 09T304 FNAM3	3/8	.016	○	○	●	●	○	○	○	○	○	○	○	○		
	CCGT 32.52 FNAM3	CCGT 09T308 FNAM3	3/8	.031	○	○	●	●	○	○	○	○	○	○	○	○		
	CCMT 21.508 FNAM3	CCMT 060202 FNAM3	1/4	.008	○	○	○	○	○	○	○	○	○	○	○	○		
	CCMT 21.51 FNAM3	CCMT 060204 FNAM3	1/4	.016	○	○	○	○	○	○	○	○	○	○	○	○		
	CCMT 32.508 FNAM3	CCMT 09T302 FNAM3	3/8	.008	○	○	○	○	○	○	○	○	○	○	○	○		
CCMT 32.51 FNAM3	CCMT 09T304 FNAM3	3/8	.016	○	○	○	○	○	○	○	○	○	○	○	○			
CCMT 32.52 FNAM3	CCMT 09T308 FNAM3	3/8	.031	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.501 AZ7	CCGT 060200 AZ7	1/4	.001	○	○	○	○	○	○	○	○	○	○	○	○		
	CCGT 21.504M AZ7	CCGT 060201M AZ7	1/4	.003	○	○	○	○	○	○	○	○	○	○	○	○		
	CCGT 21.508M AZ7	CCGT 060202M AZ7	1/4	.007	○	○	○	○	○	○	○	○	○	○	○	○		
	CCGT 32.501 AZ7	CCGT 09T300 AZ7	3/8	.001	○	○	○	●	○	○	○	○	○	○	○	○		
	CCGT 32.504M AZ7	CCGT 09T301M AZ7	3/8	.003	○	○	○	●	○	○	○	○	○	○	○	○		
	CCGT 32.508M AZ7	CCGT 09T302M AZ7	3/8	.007	○	○	○	●	○	○	○	○	○	○	○	○		
	CCGT 32.51M AZ7	CCGT 09T304M AZ7	3/8	.015	○	○	○	●	○	○	○	○	○	○	○	○		

Front Turning

Holders → **Q10**
 Cutting condition → **Q4**
 Chipbreaker → **P20**

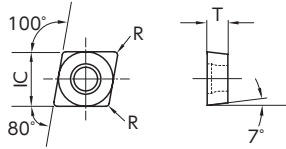
● : Stock ● : Stock (Newly added) ■□□□ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through (R)L : 1-2 week delivery (Right / Left-hand only) (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

Front Turning

[Ground Chipbreakers]

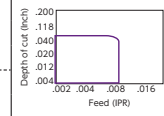
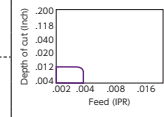
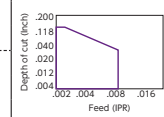
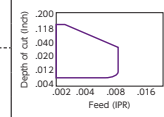
(inch)	IC	T
CC..21.5	1/4	3/32
CC..32.5	3/8	5/32

● : 1st Choice ● : 2nd choice



Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●
Cast Iron	K												●
Non-Ferrous Material	N							●	●	●	●	●	●
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating		
					PVD Coated													
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1				
	CCGT 21.501 $\frac{3}{8}$ L S	CCGT 060200 $\frac{3}{8}$ L S	1/4	.001														
	CCGT 21.504M $\frac{3}{8}$ L S	CCGT 060201M $\frac{3}{8}$ L S	1/4	.003														
	CCGT 21.504 $\frac{3}{8}$ L S	CCGT 060201 $\frac{3}{8}$ L S	1/4	.004														
	CCGT 21.508M $\frac{3}{8}$ L S	CCGT 060202M $\frac{3}{8}$ L S	1/4	.007														
	CCGT 21.508 $\frac{3}{8}$ L S	CCGT 060202 $\frac{3}{8}$ L S	1/4	.008														
	CCGT 21.51 $\frac{3}{8}$ L S	CCGT 060204 $\frac{3}{8}$ L S	1/4	.016														
	CCGT 32.501 $\frac{3}{8}$ L S	CCGT 09T300 $\frac{3}{8}$ L S	3/8	.001														
	CCGT 32.504M $\frac{3}{8}$ L S	CCGT 09T301M $\frac{3}{8}$ L S	3/8	.003														
	CCGT 32.504 $\frac{3}{8}$ L S	CCGT 09T301 $\frac{3}{8}$ L S	3/8	.004														
	CCGT 32.508M $\frac{3}{8}$ L S	CCGT 09T302M $\frac{3}{8}$ L S	3/8	.007														
	CCGT 32.508 $\frac{3}{8}$ L S	CCGT 09T302 $\frac{3}{8}$ L S	3/8	.008														
	CCGT 32.51M $\frac{3}{8}$ L S	CCGT 09T304M $\frac{3}{8}$ L S	3/8	.015														
CCGT 32.51 $\frac{3}{8}$ L S	CCGT 09T304 $\frac{3}{8}$ L S	3/8	.016															
	CCGT 21.501 $\frac{3}{8}$ L U	CCGT 060200 $\frac{3}{8}$ L U	1/4	.001														
	CCGT 21.504 $\frac{3}{8}$ L U	CCGT 060201 $\frac{3}{8}$ L U	1/4	.004														
	CCGT 21.508 $\frac{3}{8}$ L U	CCGT 060202 $\frac{3}{8}$ L U	1/4	.008														
	CCGT 32.501 $\frac{3}{8}$ L U1	CCGT 09T300 $\frac{3}{8}$ L U1	3/8	.001														
	CCGT 32.504 $\frac{3}{8}$ L U1	CCGT 09T301 $\frac{3}{8}$ L U1	3/8	.004														
	CCGT 32.508 $\frac{3}{8}$ L U1	CCGT 09T302 $\frac{3}{8}$ L U1	3/8	.008														
	CCGT 32.51 $\frac{3}{8}$ L U1	CCGT 09T304 $\frac{3}{8}$ L U1	3/8	.016														
	CCET 21.502 $\frac{3}{8}$ L KHG	CCET 0602005 $\frac{3}{8}$ L KHG	1/4	.002														
	CCET 21.503 $\frac{3}{8}$ L KHG	CCET 0602008 $\frac{3}{8}$ L KHG	1/4	.003														
	CCET 21.507 $\frac{3}{8}$ L KHG	CCET 0602018 $\frac{3}{8}$ L KHG	1/4	.007														
	CCET 21.508 $\frac{3}{8}$ L KHG	CCET 060202 $\frac{3}{8}$ L KHG	1/4	.008														
	CCET 32.502 $\frac{3}{8}$ L KHG	CCET 09T3005 $\frac{3}{8}$ L KHG	3/8	.002														
	CCET 32.503 $\frac{3}{8}$ L KHG	CCET 09T3008 $\frac{3}{8}$ L KHG	3/8	.003														
	CCET 32.507 $\frac{3}{8}$ L KHG	CCET 09T3018 $\frac{3}{8}$ L KHG	3/8	.007														
	CCET 32.508 $\frac{3}{8}$ L KHG	CCET 09T302 $\frac{3}{8}$ L KHG	3/8	.008														
	CCGT 21.504 $\frac{3}{8}$ L F1	CCGT 060201 $\frac{3}{8}$ L F1	1/4	.004														
	CCGT 21.508 $\frac{3}{8}$ L F1	CCGT 060202 $\frac{3}{8}$ L F1	1/4	.008														
	CCGT 21.51 $\frac{3}{8}$ L F1	CCGT 060204 $\frac{3}{8}$ L F1	1/4	.016														
	CCGT 32.508 $\frac{3}{8}$ L F1	CCGT 09T302 $\frac{3}{8}$ L F1	3/8	.008														
	CCGT 32.51 $\frac{3}{8}$ L F1	CCGT 09T304 $\frac{3}{8}$ L F1	3/8	.016														
	CCGW 21.501 FN	CCGW 060200 FN	1/4	.001														
	CCGW 21.501 H	CCGW 060200 H	1/4	.001														
	CCGW 21.504 FN	CCGW 060201 FN	1/4	.004														
	CCGW 21.504 H	CCGW 060201 H	1/4	.004														
	CCGW 21.508 H	CCGW 060202 H	1/4	.008														
	CCGW 21.51 FN	CCGW 060204 FN	1/4	.016														
	CCGW 21.52 FN	CCGW 060208 FN	1/4	.031														
	CCGW 32.500 V	CCGW 09T30 V	3/8	.001														
	CCGW 32.501 FN	CCGW 09T300 FN	3/8	.001														
	CCGW 32.501 H	CCGW 09T300 H	3/8	.001														
	CCGW 32.504 FN	CCGW 09T301 FN	3/8	.004														
	CCGW 32.504 H	CCGW 09T301 H	3/8	.004														
	CCGW 32.504 P	CCGW 09T301 P	3/8	.004														
	CCGW 32.508M P	CCGW 09T302M P	3/8	.007														
	CCGW 32.508 H	CCGW 09T302 H	3/8	.008														
	CCGW 32.508 P	CCGW 09T302 P	3/8	.008														



CC.. inserts - CBN / PCD

	(inch)	IC	T
CC.. 21		1/4	3/32
CC.. 32		3/8	5/32

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)											PCD			Diamond Coating			
								BIDEM/CS		Solid CBN		Coated							PD1	PD2	UC1				
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30									
	CCGW 21.508 PD FNX	CCGW 060202 PD FNX	None	1/4	.008	2	.091																		
	CCGW 21.508 PD S0415	CCGW 060202 PD S01015	S0415	1/4	.008	2	.091																		
	CCGW 21.508 PD S0525	CCGW 060202 PD S01325	S0525	1/4	.008	2	.091																		
	CCGW 21.508 PD S0635	CCGW 060202 PD S01535	S0635	1/4	.008	2	.091																		
	CCGW 21.51 PD FNX	CCGW 060204 PD FNX	None	1/4	.016	2	.091																		
	CCGW 21.51 PD S0415	CCGW 060204 PD S01015	S0415	1/4	.016	2	.091																		
	CCGW 21.51 PD S0525	CCGW 060204 PD S01325	S0525	1/4	.016	2	.091																		
	CCGW 21.51 PD S0635	CCGW 060204 PD S01535	S0635	1/4	.016	2	.091																		
	CCGW 21.52 PD FNX	CCGW 060208 PD FNX	None	1/4	.031	2	.087																		
	CCGW 21.52 PD S0415	CCGW 060208 PD S01015	S0415	1/4	.031	2	.087																		
	CCGW 21.52 PD S0525	CCGW 060208 PD S01325	S0525	1/4	.031	2	.087																		
	CCGW 21.52 PD T0620	CCGW 060208 PD T01520	T0620	1/4	.031	2	.087																		
	CCGW 21.52 PD S0635	CCGW 060208 PD S01535	S0635	1/4	.031	2	.087																		
		CCGW 32.508 PD FNX	CCGW 09T302 PD FNX	None	3/8	.008	2	.091																	
		CCGW 32.508 PD S0415	CCGW 09T302 PD S01015	S0415	3/8	.008	2	.091																	
		CCGW 32.508 PD S0525	CCGW 09T302 PD S01325	S0525	3/8	.008	2	.091																	
		CCGW 32.508 PD S0635	CCGW 09T302 PD S01535	S0635	3/8	.008	2	.091																	
		CCGW 32.51 PD FNX	CCGW 09T304 PD FNX	None	3/8	.016	2	.091																	
		CCGW 32.51 PD S0415	CCGW 09T304 PD S01015	S0415	3/8	.016	2	.091																	
		CCGW 32.51 PD S0525	CCGW 09T304 PD S01325	S0525	3/8	.016	2	.091																	
		CCGW 32.51 PD S0635	CCGW 09T304 PD S01535	S0635	3/8	.016	2	.091																	
		CCGW 32.52 PD FNX	CCGW 09T308 PD FNX	None	3/8	.031	2	.087																	
		CCGW 32.52 PD S0415	CCGW 09T308 PD S01015	S0415	3/8	.031	2	.087																	
		CCGW 32.52 PD S0525	CCGW 09T308 PD S01325	S0525	3/8	.031	2	.087																	
CCGW 32.52 PD S0635		CCGW 09T308 PD S01535	S0635	3/8	.031	2	.087																		
CCGW 32.53 PD FNX		CCGW 09T312 PD FNX	None	3/8	.047	2	.063																		
CCGW 32.53 PD S0415		CCGW 09T312 PD S01015	S0415	3/8	.047	2	.063																		
CCGW 32.53 PD S0525		CCGW 09T312 PD S01325	S0525	3/8	.047	2	.063																		
		CCMW 32.504	CCMW 09T301	None	3/8	.004	1	—																	
	CCMW 32.508	CCMW 09T302	None	3/8	.008	1	—																		
	CCMW 32.51	CCMW 09T304	None	3/8	.016	1	—																		
	CCMW 32.52	CCMW 09T308	None	3/8	.031	1	—																		
	CCMT 21.504 PBF	CCMT 060201 PBF	None	1/4	.004	1	—																		
	CCMT 21.508 PBF	CCMT 060202 PBF	None	1/4	.008	1	—																		
	CCMT 21.51 PBF	CCMT 060204 PBF	None	1/4	.016	1	—																		
	CCMT 32.504 PBF	CCMT 09T301 PBF	None	3/8	.004	1	—																		
	CCMT 32.508 PBF	CCMT 09T302 PBF	None	3/8	.008	1	—																		
	CCMT 32.51 PBF	CCMT 09T304 PBF	None	3/8	.016	1	—																		
	CCMT 32.508 PF	CCMT 09T302 PF	None	3/8	.008	1	—																		
	CCMT 32.51 PF	CCMT 09T304 PF	None	3/8	.016	1	—																		

Front Turning

Holders → Q10

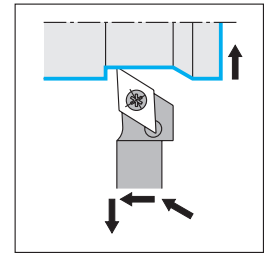
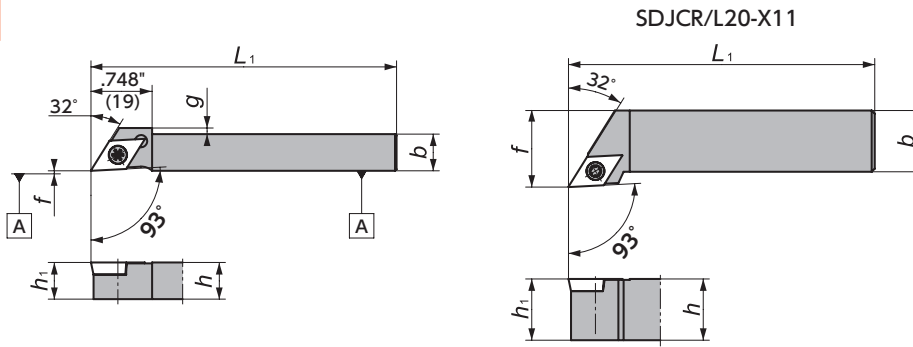
Cutting condition → Q4

Chipbreaker → P20

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) □ : 1-2 week delivery □ : 1-2 week delivery (Newly added) ● : Coolant through (R)L : 1-2 week delivery (Right / Left-hand only) (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

Toolholders for DC.. Inserts

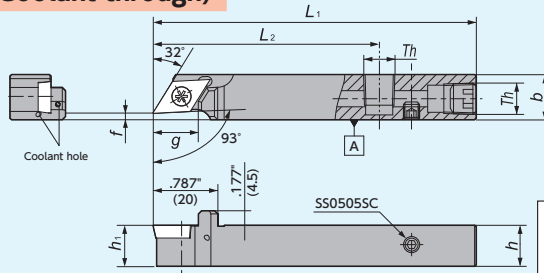
SDJC-N



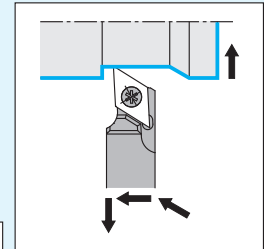
Right-Hand style shown

Figure-1

SDJC-N-OH2 (Coolant through)



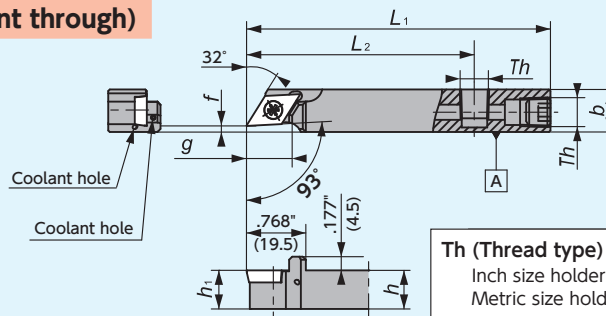
Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



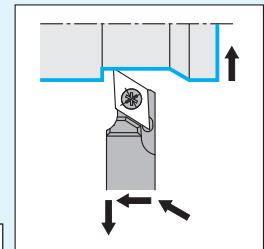
Right-Hand style shown

Figure-2

SDJC-N-OH (Coolant through)



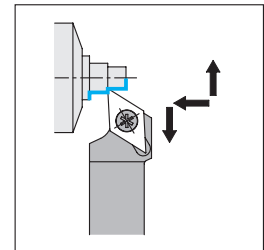
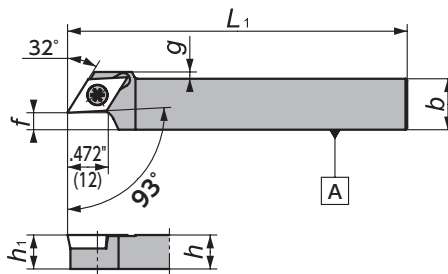
Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown

Figure-3

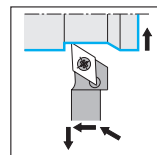
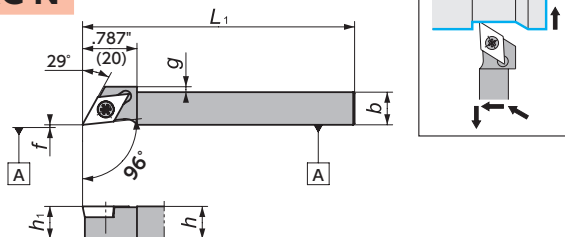
SDJC-N-F (Shifted)



Right-Hand style shown

Figure-4

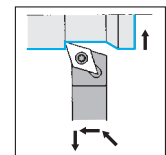
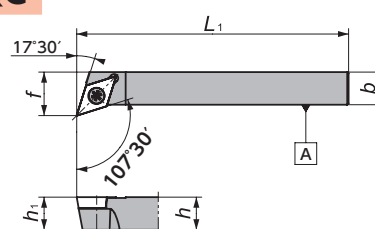
SDXC-N



Right-Hand style shown

Figure-5

SDQC



Right-Hand style shown

Figure-6

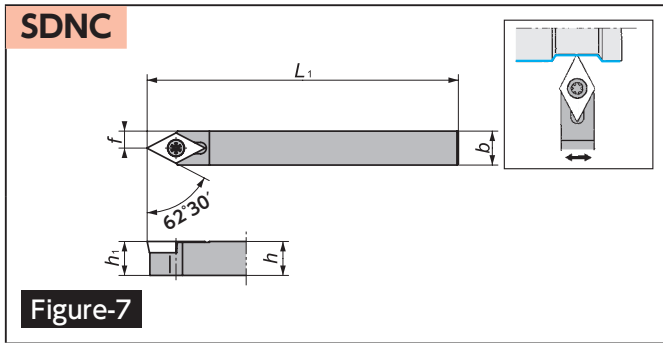


Figure-7

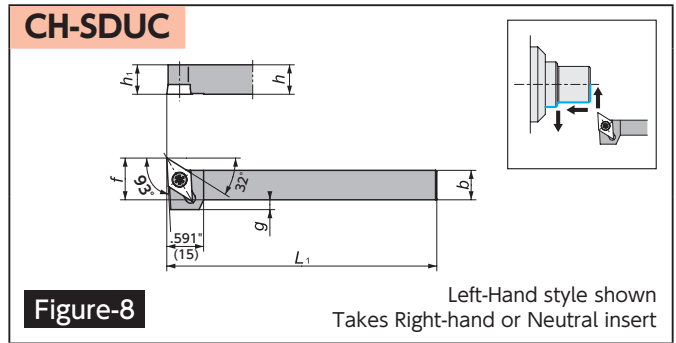


Figure-8

Left-Hand style shown
Takes Right-hand or Neutral insert

DC.. Series - Toolholders I



Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	g (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L										
			N											
DC..21.5.. DC..21.5..WP	SDJC%062C	1	●	●	3/8	3/8	3/8	4.724 120	0 0	—	—	—	—	—
	SDJC%082C	1	●	●	1/2	1/2	1/2	4.724 120	0 0	—	—	—	—	—
	SDJC%0808X07N	1	○	○	.315 8	.315 8	.315 8	4.724 120	0 0	—	—	—	—	—
	SDJC%1010GX07N	1	○	○	.394 10	.394 10	.394 10	3.346 85	0 0	—	—	—	—	—
DC..32.5.. DC..32.5..WP	SDJC%1010X07N	1	○	○	.394 10	.394 10	.394 10	4.724 120	0 0	—	—	—	—	—
	SDJC%083C	1	●	●	1/2	1/2	1/2	4.724 120	0 0	—	—	—	—	—
	SDJC%103C	1	●	●	5/8	5/8	5/8	4.724 120	0 0	—	—	—	—	—
	SDJC%1010H11N	1	○	○	.394 10	.394 10	.394 10	3.937 100	0 0	—	.079 2	—	—	—
	SDJC%1010X11N	1	○	○	.394 10	.394 10	.394 10	4.724 120	0 0	—	.079 2	—	—	—
	SDJC%1012X11N	1	○	○	.394 10	.472 12	.394 10	4.724 120	0 0	—	—	—	—	—
	SDJC%1212GX11N	1	○	○	.472 12	.472 12	.472 12	3.346 85	0 0	—	—	—	—	—
	SDJC%1216GX11N	1	○	○	.472 12	.630 16	.472 12	3.346 85	0 0	—	—	—	—	—
	SDJC%1212X11N	1	○	●	.472 12	.472 12	.472 12	4.724 120	0 0	—	—	—	—	—
	SDJC%1616X11N	1	○	○	.630 16	.630 16	.630 16	4.724 120	0 0	—	—	—	—	—
DC..21.5../DC..21.5..WP	SDJC%20-X11	1	○	○	.787 20	.787 20	.787 20	4.724 120	.984 25	—	—	—	—	—
	SDJC%082H-F079-OH	3	●	●	1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.630 16	NPT1/8	LRIS-2.5 × 7	CLR-155
DC..32.5.. DC..32.5..WP	SDJC%083H-F079-OH	3	●	●	1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.630 16	NPT1/8	LRIS-4 × 10	LLR-255
	SDJC%083H-F079-OH2	2	■	■	1/2	.551 14	1/2	3.937 100	.079 2	2.756 70	.630 16	NPT1/8	LRIS-4 × 10	LLR-255
	SDJC%103HL-F079-OH	3	●	●	5/8	5/8	5/8	3.937 100	.079 2	2.953 75	.724 18.4	NPT1/8	LRIS-4 × 10	LLR-255
	SDJC%103XL-F079-OH2	2	■	■	5/8	5/8	5/8	4.724 120	.079 2	2.953 75	.724 18.4	NPT1/8	LRIS-4 × 10	LLR-255
	SDJC%1014F11N-F02OH	3	○	○	.392 10	.551 14	.394 10	3.150 80	.079 2	2.165 55	.630 16	M6 × 1	LRIS-4 × 10	LLR-255
	SDJC%1214H11N-F02OH	3	■	■	.472 12	.551 14	.472 12	3.937 100	.079 2	2.953 75	.630 16	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255
	SDJC%1214H11N-F02OH2	2	●	●	.472 12	.551 14	.472 12	3.937 100	.079 2	2.756 70	.630 16	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255
	SDJC%1616H11N-F02OH	3	○	○	.630 16	.630 16	.630 16	3.937 100	.079 2	2.953 75	.724 18.4	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255
DC..21.5.. DC..21.5..WP	SDJC%1616X11N-F02OH2	2	●	●	.630 16	.630 16	.630 16	4.724 120	.079 2	2.953 75	.724 18.4	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255
	SDJC%1015X07N-F05	4	○	○	.394 10	.591 15	.394 10	4.724 120	.197 5	—	—	—	LRIS-2.5 × 7	CLR-155
DC..32.5.. DC..32.5..WP	SDJC%1020X07N-F10	4	○	○	.394 10	.787 20	.394 10	4.724 120	.394 10	—	—	—	LRIS-2.5 × 7	CLR-155
	SDJC%083C-F250	4	●	●	1/2	.728 18.5	1/2	4.724 120	1/4	—	—	—	LRIS-4 × 10	LLR-255
	SDJC%083C-F500	4	○	○	1/2	1	1/2	4.724 120	1/2	—	—	—	LRIS-4 × 10	LLR-255
	SDJC%1015X11N-F05	4	○	○	.394 10	.591 15	.394 10	4.724 120	.197 5	—	—	—	LRIS-4 × 10	LLR-255
	SDJC%1020X11N-F10	4	○	○	.394 10	.787 20	.394 10	4.724 120	.394 10	—	—	—	LRIS-4 × 10	LLR-255
	SDJC%1218X11N-F06	4	●	●	.472 12	.709 18	.472 12	4.724 120	.236 6	—	—	—	LRIS-4 × 10	LLR-255
DC..32.5..	SDJC%1224X11N-F12	4	●	●	.472 12	.945 24	.472 12	4.724 120	.472 12	—	—	—	LRIS-4 × 10	LLR-255
	SDXC%1010X11N	5	○	○	.394 10	.394 10	.394 10	4.724 120	0 0	—	—	—	LRIS-4 × 10	LLR-255
	SDXC%1016X11N	5	○	○	.394 10	.630 16	.394 10	4.724 120	0 0	—	—	—	LRIS-4 × 10	LLR-255
	SDXC%1212X11N	5	○	○	.472 12	.472 12	.472 12	4.724 120	0 0	—	—	—	LRIS-4 × 10	LLR-255
	SDXC%1216X11N	5	○	○	.472 12	.630 16	.472 12	4.724 120	0 0	—	—	—	LRIS-4 × 10	LLR-255
DC..21.5..	SDQC%10-X07	6	○	○	.394 10	.394 10	.394 10	4.724 120	.472 12	—	—	—	LRIS-2.5 × 7	CLR-155
	SDQC%12-X11	6	○	○	.472 12	.472 12	.472 12	4.724 120	.630 16	—	—	—	LRIS-4 × 10	LLR-255
	SDQC%16-X11	6	○	○	.630 16	.630 16	.630 16	4.724 120	.787 20	—	—	—	LRIS-4 × 10	LLR-255
DC..21.5..	SDQC%20-X11	6	○	○	.787 20	.787 20	.787 20	4.724 120	.984 25	—	—	—	LRIS-4 × 10	LLR-255
	SDNCN-062	7	●	●	3/8	3/8	3/8	2.5 63.5	3/16	—	—	—	LRIS-2.5 × 7	CLR-155
	SDNCN-082	7	●	●	1/2	1/2	1/2	3.5 88.9	1/4	—	—	—	LRIS-2.5 × 7	CLR-155
	SDNCN08-X07	7	○	○	.315 8	.315 8	.315 8	4.724 120	.157 4	—	—	—	LRIS-2.5 × 7	CLR-155
DC..32.5..	SDNCN10-X07	7	○	○	.394 10	.394 10	.394 10	4.724 120	.197 5	—	—	—	LRIS-2.5 × 7	CLR-155
	SDNCN-083	7	●	●	1/2	1/2	1/2	3.937 100	1/4	—	—	—	LRIS-4 × 10	LLR-255
	SDNCN-103	7	●	●	5/8	5/8	5/8	3.937 100	5/16	—	—	—	LRIS-4 × 10	LLR-255
	SDNCN12-X11	7	○	○	.472 12	.472 12	.472 12	4.724 120	.236 6	—	—	—	LRIS-4 × 10	LLR-255
	SDNCN16-X11	7	○	○	.630 16	.630 16	.630 16	4.724 120	.315 8	—	—	—	LRIS-4 × 10	LLR-255
DC..32.5.. DC..32.5..WP	SDNCN20-X11	7	○	○	.787 20	.787 20	.787 20	4.724 120	.394 10	—	—	—	LRIS-4 × 10	LLR-255
	CH-SDUC%1010H11	8	○	○	.394 10	.394 10	.394 10	3.937 100	.591 15	—	—	—	LRIS-4 × 10PW	CLR-155
	CH-SDUC%1212H11	8	○	○	.472 12	.472 12	.472 12	3.937 100	.669 17	—	—	—	LRIS-4 × 10PW	CLR-155

Inserts → Q20 Cutting condition → Q4

● : Stock R L : Stock (Right / Left-hand only) ○ : 1-2 week delivery (Right / Left-hand only)
 ● : Stock (Newly added) R L : Stock (Right / Left-hand only, Newly added) ○ : 1-2 week delivery (Newly added) ○ : 1-2 week delivery (Right / Left-hand only, Newly added)
 ■ : While stocks last ☉ : Mirror finish ☉ : Coolant through

Front Turning

Y-Axis Holders for DC.. Inserts

Y-SDJC

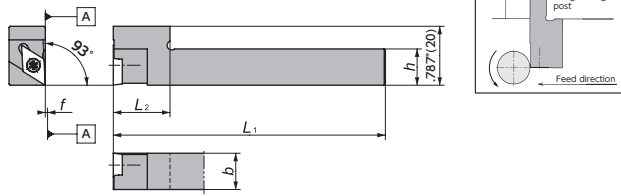


Figure-1

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SDNC

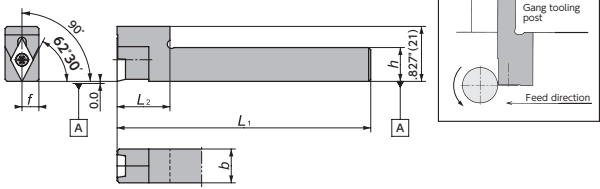
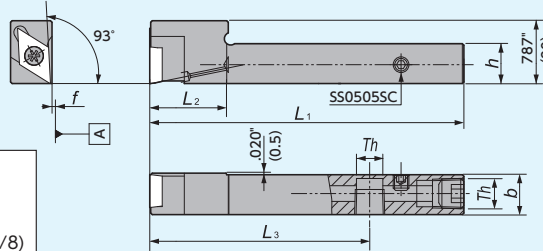


Figure-4

Takes Right-hand or Neutral insert

Y-SDJC-OH2 (Coolant through)

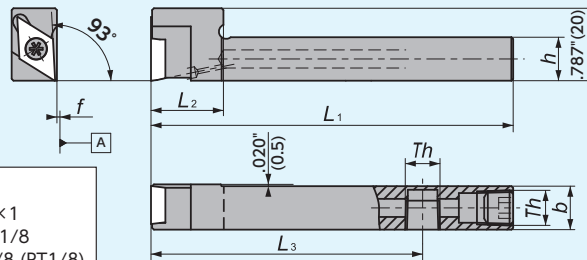


Th (Thread type)
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-2

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SDJC-OH (Coolant through)

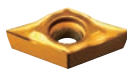


Th (Thread type)
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-3

Right-Hand style shown
Takes Right-hand or Neutral insert

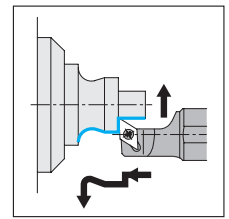
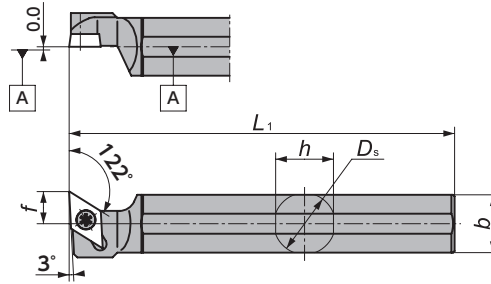
DC.. Series - Toolholders II



Gage Insert	Item Number	Figure	Stock		h	b	L ₁	f	L ₂	L ₃	Th	Clamp Screw	Wrench	
			R	L										
			N		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
DC..21.5.. DC..21.5..WP	Y-SDJCR062-IN	1	●		3/8	3/8	4.724 120	0 0	.984 25	- -	-	LRIS-2.5 × 7	CLR-15S	
	Y-SDJCR082-IN	1	●		1/2	1/2	4.724 120	0 0	.984 25	- -	-	LRIS-2.5 × 7	CLR-15S	
	Y-SDJCR10-07S	1	○		.394 10.0	.394 10	4.724 120	0 0	.787 20	- -	-	LRIS-2.5 × 7	CLR-15S	
	Y-SDJCR12-07S	1	○		.472 12.0	.472 12	4.724 120	0 0	.787 20	- -	-	LRIS-2.5 × 7	CLR-15S	
DC..32.5.. DC..32.5..WP	Y-SDJCR083-IN	1	●		1/2	1/2	4.724 120	0 0	.984 25	- -	-	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR103-IN	1	●		5/8	5/8	4.724 120	0 0	.984 25	- -	-	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR10-11MS	2	○		.394 10.0	.394 10	4.724 120	0 0	.866 22	- -	-	LRIS-2.5 × 7	CLR-15S	
	Y-SDJCR10-11S	2	○		.394 10.0	.394 10	4.724 120	0 0	.787 20	- -	-	LRIS-2.5 × 7	CLR-15S	
	Y-SDJCR12-11MS	2	○		.472 12.0	.630 16	4.724 120	0 0	.866 22	- -	-	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR12-11S	1	○		.472 12.0	.630 16	4.724 120	0 0	.787 20	- -	-	LRIS-4 × 10	LLR-25S-20 × 65	
DC..21.5.. DC..21.5..WP	Y-SDJCR062H-IN-OH	3	●		3/8	3/8	3.937 100	0 0	.984 25	2.953 75	M6 × 1	LRIS-2.5 × 7	CLR-15S	
	Y-SDJCR082H-IN-OH	3	●		1/2	1/2	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-2.5 × 7	CLR-15S	
DC..32.5.. DC..32.5..WP	Y-SDJCR083H-IN-OH	3	●		1/2	1/2	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR083H-IN-OH2	2	●		1/2	1/2	3.937 100	0 0	.984 25	2.756 70	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR103H-IN-OH	3	●		5/8	5/8	3.937 100	0 0	.984 25	2.953 75	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR1212H11S-OH	3	●		.472 12.0	.472 12.0	3.937 100	0 0	.787 20	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR1212H11S-OH2	2	●		.472 12.0	.472 12.0	3.937 100	0 0	.787 20	2.756 70	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDJCR1616H11-OH	3	○		.630 16.0	.630 16.0	3.937 100	0 0	.984 25	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65	
DC..32.5..	Y-SDNCN083-IN	4	●		1/2	1/2	4.724 120	1/4 6.35	.984 25	- -	-	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDNCN12-11S	4	○		.472 12.0	.472 12	4.724 120	.236 6.0	.787 20	- -	-	LRIS-4 × 10	LLR-25S-20 × 65	
	Y-SDNCN16-11S	4	○		.630 16.0	.630 16	4.724 120	.315 8.0	.787 20	- -	-	LRIS-4 × 10	LLR-25S-20 × 65	

DS Toolholders for DC.. Inserts

DS-SDU



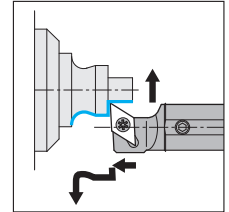
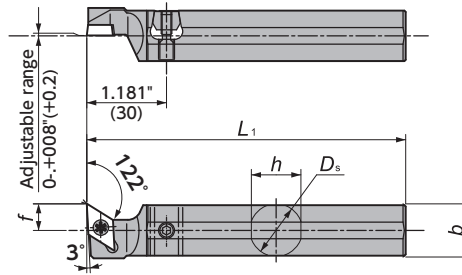
Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-4

DS-SDU-ACH (Adjustable centerline height)

(Parts)

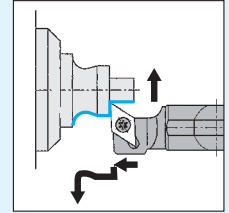
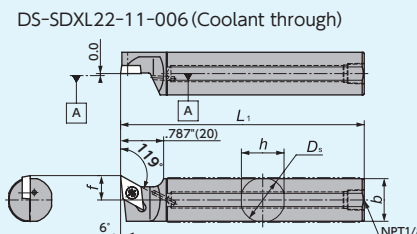
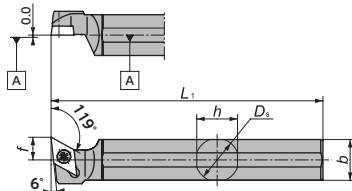
Shank	Wedge	Screw for Wedge
φ.630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ3/4" (19.05)		
φ.787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ.866" (22)		
φ1" (25.4)		



Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-5

DS-SDX / DS-SDX (Coolant through)



Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-6

DC.. Series - Toolholders III



Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
DC..21.5.. DC..21.5..WP	DS-SDU%14F-07	4	○	○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%15H-07	4	○	○	.5/8	15.875	.591	15.0	.591	15.0	3.937	100	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%16F-07	4	○	○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%16X-07	4	○	○	.630	16.000	.591	15.0	.591	15.0	3.740	95	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%19-07	4	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%20X-07	4	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%20-07	4	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.236	6.0	LR15-2.5 × 7	CLR-155
DS-SDU%22-07	4	○	○	.866	22.000	.827	21.0	.827	21.0	4.724	120	.236	6.0	LR15-2.5 × 7	CLR-155	
DC..32.5.. DC..32.5..WP	DS-SDU%14F-11	4	○	○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%16F-11	4	○	○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%19-11	4	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%19-11SPL	4	○	○	3/4	19.050	.709	18.0	.709	18.0	6.300	160	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%20X-11	4	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%20-11	4	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%22-11	4	○	○	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%23-11-007	4	○	○	.906	23.000	.866	22.0	.866	22.0	2.756	70	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%25-11MET	4	○	○	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%25-11	4	○	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%25-11SPL	4	○	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.492	12.5	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%16F-11-ACH	5	●	●	.630	16.000	.610	15.5	.610	15.5	3.150	80	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%19-11-ACH	5	●	●	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%20-11-ACH	5	●	●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%22-11-ACH	5	●	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%25-11MET-ACH	1	●	●	.984	25.000	.945	24.0	.945	24.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%25-11-ACH	5	●	●	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDX%22-11-006	6	●	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.472	12.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDX%19-11	6	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
DS-SDX%20X-11	6	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%20-11	6	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%25-11MET	6	○	○	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%32-11	6	○	○	1.260	32.000	1.181	30.0	1.181	30.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	

Inserts → Q20 Cutting condition → Q4

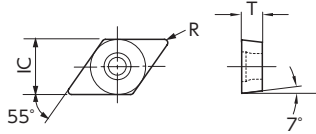
● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⊕ : Coolant through
Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Front Turning

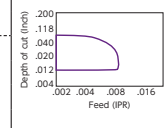
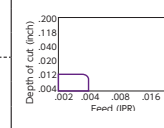
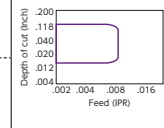
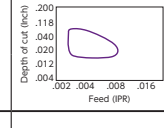
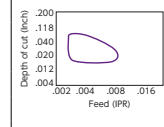
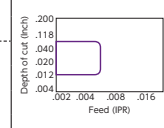
DC.. Inserts - Carbide

(inch)	IC	T
DC..21.5	1/4	3/32
DC..32.5	3/8	5/32

● : 1st Choice ● : 2nd choice

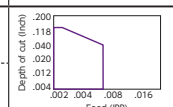
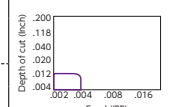
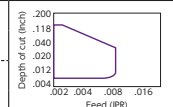
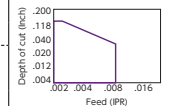
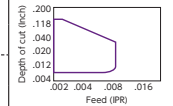
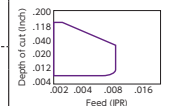


Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	
					PVD Coated												
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1			
	DCGT 21.504M YL	DCGT 070201M YL	1/4	.003	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 21.508M YL	DCGT 070202M YL	1/4	.007	●	●	●	●	●	●	●	●	●	●	●		
	DCGT 21.51M YL	DCGT 070204M YL	3/8	.015		●		●								●	
	DCGT 32.501 YL	DCGT 11T300 YL	3/8	.001			●		●								
	DCGT 32.504M YL	DCGT 11T301M YL	3/8	.003	●	●		●									
	DCGT 32.508M YL	DCGT 11T302M YL	3/8	.007	●	●		●									
	DCGT 32.51M YL	DCGT 11T304M YL	3/8	.015	●	●		●									
	DCGT 32.52M YL	DCGT 11T308M YL	3/8	.031	●	●		●									
	DCGT 21.501 FNAM3	DCGT 070200 FNAM3	1/4	.001			●	●			○						
	DCGT 21.504M FNAM3	DCGT 070201 FNAM3	1/4	.003			●	●			○						
	DCGT 21.504 FNAM3	DCGT 070201 FNAM3	1/4	.004			●	●			○						
	DCGT 21.508M FNAM3	DCGT 070202 FNAM3	1/4	.007			●	●			○						
	DCGT 21.508 FNAM3	DCGT 070202 FNAM3	1/4	.008			●	●			○						
	DCGT 21.51M FNAM3	DCGT 070204 FNAM3	1/4	.015			●	●			○						
	DCGT 21.51 FNAM3	DCGT 070204 FNAM3	1/4	.016			●	●			○						
	DCGT 32.501 FNAM3	DCGT 11T300 FNAM3	3/8	.001			●	●			○						
	DCGT 32.504M FNAM3	DCGT 11T301 FNAM3	3/8	.003			●	●			○						
	DCGT 32.508M FNAM3	DCGT 11T302 FNAM3	3/8	.007			●	●			○						
	DCGT 32.508 FNAM3	DCGT 11T302 FNAM3	3/8	.008			●	●			○						
	DCGT 32.51M FNAM3	DCGT 11T304 FNAM3	3/8	.015			●	●			○						
	DCGT 32.51 FNAM3	DCGT 11T304 FNAM3	3/8	.016			●	●			○						
	DCGT 32.52 FNAM3	DCGT 11T308 FNAM3	3/8	.031			●	●			○						
	DCMT 21.508 FNAM3	DCMT 070202 FNAM3	1/4	.008			○										
DCMT 21.51 FNAM3	DCMT 070204 FNAM3	1/4	.016			○											
DCMT 32.508 FNAM3	DCMT 11T302 FNAM3	3/8	.008			○											
DCMT 32.51 FNAM3	DCMT 11T304 FNAM3	3/8	.016			○											
DCMT 32.52 FNAM3	DCMT 11T308 FNAM3	3/8	.031			○											
 wiper insert	DCGT 32.502 AM3-WP*	TFD 11FR05AM3	3/8	.002			●	○									
	DCGT 32.506 AM3-WP*	TFD 11FR15AM3	3/8	.006			●	○									
	DCGT 21.504M CL	DCGT 070201M CL	1/4	.003	○	○	●	○	○								
	DCGT 21.508M CL	DCGT 070202M CL	1/4	.007	○	○	●	○	○								
	DCGT 21.51M CL	DCGT 070204M CL	1/4	.015	○	○	●	○	○								
	DCGT 32.504M CL	DCGT 11T301M CL	3/8	.003	○	○	●	○	○								
	DCGT 32.508M CL	DCGT 11T302M CL	3/8	.007	○	○	●	○	○								
DCGT 32.51M CL	DCGT 11T304M CL	3/8	.015	○	○	●	○	○									
	DCGT 21.504M AMX	DCGT 070201M AMX	1/4	.003		○	○		●								
	DCGT 21.508M AMX	DCGT 070202M AMX	1/4	.007		○	○		●								
	DCGT 21.51M AMX	DCGT 070204M AMX	1/4	.015					○								
	DCGT 32.504M AMX	DCGT 11T301M AMX	3/8	.003		●			○								
	DCGT 32.508M AMX	DCGT 11T302M AMX	3/8	.007		●			○								
DCGT 32.51M AMX	DCGT 11T304M AMX	3/8	.015		●			○									
	DCGT 21.501 AZ7	DCGT 070200 AZ7	1/4	.001					○								
	DCGT 21.504M AZ7	DCGT 070201M AZ7	1/4	.003					○								
	DCGT 21.508M AZ7	DCGT 070202M AZ7	1/4	.007					○								
	DCGT 32.501 AZ7	DCGT 11T300 AZ7	3/8	.001				○	●		○						
	DCGT 32.504M AZ7	DCGT 11T301M AZ7	3/8	.003				○	●		○						
	DCGT 32.508M AZ7	DCGT 11T302M AZ7	3/8	.007				○	●		○						
	DCGT 32.51M AZ7	DCGT 11T304M AZ7	3/8	.015				○	●		○						
	DCGT 32.52 AZ7	DCGT 11T308 AZ7	3/8	.031				○	●		○						

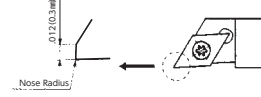


				Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●
				Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	
				Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	
				Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	
				Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	
				Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	
Shape	Item Number	ISO Item Number	IC	R	Carbide													
					PVD Coated								CVD	Diamond Coating				
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1			CP1	UC1		
	DCGT 21.501 R $\frac{1}{4}$ S	DCGT 070200 R $\frac{1}{4}$ S	1/4	.001			(R)	R		(R/L)	R/L							
	DCGT 21.504M R $\frac{1}{4}$ S	DCGT 070201M R $\frac{1}{4}$ S	1/4	.003			(R)	R		(R/L)	R/L							
	DCGT 21.508M R $\frac{1}{4}$ S	DCGT 070202M R $\frac{1}{4}$ S	1/4	.007			(R)	R		(R/L)	R/L							
	DCGT 21.508 R $\frac{1}{4}$ S	DCGT 070202 R $\frac{1}{4}$ S	1/4	.008						(R/L)	R/L							
	DCGT 21.51 R $\frac{1}{4}$ S	DCGT 070204 R $\frac{1}{4}$ S	1/4	.016						(R)								
	DCGT 32.501 R $\frac{3}{8}$ S	DCGT 11T300 R $\frac{3}{8}$ S	3/8	.001			(R)	R	(R)	(R/L)	R							
	DCGT 32.504M R $\frac{3}{8}$ S	DCGT 11T301M R $\frac{3}{8}$ S	3/8	.003			(R)	R	(R)	(R/L)	R							
	DCGT 32.504 R $\frac{3}{8}$ S	DCGT 11T301 R $\frac{3}{8}$ S	3/8	.004						(R)	(R/L)	R						
	DCGT 32.508M R $\frac{3}{8}$ S	DCGT 11T302M R $\frac{3}{8}$ S	3/8	.007			(R)	R	(R)	(R/L)	R							
	DCGT 32.508 R $\frac{3}{8}$ S	DCGT 11T302 R $\frac{3}{8}$ S	3/8	.008						(R)	(R/L)	R						
DCGT 32.51M R $\frac{3}{8}$ S	DCGT 11T304M R $\frac{3}{8}$ S	3/8	.015			(R)	R											
DCGT 32.51 R $\frac{3}{8}$ S	DCGT 11T304 R $\frac{3}{8}$ S	3/8	.016															
	DCGT 21.502 R $\frac{1}{4}$ S-WP*	TFD 07F R $\frac{1}{4}$ 05	1/4	.002				R		(R)	(R/L)							
	DCGT 21.506 R $\frac{1}{4}$ S-WP*	TFD 07F R $\frac{1}{4}$ 15	1/4	.006				R			(R/L)							
	DCGT 32.502 R $\frac{3}{8}$ S-WP*	TFD 11F R $\frac{3}{8}$ 05	3/8	.002				R		(R)	(R)							
	DCGT 32.506 R $\frac{3}{8}$ S-WP*	TFD 11F R $\frac{3}{8}$ 15	3/8	.006				R			(R)							
	DCGT 21.501 R $\frac{1}{4}$ U	DCGT 070200 R $\frac{1}{4}$ U	1/4	.001						(R)	(R)							
	DCGT 21.504 R $\frac{1}{4}$ U	DCGT 070201 R $\frac{1}{4}$ U	1/4	.004						(R)	(R)							
	DCGT 21.508 R $\frac{1}{4}$ U	DCGT 070202 R $\frac{1}{4}$ U	1/4	.008						(R)	(R/L)							
	DCGT 32.501 R $\frac{3}{8}$ U1	DCGT 11T300 R $\frac{3}{8}$ U1	3/8	.001			(R)		(R)	(R)	(R/L)							
	DCGT 32.504 R $\frac{3}{8}$ U1	DCGT 11T301 R $\frac{3}{8}$ U1	3/8	.004			(R)		(R)	(R)	(R/L)							
	DCGT 32.508 R $\frac{3}{8}$ U1	DCGT 11T302 R $\frac{3}{8}$ U1	3/8	.008			(R)		(R)	(R)	(R/L)							
DCGT 32.51 R $\frac{3}{8}$ U1	DCGT 11T304 R $\frac{3}{8}$ U1	3/8	.016			(R)		(R)	(R)	(R/L)								
	DCGT 21.502 R $\frac{1}{4}$ U-WP*	TFD 07F R $\frac{1}{4}$ 05U	1/4	.002				R		(R)	(R)							
	DCGT 21.506 R $\frac{1}{4}$ U-WP*	TFD 07F R $\frac{1}{4}$ 15U	1/4	.006				R			(R)							
	DCGT 32.502 R $\frac{3}{8}$ U1-WP*	TFD 11F R $\frac{3}{8}$ 05U1	3/8	.002				R		(R)	(R)							
	DCGT 32.506 R $\frac{3}{8}$ U1-WP*	TFD 11F R $\frac{3}{8}$ 15U1	3/8	.006				R			(R)							
	DCET 21.502 R $\frac{1}{4}$ KHG	DCET 0702005 R $\frac{1}{4}$ KHG	1/4	.002						(R/L)								
	DCET 21.503 R $\frac{1}{4}$ KHG	DCET 0702008 R $\frac{1}{4}$ KHG	1/4	.003						(R/L)								
	DCET 21.507 R $\frac{1}{4}$ KHG	DCET 0702018 R $\frac{1}{4}$ KHG	1/4	.007						(R/L)								
	DCET 21.508 R $\frac{1}{4}$ KHG	DCET 070202 R $\frac{1}{4}$ KHG	1/4	.008						(R/L)								
	DCET 32.502 R $\frac{3}{8}$ KHG	DCET 11T3005 R $\frac{3}{8}$ KHG	3/8	.002					(R)	(R/L)								
	DCET 32.503 R $\frac{3}{8}$ KHG	DCET 11T3008 R $\frac{3}{8}$ KHG	3/8	.003					(R)	(R/L)								
DCET 32.507 R $\frac{3}{8}$ KHG	DCET 11T3018 R $\frac{3}{8}$ KHG	3/8	.007					(R)	(R/L)									
DCET 32.508 R $\frac{3}{8}$ KHG	DCET 11T302 R $\frac{3}{8}$ KHG	3/8	.008					(R)	(R/L)									
	DCET 21.503 UHG	DCET 0702008 R $\frac{1}{4}$ UHG	1/4	.003						(R)								
	DCET 32.503 UHG	DCET 11T3008 R $\frac{3}{8}$ UHG	3/8	.003						(R)								
	DCGW 21.500 V (M)	DCGW 07020 V	1/4	.001						○								
	DCGW 21.501 FN (M)	DCGW 070200 FN	1/4	.001							○							
	DCGW 21.501 H (M)	DCGW 070200 H	1/4	.001								●						
	DCGW 21.504 FN (M)	DCGW 070201 FN	1/4	.004								○						
	DCGW 21.504 H (M)	DCGW 070201 H	1/4	.004									●					
	DCGW 21.508 H (M)	DCGW 070202 H	1/4	.008									●					
	DCGW 32.500 V (M)	DCGW 11T30 V	3/8	.001							○							
	DCGW 32.501 FN (M)	DCGW 11T300 FN	3/8	.001								○						
	DCGW 32.501 H (M)	DCGW 11T300 H	3/8	.001									●					
	DCGW 32.504 FN (M)	DCGW 11T301 FN	3/8	.004									○					
DCGW 32.504 H (M)	DCGW 11T301 H	3/8	.004										●					
DCGW 32.508 H (M)	DCGW 11T302 H	3/8	.008										●					
	DCGW 21.502RH-WP* (M)	TFD 07FR05H	1/4	.002								○						
	DCGW 32.502RH-WP* (M)	TFD 11FR05H	3/8	.006									○					

Front Turning



*Note: NTK WP style inserts have a wiper facet design.
 The insert has a 0.3mm (.012") flat on the cutting edge when the insert is set into the toolholder.
 The flat on the cutting edge ensures a superior surface when feed rates are increased.
 WP style inserts can be used in toolholders: SDJC, CH-SDUL and DS-SDUL.



- : Stock
- : Stock (Newly added)
- (with R/L) : While stocks last
- R L : Stock (Right / Left-hand only)
- R L : Stock (Right / Left-hand only, Newly added)
- Ⓜ : Mirror finish
- : 1-2 week delivery
- : 1-2 week delivery (Newly added)
- : Coolant through
- (R/L) : 1-2 week delivery (Right / Left-hand only)
- (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

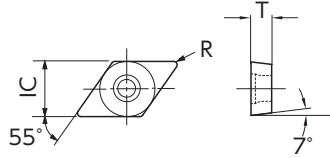
Holders → Q16
 Cutting condition → Q4
 Chipbreaker → P20

Front Turning

DC.. inserts - CBN / PCD

(inch)	IC	T
DC.. 21	1/4	3/32
DC.. 32	3/8	5/32

● : 1st Choice ● : 2nd choice

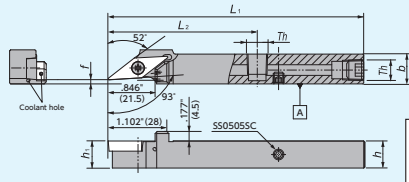


Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material										PCD			Diamond Coating
								BIDEMICS Coated		Solid CBN	CBN (Brazed)							PCD			
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1		
	DCGW 21.508 PD FNX	DCGW 070202 PD FNX	None	1/4	.008	2	.094														
	DCGW 21.508 PD S0415	DCGW 070202 PD S01015	S0415	1/4	.008	2	.094				●										
	DCGW 21.508 PD S0635	DCGW 070202 PD S01535	S0635	1/4	.008	2	.094				●										
	DCGW 21.51 PD FNX	DCGW 070204 PD FNX	None	1/4	.016	2	.087				○										
	DCGW 21.51 PD S0415	DCGW 070204 PD S01015	S0415	1/4	.016	2	.087				●										
	DCGW 21.51 PD S0635	DCGW 070204 PD S01535	S0635	1/4	.016	2	.087				○										
	DCGW 21.52 PD FNX	DCGW 070208 PD FNX	None	1/4	.031	2	.075				○										
	DCGW 21.52 PD S0415	DCGW 070208 PD S01015	S0415	1/4	.031	2	.075				●										
	DCGW 21.52 PD S0525	DCGW 070208 PD S01325	S0525	1/4	.031	2	.075				○										
	DCGW 21.52 PD S0635	DCGW 070208 PD S01535	S0635	1/4	.031	2	.075				○										
	DCGW 32.504 PD S0415	DCGW 11T301 PD S01015	S0415	3/8	.004	2	.091				○										
	DCGW 32.508 PD FNX	DCGW 11T302 PD FNX	None	3/8	.008	2	.094				○										
	DCGW 32.508 PD S0415	DCGW 11T302 PD S01015	S0415	3/8	.008	2	.094			●	●		○	○	○						
	DCGW 32.508 PD S0525	DCGW 11T302 PD S01325	S0525	3/8	.008	2	.094				○		○	○	○						
	DCGW 32.508 PD S0635	DCGW 11T302 PD S01535	S0635	3/8	.008	2	.094				○		○	○	●						
	DCGW 32.51 PD FNX	DCGW 11T304 PD FNX	None	3/8	.016	2	.087				○										
	DCGW 32.51 PD T0415	DCGW 11T304 PD T01015	T0415	3/8	.016	2	.087						○	○	○						
	DCGW 32.51 PD S0415	DCGW 11T304 PD S01015	S0415	3/8	.016	2	.087			●	●		○	○	○						
	DCGW 32.51 PD S0525	DCGW 11T304 PD S01325	S0525	3/8	.016	2	.087				○		○	○	○						
	DCGW 32.51 PD S0635	DCGW 11T304 PD S01535	S0635	3/8	.016	2	.087				○		○	○	●						
	DCGW 32.52 PD FNX	DCGW 11T308 PD FNX	None	3/8	.031	2	.075				○										
DCGW 32.52 PD S0415	DCGW 11T308 PD S01015	S0415	3/8	.031	2	.075				●				○							
DCGW 32.52 PD S0525	DCGW 11T308 PD S01325	S0525	3/8	.031	2	.075				○				○							
DCGW 32.52 PD S0635	DCGW 11T308 PD S01535	S0635	3/8	.031	2	.075				○				○							
DCGW 32.53 PD S0415	DCGW 11T312 PD S01015	S0415	3/8	.047	2	.102				○											
	DCMW 32.504	DCMW 11T301	None	3/8	.004	1	—														
	DCMW 32.508	DCMW 11T302	None	3/8	.008	1	—														
	DCMW 32.51	DCMW 11T304	None	3/8	.016	1	—														
	DCMW 32.52	DCMW 11T308	None	3/8	.031	1	—														
	DCMT 21.504 PBF	DCMT 070201 PBF	None	1/4	.004	1	—													○	
	DCMT 21.508 PBF	DCMT 070202 PBF	None	1/4	.008	1	—														○
	DCMT 32.504 PBF	DCMT 11T301 PBF	None	3/8	.004	1	—														○
	DCMT 32.508 PBF	DCMT 11T302 PBF	None	3/8	.008	1	—														○
	DCMT 32.51 PBF	DCMT 11T304 PBF	None	3/8	.016	1	—														○
	DCMT 21.504 PF	DCMT 070201 PF	None	1/4	.004	1	—														○
	DCMT 21.508 PF	DCMT 070202 PF	None	1/4	.008	1	—														○
	DCMT 32.508 PF	DCMT 11T302 PF	None	3/8	.008	1	—														●
	DCMT 32.51 PF	DCMT 11T304 PF	None	3/8	.016	1	—														●
	DCMT 32.504 FNAM3	DCMT 11T301 FNAM3	None	3/8	.004	2	—														●
	DCMT 32.508 FNAM3	DCMT 11T302 FNAM3	None	3/8	.008	2	—														●
	DCMT 32.51 FNAM3	DCMT 11T304 FNAM3	None	3/8	.016	2	—														●

Front Turning

Toolholders for VB.. Inserts

SVJB-OH2 (Coolant through)



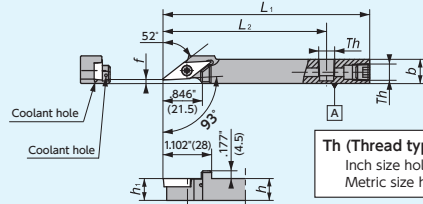
Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

Figure-1

Right-Hand style shown

● Left-Hand coolant through holders are designed for Right-Hand machines

SVJB-OH (Coolant through)



Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

Figure-2

Right-Hand style shown

● Left-Hand coolant through holders are designed for Right-Hand machines

VBGT33

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	g (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L										
	SVJB%∠083C-F079-OH	2	●	●	1/2	.551 14	1/2	4.724 120	.079 2	3.740 95	.079 2	NPT1/8	LR15-4 × 10	LLR-255
	SVJB%∠083C-F079-OH2	1	●	●	1/2	.551 14	1/2	4.724 120	.079 2	2.756 70	.079 2	NPT1/8	LR15-4 × 10	LLR-255
	SVJB%∠103C-F079-OH	2	●	●	5/8	5/8	5/8	4.724 120	.079 2	3.740 95	0 0	NPT1/8	LR15-4 × 10	LLR-255
	SVJB%∠103C-F079-OH2	1	●	●	5/8	5/8	5/8	4.724 120	.079 2	2.953 75	0 0	NPT1/8	LR15-4 × 10	LLR-255
	SVJB%∠1214-X16N-F020H	2	●	●	.472 12	.551 14	.472 12	4.724 120	.079 2	3.740 95	.079 2	Rc1/8(PT1/8)	LR15-4 × 10	LLR-255
	SVJB%∠1616-X16N-F020H	2	●	●	.630 16	.630 16	.630 16	4.724 120	.079 2	3.740 95	0 0	Rc1/8(PT1/8)	LR15-4 × 10	LLR-255

● Left-Hand coolant through holders are designed for Right-Hand machines

VB.. inserts - Carbide

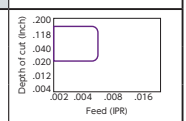
[Molded Chipbreaker]

● : 1st Choice ● : 2nd choice

(inch)	IC	T
VB33	3/8	3/16

Shape	Item Number	ISO Item Number	IC	R	Carbide								CVD	Diamond Coating
					PVD Coated									
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1
	VBGT 3308 FNYL	VBGT 160402 FNYL	3/8	.008	○	●	○	●	○	○	○	○	○	○
	VBGT 331 FNYL	VBGT 160404 FNYL	3/8	.016	○	●	○	●	○	○	○	○	○	○
	VBGT 332 FNYL	VBGT 160408 FNYL	3/8	.031	○	●	○	●	○	○	○	○	○	○
						○	●	○	●	○	○	○	○	○
						○	●	○	●	○	○	○	○	○
						○	●	○	●	○	○	○	○	○

● : 1st Choice
 ● : Alternate choice



VB..33 Inserts - CBN / PCD

● : 1st Choice ● : 2nd choice

(inch)	IC	T
VB.. 33	3/8	3/16

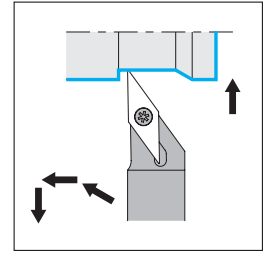
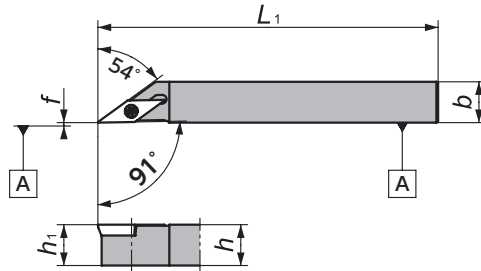
Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material											
								BIDEMICS Coated	Solid CBN	CBN (Brazed)							PCD		Diamond Coating
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1
	VBGW 3308 PD S0415	VBGW 160402 PD S01015	S0415	3/8	.008	2	.102	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 3308 PD S0525	VBGW 160402 PD S01325	S0525	3/8	.008	2	.102	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 3308 PD S0635	VBGW 160402 PD S01535	S0635	3/8	.008	2	.102	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 331 PD S0415	VBGW 160404 PD S01015	S0415	3/8	.016	2	.098	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 331 PD S0525	VBGW 160404 PD S01325	S0525	3/8	.016	2	.098	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 331 PD S0635	VBGW 160404 PD S01535	S0635	3/8	.016	2	.098	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 332 PD S0415	VBGW 160408 PD S01015	S0415	3/8	.016	2	.063	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 332 PD S0525	VBGW 160408 PD S01325	S0525	3/8	.016	2	.063	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 332 PD S0635	VBGW 160408 PD S01535	S0635	3/8	.016	2	.063	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 333 PD S0415	VBGW 160412 PD S01015	S0415	3/8	.031	2	.106	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 333 PD S0525	VBGW 160412 PD S01325	S0525	3/8	.031	2	.106	○	○	○	○	○	○	○	○	○	○	○	○
	VBGW 333 PD S0635	VBGW 160412 PD S01535	S0635	3/8	.031	2	.106	○	○	○	○	○	○	○	○	○	○	○	○

Cutting condition → Q4 Chipbreaker → P20

● : Stock
 ● : Stock (Newly added)
 ■ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R,L) : 1-2 week delivery (Right / Left-hand only)
 (R,L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Toolholders for VC.. Inserts

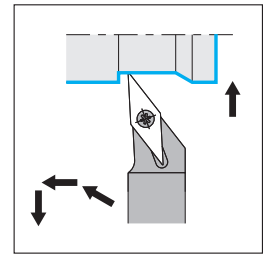
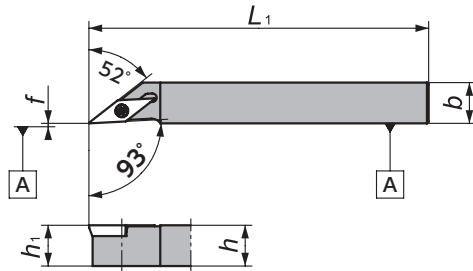
SVAC-N



Right-Hand style shown

Figure-1

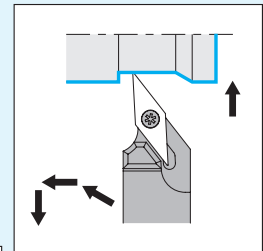
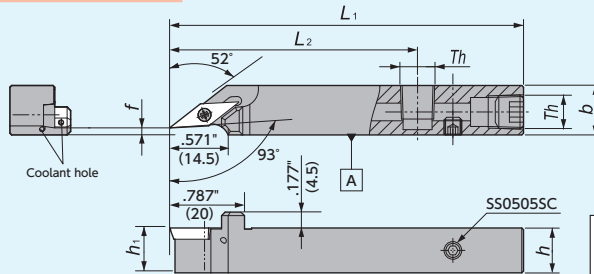
SVJC



Right-Hand style shown

Figure-2

SVJC-OH2 (Coolant through)

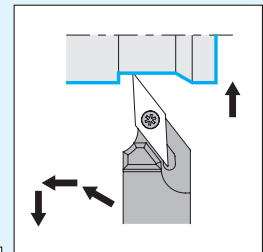
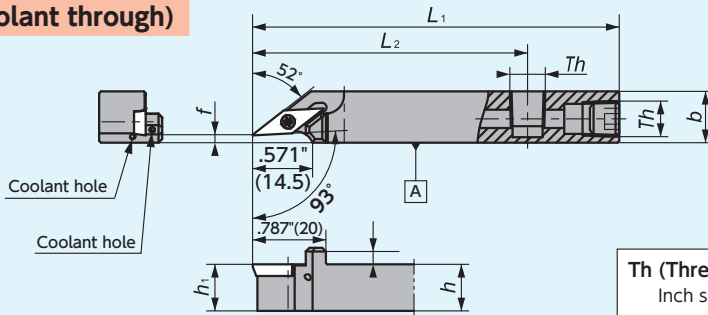


Right-Hand style shown

Figure-3

Th (Thread type)
Inch size holder: NPT1/8

SVJC-OH (Coolant through)

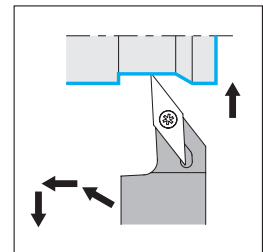
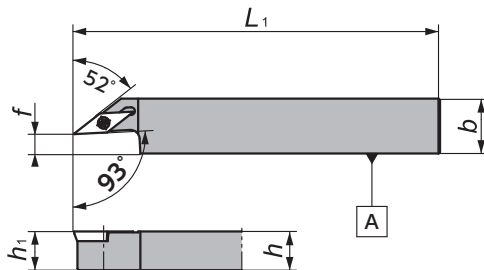


Right-Hand style shown

Figure-4

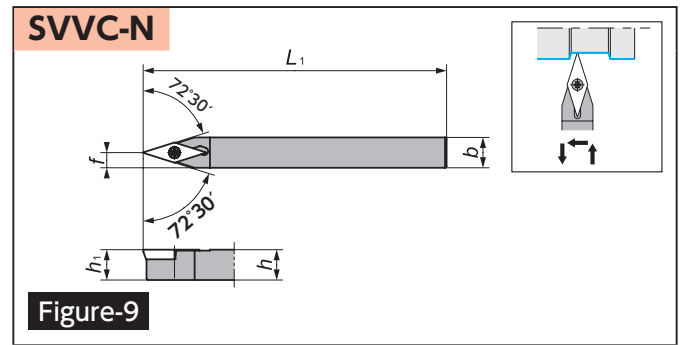
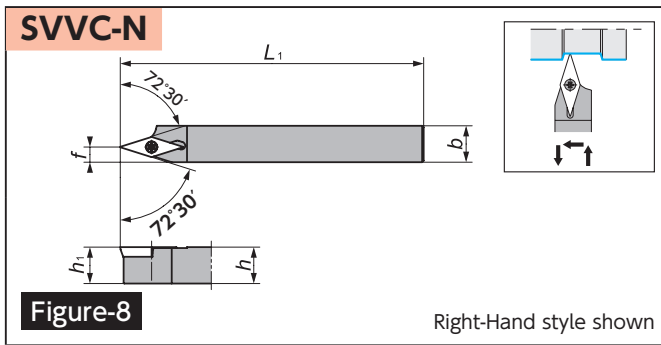
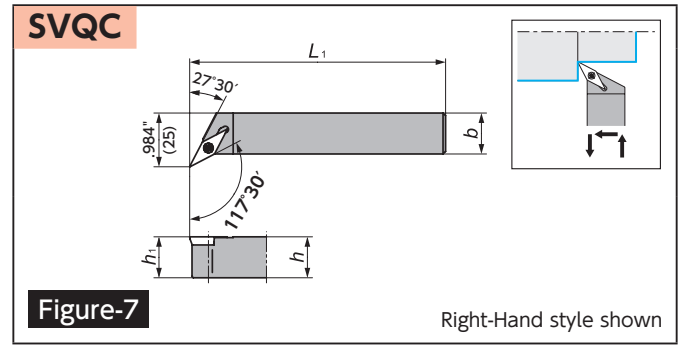
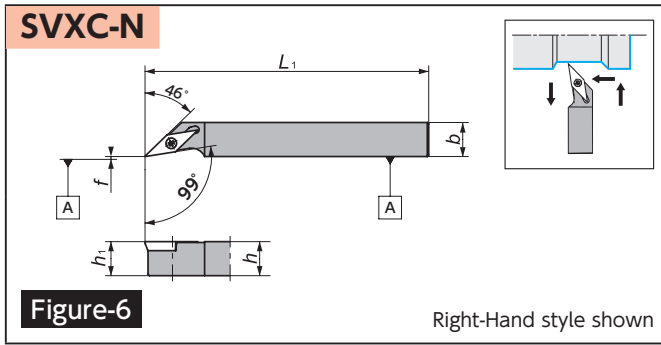
Th (Thread type)
Inch size holder: NPT1/8

SVJC-F (Shifted)



Right-Hand style shown

Figure-5



VC.. Series - Toolholders I



Gage Insert	Item Number	Figure	Stock		h	b	h ₁	L ₁	L ₂	f	Th	Clamp Screw	Wrench	
			R	L										
					(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VC..22 VC..22-WP	SVAC%10808X11N	1	●	●	.315 8	.315 8	.315 8	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVAC%11010X11N	1	○	○	.394 10	.394 10	.394 10	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVAC%11212X11N	1	○	○	.472 12	.472 12	.472 12	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVAC%11616X11N	1	○	○	.630 16	.630 16	.630 16	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
VC..22	SVJCR%082H-F02C	2	●	●	3/8	3/8	3/8	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%082C	2	●	●	1/2	1/2	1/2	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%102C	2	●	●	5/8	5/8	5/8	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%0808H11N	2	○	○	.315 8	.315 8	.315 8	3.937 100	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%11010X11N	2	○	○	.394 10	.394 10	.394 10	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%1212X11N	2	●	○	.472 12	.472 12	.472 12	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%1616X11N	2	○	○	.630 16	.630 16	.630 16	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%082H-F079-OH	4	■	■	1/2	.551 14	1/2	3.937 100	2.953 75	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S	
SVJCR%082H-F079-OH2	3	●	●	1/2	.551 14	1/2	3.937 100	2.756 70	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S		
SVJCR%102H-F079-OH	4	●	●	5/8	5/8	5/8	3.937 100	2.953 75	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S		
SVJCR%102X-F079-OH2	3	●	●	5/8	5/8	5/8	4.724 120	2.953 75	.079 2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S		
VC..22	SVJCR1014F11N-F02OH	4	○	○	.394 10	.551 14	.394 10	3.150 80	2.953 75	.079 2.0	M6 × 1	LRIS-2.5 × 7	CLR-15S	
	SVJCR1214H11N-F02OH	4	○	○	.472 12	.551 14	.472 12	3.937 100	2.953 75	.079 2.0	Rc1/8 (PT1/8)	LRIS-2.5 × 7	CLR-15S	
	SVJCR1616H11N-F02OH	4	○	○	.630 16	.630 16	.630 16	3.937 100	2.953 75	.079 2.0	Rc1/8 (PT1/8)	LRIS-2.5 × 7	CLR-15S	
VC..22	SVJCR%082C-F250	5	●	●	1/2	1/2	.709 18	4.724 120	—	1/4	—	LRIS-2.5 × 7	CLR-15S	
	SVJCR%082C-F500	5	●	●	1/2	1/2	.984 25	4.724 120	—	1/2	—	LRIS-2.5 × 7	CLR-15S	
VC..22	SVXC%11012X11N	6	○	○	.394 10	.472 12	.394 10	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
	SVXC%11212X11N	6	○	○	.472 12	.472 12	.472 12	4.724 120	—	0.0 0.0	—	LRIS-2.5 × 7	CLR-15S	
VC..22	SVQC%20-X11	7	○	○	.787 20	.787 20	.787 20	4.724 120	—	—	—	LRIS-2.5 × 7	CLR-15S	
VC..22	SVVC%11212X11N	8	●	●	.472 12	.472 12	.472 12	4.724 120	—	.197 5	—	LRIS-2.5 × 7	CLR-15S	
	SVVC%11616X11N	8	○	○	.630 16	.630 16	.630 16	4.724 120	—	.197 5	—	LRIS-2.5 × 7	CLR-15S	
	SVVCN0808H11N	9	○	○	.315 8	.315 8	.315 8	3.937 100	—	.157 4	—	LRIS-2.5 × 7	CLR-15S	
	SVVCN11010X11N	9	○	○	.394 10	.394 10	.394 10	4.724 120	—	.197 5	—	LRIS-2.5 × 7	CLR-15S	
	SVVCN20-X11	9	○	○	.787 20	.787 20	.787 20	4.724 120	—	.394 10	—	LRIS-2.5 × 7	CLR-15S	

Inserts → Q27

Cutting condition → Q4

● : Stock
 ● : Stock (Newly added)
 ■□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R) : 1-2 week delivery (Right / Left-hand only)
 (R) : 1-2 week delivery (Right / Left-hand only, Newly added)

Y-axis Toolholders for VC.. Inserts

Y-SVJCR

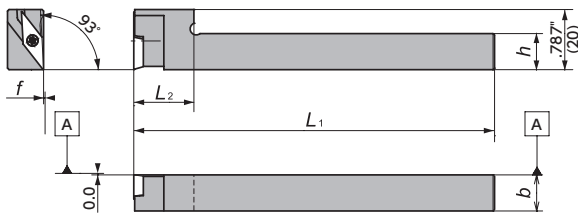


Figure-1

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SVJCR-OH2 (Coolant through)

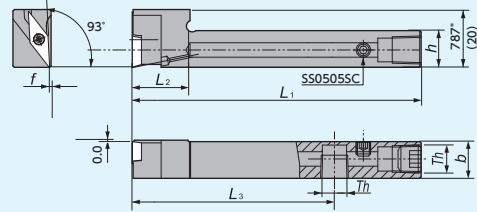


Figure-2

Th (Thread type)
Inch size holder: NPT1/8 Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SVJCR-OH (Coolant through)

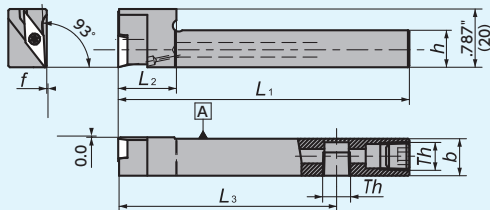


Figure-3

Th (Thread type)
Inch size holder: NPT1/8 Right-Hand style shown
Takes Right-hand or Neutral insert

DS-SVX

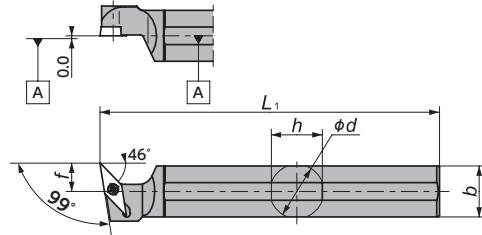


Figure-4

Left-Hand style shown
Takes Right-hand or Neutral insert

VC.. Series - Toolholders II



Gage Insert	Item Number	Figure	Stock		h		b		L_1		f		L_2		L_3		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
VC..22..	Y-SVJCR062-IN	1	●		3/8		3/8		4.724	120	0.0	0.0	.787	20	—	—	—	LRIS-2.5×7	CLR-15S
	Y-SVJCR082-IN	1	●		1/2		1/2		4.724	120	0.0	0.0	.787	20	—	—	—	LRIS-2.5×7	CLR-15S
	Y-SVJCR102-IN	1	●		5/8		5/8		4.724	120	0.0	0.0	.984	25	—	—	—	LRIS-2.5×7	CLR-15S
VC..22..	Y-SVJCR082HS-IN-OH	3	■		1/2		1/2		3.937	100	0.0	0.0	.787	20	2.953	75	NPT1/8	LRIS-2.5×7	CLR-15S
	Y-SVJCR082HS-IN-OH2	2	●		1/2		1/2		3.937	100	0.0	0.0	.787	20	2.756	70	NPT1/8	LRIS-2.5×7	CLR-15S
	Y-SVJCR102H-IN-OH	3	●		5/8		5/8		3.937	100	0.0	0.0	.984	25	2.953	75	NPT1/8	LRIS-2.5×7	CLR-15S
VC..22..	Y-SVJCR1212H11S-OH	3	□		.472	12	.472	12	3.937	100	0.0	0.0	.787	20	2.953	75	RC1/8(PT1/8)	LRIS-2.5×7	CLR-15S
	Y-SVJCR1212H11S-OH2	2	●		.472	12	.472	12	3.937	100	0.0	0.0	.787	20	2.756	70	RC1/8(PT1/8)	LRIS-2.5×7	CLR-15S
	Y-SVJCR1616H11S-OH	3	○		.630	16	.630	16	3.937	100	0.0	0.0	.787	20	2.953	75	RC1/8(PT1/8)	LRIS-2.5×7	CLR-15S

VC.. Series - Toolholders III



Gage Insert	Item Number	Figure	Stock		ϕd		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VC..22..	DS-SVX $\frac{1}{4}$ 14F-11	4	○		.551	14.000	.512	13	.512	13	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 15H-11	4	○		5/8	15.875	.591	15	.591	15	3.937	100	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 16F-11	4	●		.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 19-11	4	●		3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 19-11SPL	4	○		3/4	19.050	.709	18	.709	18	6.299	160	.433	11.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 20X-11	4	○		.787	20.000	.748	19	.748	19	3.740	95	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 20-11	4	●		.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 22-11	4	●		.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 25-11MET	4	○		.984	25.000	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 25-11	4	●		1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S

VC.. Inserts - Carbide

(inch)	IC	T
VC..22	1/4	1/8

Shape	Item Number	ISO Item Number	IC	R	Carbide												CVD	Diamond Coating	Graph
					PVD Coated								CP1	UC1					
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1							
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●
	VCGT 2204M YL	VCGT 110301M YL	1/4	.003	●	●	○	●	○										
	VCGT 2208M YL	VCGT 110302M YL	1/4	.007	●	●	○	●	○										
	VCGT 221M YL	VCGT 110304M YL	1/4	.015	●	●	○	●	○										
	VCGT 2204M CL	VCGT 110301M CL	1/4	.003	○	○	●	○	●										
	VCGT 2208M CL	VCGT 110302M CL	1/4	.007	○	○	●	○	●										
	VCGT 2201 FNAM3	VCGT 110300 FNAM3	1/4	.001	○		●	●	○	●	■								
	VCGT 2204M FNAM3	VCGT 110301M FNAM3	1/4	.003	○		●	●	○	○	○								
	VCGT 2204 FNAM3	VCGT 110301 FNAM3	1/4	.004	○		●	●	○	○	○								
	VCGT 2208M FNAM3	VCGT 110302M FNAM3	1/4	.007	○		●	●	○	○	○								
	VCGT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008	○		●	●	○	○	○								
	VCGT 221M FNAM3	VCGT 110304M FNAM3	1/4	.015	○		●	●	○	○	○								
	VCMT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008		○													
VCMT 221 FNAM3	VCGT 110304 FNAM3	1/4	.016		○														
	VCGT 2201 AZ7	VCGT 110300 AZ7	1/4	.001				●			○								
	VCGT 2204M AZ7	VCGT 110301M AZ7	1/4	.003				●			○								
	VCGT 2208M AZ7	VCGT 110302M AZ7	1/4	.007				●			○								
	VCGT 221M AZ7	VCGT 110304M AZ7	1/4	.015				●			○								
wiper insert	VCGT 2202 ½ S-WP*	TFV 11F ½ 05SX	1/4	.002							R	Ⓜ							
	VCGT 2204 ½ S-WP*	TFV 11F ½ 10SX	1/4	.004							R	Ⓜ							
	VCGT 2201 ½ U	VCGT 110300 ½ U	1/4	.001							Ⓜ	Ⓜ							
	VCGT 2204M ½ U	VCGT 110301M ½ U	1/4	.003							Ⓜ	Ⓜ							
	VCGT 2204 ½ U	VCGT 110301 ½ U	1/4	.004							Ⓜ	Ⓜ							
	VCGT 2208M ½ U	VCGT 110302M ½ U	1/4	.007							Ⓜ	Ⓜ							
	VCGT 2208 ½ U	VCGT 110302 ½ U	1/4	.008							Ⓜ	Ⓜ							
wiper insert	VCGT 2202 ½ U-WP*	TFV 11F ½ 05U	1/4	.002							Ⓜ	Ⓜ							
	VCGT 2204 ½ U-WP*	TFV 11F ½ 10U	1/4	.004							Ⓜ	Ⓜ							
	VCGW 2201 H	VCGW 110300 H	1/4	.001									●						
	VCGW 2204 H	VCGW 110301 H	1/4	.004									●						
	VCGW 2208 H	VCGW 110302 H	1/4	.008									●						



* Note: NTK WP style inserts have a wiper facet design.

The insert has a 0.2mm (.008") flat on the cutting edge when the insert is set into the toolholder. The flat on the cutting edge ensures a superior surface finish when feed rates are increased.

WP style inserts can be used in toolholders: SVAC

Cutting condition → Q4 Chipbreaker → P20

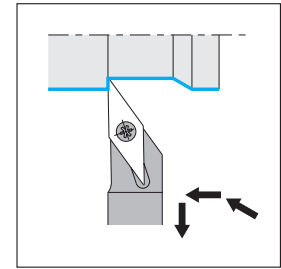
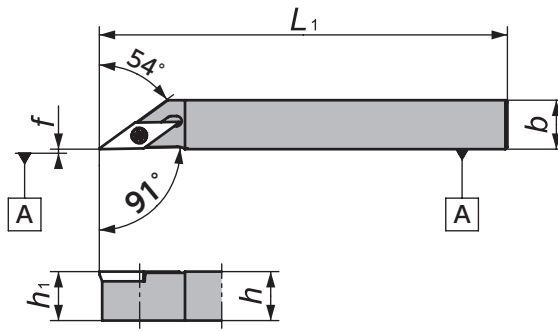
● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)												PCD	Diamond Coating
								BIDEMICS Coated		Solid CBN		Coated									
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1		
	VCGW 2208 PD S0415	VCGW 110302 PD S01015	S0415	1/4	.008	2	.102														
	VCGW 2208 PD S0635	VCGW 110302 PD S01535	S0635	1/4	.008	2	.102														
	VCGW 221 PD S0415	VCGW 110304 PD S01015	S0415	1/4	.016	2	.098														
	VCGW 221 PD S0635	VCGW 110304 PD S01535	S0635	1/4	.016	2	.098														
	VCGW 222 PD S0415	VCGW 110308 PD S01015	S0415	1/4	.031	2	.098														
	VCGW 222 PD S0635	VCGW 110308 PD S01535	S0635	1/4	.031	2	.098														
	VCGW 223 PD S0415	VCGW 110312 PD S01015	S0415	1/4	.047	2	.106														
	VCGW 223 PD S0635	VCGW 110312 PD S01535	S0635	1/4	.047	2	.106														
	VCMW 2204	VCMW 110301	None	1/4	.004	1	—														
VCMW 2208	VCMW 110302	None	1/4	.008	1	—															
VCMW 221	VCMW 110304	None	1/4	.016	1	—															

● : Stock ● : Stock (Newly added) ■ □ □ □ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through Ⓜ : 1-2 week delivery (Right / Left-hand only) Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Toolholders for VC.. Inserts


SVAC-N-1L



Right-Hand style shown

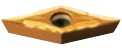
Figure-1

SVAC-N

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	SVAC%1010X11N-1L	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	VCGT21.508	SVAC%1212X11N-1L	1	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	RLR-20S

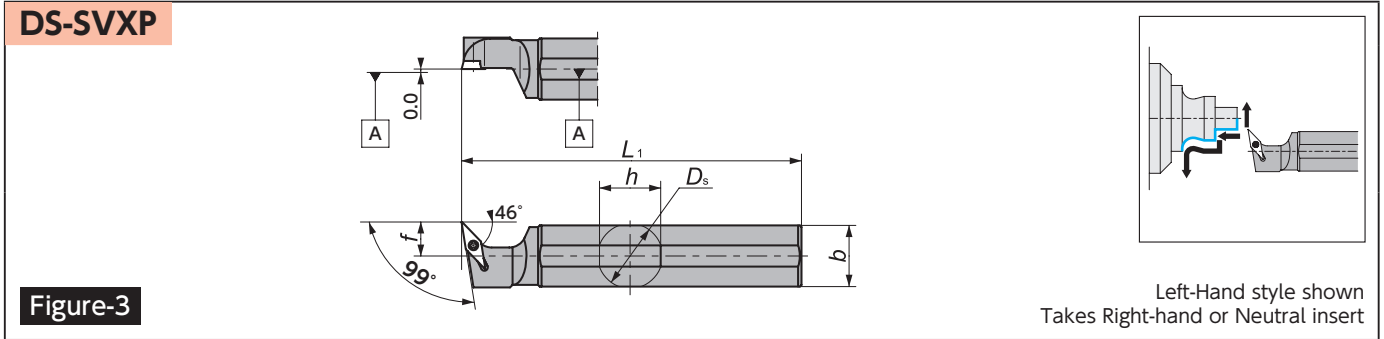
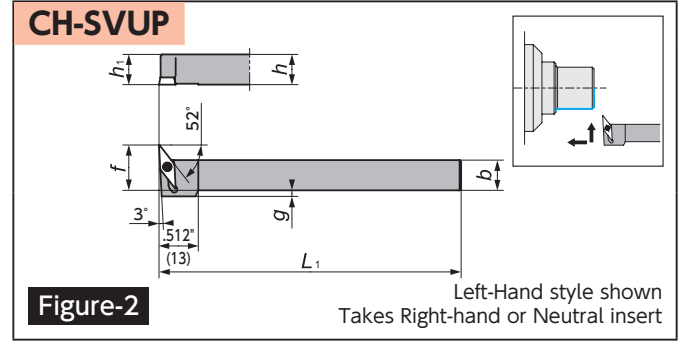
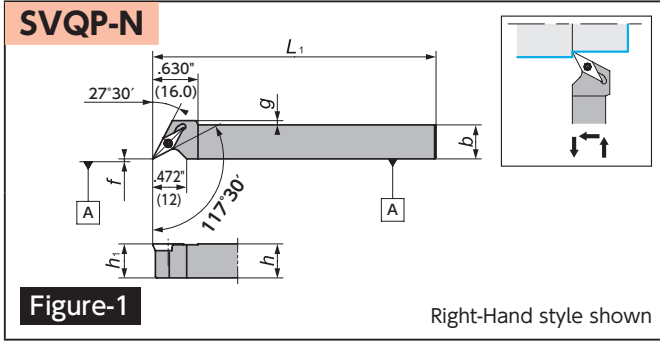
VC..21 Inserts - Carbide

SVAC-N

Shape	Item Number	ISO Item Number	IC		T		R		Coated Carbide			
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	DM4	DT4	QM3	TM4
	VCGT21.508MCL	VCGT110202MCL	1/4	6.35	3/32	2.38	.007	0.18	○	○	○	○

Cutting condition →Q4
Chipbreaker →P20

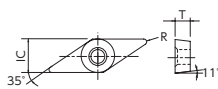
Toolholders VP..08 Inserts



Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..0802	SVQP%1010X08N	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	.138	3.5	LRIS-2 × 6	CLR-13S
	SVQP%1212X08N	1	○	○	.472	12	.472	12	.394	10	4.724	120	0.0	0.0	.059	1.5	LRIS-2 × 6	CLR-13S
	SVQP%1616X08N	1	○	○	.630	16	.630	16	.394	10	4.724	120	0.0	0.0	0	0	LRIS-2 × 6	CLR-13S
	CH-SVUP%1010H08	2	○	○	.394	10	.394	10	.394	10	3.937	100	.591	15	.079	2	LRIS-2 × 6	CLR-13S
	CH-SVUP%1212H08	2	○	○	.472	12	.472	12	.472	12	3.937	100	.669	17	0	0	LRIS-2 × 6	CLR-13S

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..0802	DS-SVXP%19-08	3	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP%20-08	3	○	○	.787	20.000	.748	19	.748	19	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP%22-08	3	○	○	.866	22.000	.827	21	.827	21	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP%25-08	3	○	○	1	25.400	.945	24	.945	24	5.906	150	.394	10	LRIS-2 × 6	CLR-13S

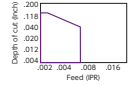
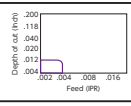
VP.. Inserts - Carbide



VP__

			● : 1st Choice ● : 2nd choice																	
			(inch)	IC	T															
			VP..08	3/16	3/32															
Steel	P		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless Steel	M		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-Ferrous Material	N		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat Resistant Alloy	S		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened Material	H		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating					
					PVD Coated																
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1							
	VPET 0802005 %1/4 KHG	VPET 0802005 %1/4 KHG	.187	.002																	
	VPET 0802008 %1/4 KHG	VPET 0802008 %1/4 KHG	.187	.003																	
	VPET 0802018 %1/4 KHG	VPET 0802018 %1/4 KHG	.187	.007																	
	VPET 0802022 %1/4 KHG	VPET 0802022 %1/4 KHG	.187	.008																	
	VPET 0802008 %1/4 UHG	VPET 0802008 %1/4 UHG	.187	.003																	



Cutting condition →Q4

Chipbreaker →P20

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Toolholders for VP..22 Inserts

SVXP-N

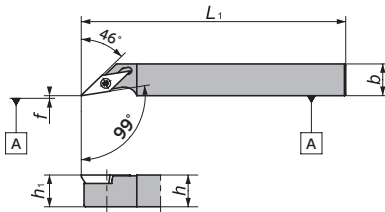


Figure-1

Right-Hand style shown

DS-SVVP

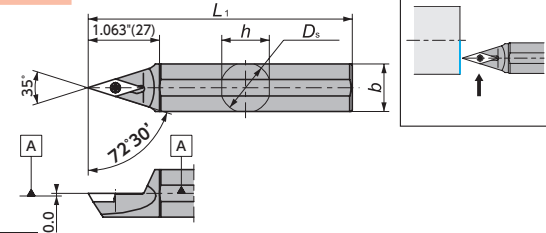


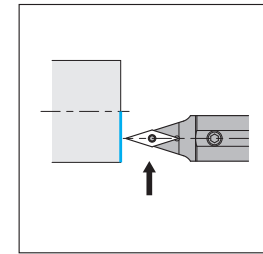
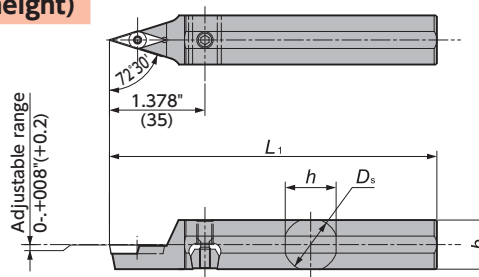
Figure-2


DS-SVVP-ACH (Adjustable centerline height)


<Parts>

Shank	Wedge	Screw for Wedge
$\phi .630''$ (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
$\phi 3/4''$ (19.05)		
$\phi .787''$ (20)		
$\phi .866''$ (22)	ACH-W24 (5805619)	WS060419-004 (5799226)
$\phi 1''$ (25.4)		

Figure-3

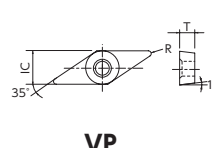




Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	SVXP $\frac{1}{4}$ 1012X11N	1	○	○	.394	10	.472	12	.394	10	4.724	120	0.0	0.0	LRIS-2.5 \times 7	CLR-15S
	SVXP $\frac{1}{4}$ 1212X11N	1	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 \times 7	CLR-15S

Gage Insert	Item Number	Figure	Stock Neutral	D_s		h		b		L_1		Clamp Screw	Wrench
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	DS-SVVPN19-11	2	○	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 \times 7	CLR-15S
	DS-SVVPN22-11	2	○	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 \times 7	CLR-15S
	DS-SVVPN16-11-ACH	3	●	.630	16.000	.610	15.5	.610	15	4.724	120	LRIS-2.5 \times 7	CLR-15S
	DS-SVVPN19-11-ACH	3	●	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 \times 7	CLR-15S
	DS-SVVPN20-11-ACH	3	●	.787	20.000	.748	19.0	.748	19	4.724	120	LRIS-2.5 \times 7	CLR-15S
	DS-SVVPN22-11-ACH	3	●	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 \times 7	CLR-15S
	DS-SVVPN25-11-ACH	3	●	1	25.400	.945	24.0	.945	24	5.906	150	LRIS-2.5 \times 7	CLR-15S

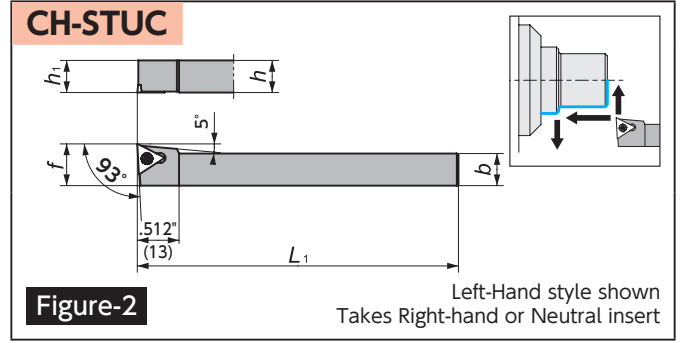
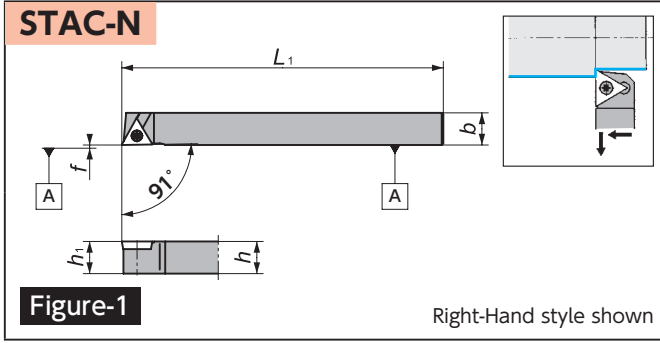
VP.. Inserts - Carbide

(inch)	IC	T
VP..22	1/4	1/8

Shape	Item Number	ISO Item Number	IC	R	Carbide													
					PVD Coated								CVD	Diamond Coating				
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1			CP1	UC1		
 <p>VP__</p>					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●
	VPET 2202	$\frac{1}{4}$ KHG	VPET 1103005	$\frac{1}{4}$ KHG	1/4	.002	●	●	●	●	●	●	●	●	●	●	●	
	VPET 2203	$\frac{1}{4}$ KHG	VPET 1103008	$\frac{1}{4}$ KHG	1/4	.003	●	●	●	●	●	●	●	●	●	●	●	
	VPET 2207	$\frac{1}{4}$ KHG	VPET 1103018	$\frac{1}{4}$ KHG	1/4	.007	●	●	●	●	●	●	●	●	●	●	●	
	VPET 2208	$\frac{1}{4}$ KHG	VPET 110302	$\frac{1}{4}$ KHG	1/4	.008	●	●	●	●	●	●	●	●	●	●	●	
	VPGT 2201	FNAM3	VPGT 110300	FNAM3	1/4	.001	●	●	●	●	●	●	●	●	●	●	●	
	VPGT 2204M	FNAM3	VPGT 110301M	FNAM3	1/4	.003	○	●	●	●	●	●	●	●	●	●	●	
	VPGT 2208M	FNAM3	VPGT 110302M	FNAM3	1/4	.007	○	●	●	●	●	●	●	●	●	●	●	

Cutting condition **→Q4**
Chipbreaker **→P20**

Toolholders for TC.. Inserts



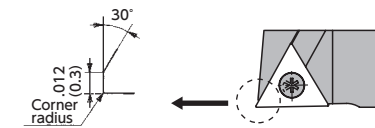
Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TC..73..	STAC%0808X09N	1	○		.315	8	.315	8	.315	8	4.724	120	0.0	0.0	LRIS-2.2 × 6	CLR-13S
	STAC%1010X09N	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	LRIS-2.2 × 6	CLR-13S
TC..21.5..	STAC%1212X11N	1	○		.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CH-STUC%1010H09	2		○	.394	10	.394	10	.394	10	3.937	100	.512	13	LRIS-2.2 × 6	CLR-13S
TC..73..	CH-STUC%1212H09	2		○	.472	12	.472	12	.472	12	3.937	100	.591	15	LRIS-2.2 × 6	CLR-13S

TC.. Inserts - Carbide

Shape	Item Number	ISO Item Number	IC	R	Carbide								CVD	Diamond Coating			
					PVD Coated												
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1			CP1	UC1	
					Steel	P	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●
							●	●	●	●	●	●	●	●	●	●	●

● : 1st Choice ● : 2nd choice

(inch) TC..21 IC 1/4 T 3/32 (inch) TC..73 IC 7/32 T 3/32



*Note: NTK WP style inserts have a wiper facet design. The insert has a 0.3mm (.012") flat on the cutting edge when the insert is set into the toolholder. The flat on the cutting edge ensures a superior surface finish when feed rates are increased. WP style inserts can be used in toolholders: STAC

Cutting condition → **Q4**
Chipbreaker → **P20**

● : Stock
● : Stock (Newly added)
■ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
○ : Mirror finish

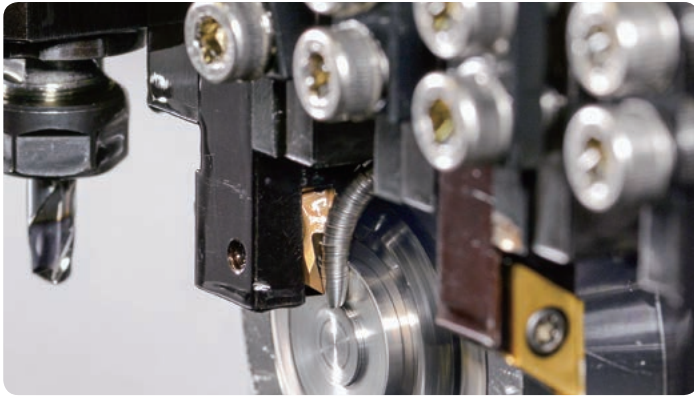
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

○ : 1-2 week delivery (Right / Left-hand only)
○ : 1-2 week delivery (Right / Left-hand only, Newly added)

Front Turning

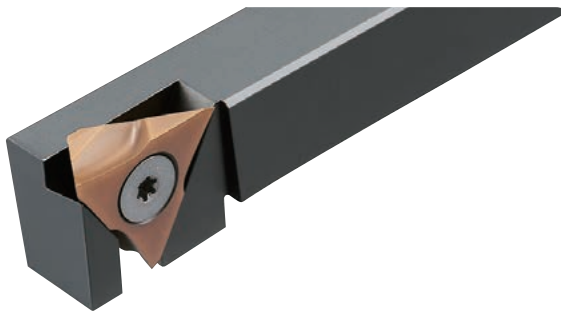
Front turning insert for large DOC

Front Turning



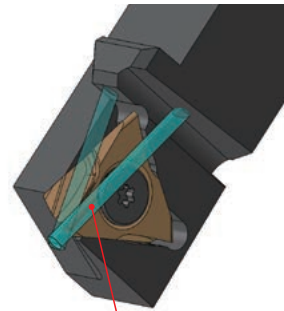
Features

- Up to .197" DOC capability
- Specially designed chipbreaker provides excellent chip control and sharpness
- Coolant through toolholder helps to evacuate chips

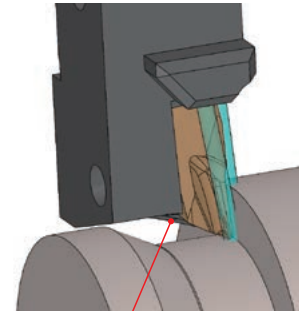


Available in wiper insert

Rigid side clamp



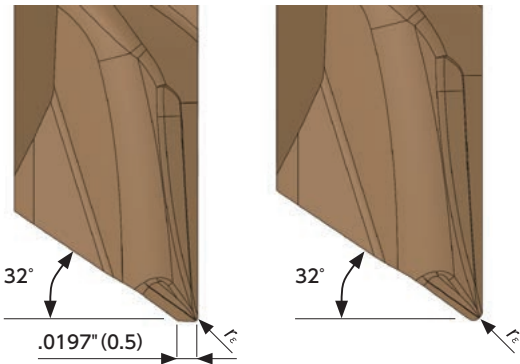
Coolant through tool holder is available



Can take 30° taper

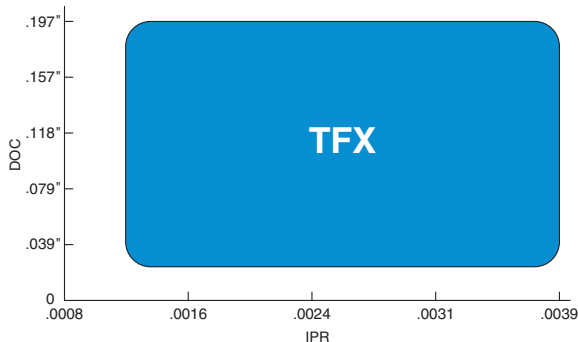
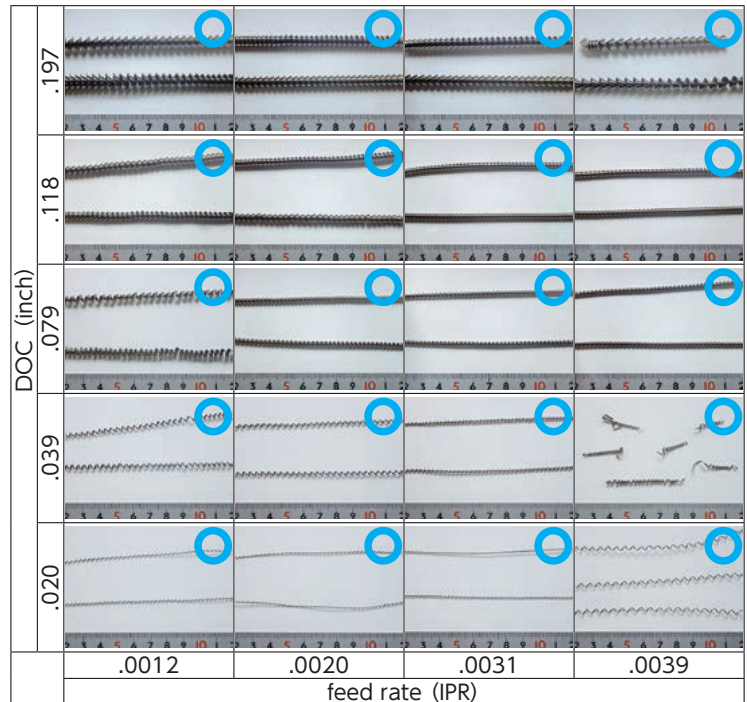
With wiper

No wiper



Excellent chip control

304 SS dia 16mm material, 260 SFM



Toolholders for TFT series

TFT-OH2 (Coolant through)

Screw accessible from both sides

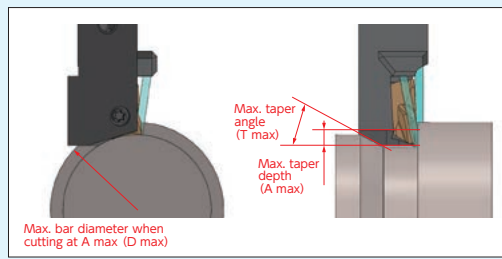
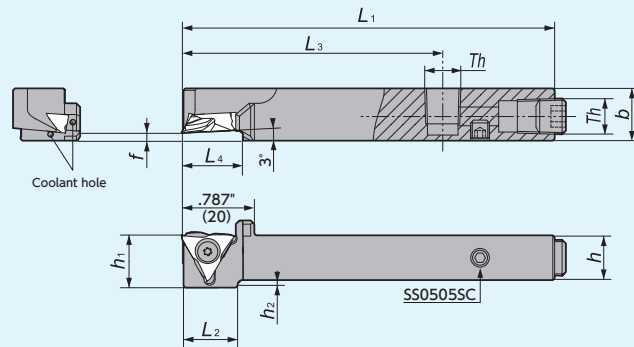


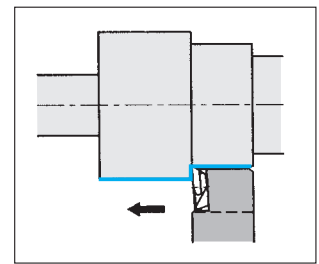
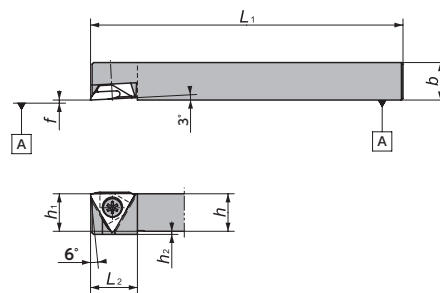
Figure-1



Right-Hand style shown

TFT

Screw accessible from both sides



Right-Hand style shown

Figure-2

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	L ₄ (Inch) (mm)	Th	Max. DOC inch/side	Taper cut capability		
			R	L												D max	A max	T max
TFX33	TFT%106H-IN-OH2	1	●		3/8	.551 14	3/8	3.937 100	.079 2.0	.591 15	.157 4	2.756 70	.591 15	M6 x 1.0	.197 (TFX)	.787	.098	30°
	TFT%108H-IN-OH2	1	●		1/2	.551 14	1/2	3.937 100	.079 2.0	.591 15	.079 2	2.756 70	.591 15	NPT1/8		1.181		
	TFT%110X-IN-OH2	1	●		5/8	5/8	5/8	4.724 120	.079 2.0	0 0	0 0	2.756 70	.689 17.5	NPT1/8		1.574		
	TFT%11014H-OH2	1	○		.394 10	.551 14	.394 10	3.937 100	.079 2.0	.591 15	.157 4	2.756 70	.591 15	M6 x 1.0		.787		
	TFT%11214H-OH2	1	●		.472 12	.551 14	.472 12	3.937 100	.079 2.0	.591 15	.079 2	2.756 70	.591 15	Rc1/8(PT1/8)		1.181		
	TFT%11616X-OH2	1	○		.630 16	.630 16	.630 16	4.724 120	.079 2.0	0 0	0 0	2.756 70	.689 17.5	Rc1/8(PT1/8)		1.574		
TF33	TFT%106-IN	2	●		3/8	3/8	3/8	4.724 120	0.0 0.0	.591 15	.118 3	-	-	-	.157 (TF)	No capability for taper cut		
	TFT%108-IN	2	●		1/2	1/2	4.724 120	0.0 0.0	.591 15	.039 1	-	-	-					
	TFT%110	2	○		.394 10	.394 10	.394 10	4.724 120	0.0 0.0	.591 15	.118 3	-	-	-				
	TFT%112	2	○		.472 12	.472 12	.472 12	4.724 120	0.0 0.0	.591 15	.039 1	-	-	-				
	TFT%116	2	○		.630 16	.630 16	.630 16	4.724 120	0.0 0.0	0 0	0.0 0	-	-	-				
	TFT%120	2	○		.787 20	.787 20	.787 20	4.724 120	0.0 0.0	0 0	0.0 0	-	-	-				

TFX / TFT Series - Inserts

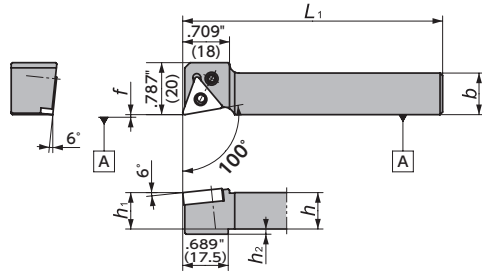
Shape	Item Number	Wiper	Max. DOC (Inch)	d		s		r _e		DM4		ST4		ZM3	
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L	R	L	R	L
<p>Right-Hand style shown</p> <p>Note: Up to .197\"/> </p>	TFX3301MR	No	.197	3/8	9.525	3/16	4.76	.003	0.08	●		●			
	TFX3302MR	No	.197	3/8	9.525	3/16	4.76	.007	0.18	●		●			
	TFX3304MR	No	.197	3/8	9.525	3/16	4.76	.015	0.38	●		●			
	TFX3301MRW	Yes	.197	3/8	9.525	3/16	4.76	.003	0.08	●		●			
	TFX3302MRW	Yes	.197	3/8	9.525	3/16	4.76	.007	0.18	●		●			
TFX3304MRW	Yes	.197	3/8	9.525	3/16	4.76	.015	0.38	●		●				
<p>Right-Hand style shown</p> <p>Note: Up to .157\"/> </p>	TF3300R/L	Yes	.157	3/8	9.525	3/16	4.76	0	0					●	
	TF3305R/L	Yes	.157	3/8	9.525	3/16	4.76	.002	0.05					●	
	TF3315R/L	Yes	.157	3/8	9.525	3/16	4.76	.006	0.15					●	
	TF3320R/L	Yes	.157	3/8	9.525	3/16	4.76	.008	0.2					○	

Cutting condition → Q4

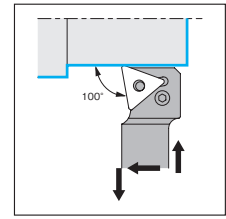
● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R/L) : 1-2 week delivery (Right / Left-hand only)
 (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Toolholders for TN.. Inserts

PTXN-N



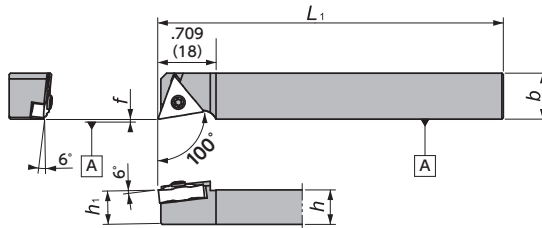
Shim	Clamp Pin	Spring
—	LCL33N	—



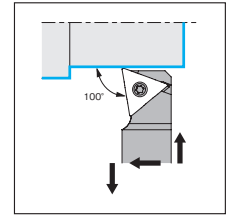
Right-Hand style shown

Figure-1

STXNR-N



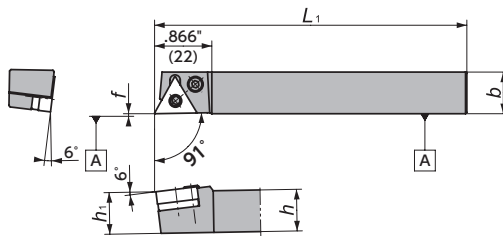
* Only for UL Chipbreaker



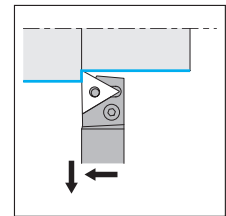
Right-Hand style shown

Figure-2

PTAN-N



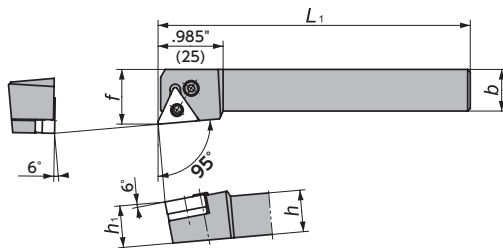
Shim	Clamp Pin	Spring
LST317	LCL3	LSP3



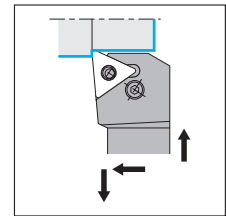
Right-Hand style shown

Figure-3

PTLN



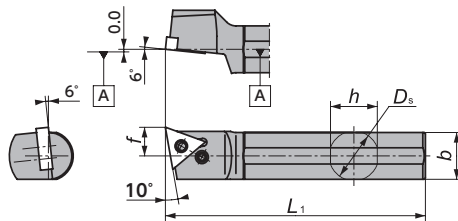
Shim	Clamp Pin	Spring
LST317	LCL3	LSP3



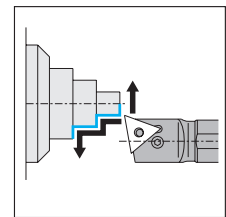
Right-Hand style shown

Figure-4

DS-PTX



Shim	Clamp Pin	Spring
—	LCL33N	—



Left-Hand style shown
Takes Right-hand or Neutral insert

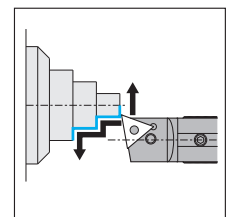
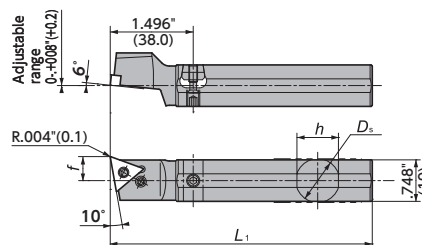
Figure-5

DS-PTX-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ .866" (22)		
φ 1" (25.4)		

Shim	Clamp Pin	Spring
—	LCL33N	—



Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-6

TN.. Series - Toolholders



PTXN-N / PTAN-N / PTLN

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		h_2		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TN..33..	PTXN%1063C	1	●		3/8	5/8	3/8	4.724 120	.097 2.475	0.0 0.0	LCS33	LW-2						
	PTXN%1083C	1	●		1/2	5/8	1/2	4.724 120	— —	0.0 0.0	LCS33	LW-2						
	PTXN%1103C	1	●		5/8	5/8	5/8	4.724 120	— —	0.0 0.0	LCS33	LW-2						
TN..33..	PTXN%11016X33N	1	○		.394 10.0	.630 16	.394 10	4.724 120	.079 2	0.0 0.0	LCS33	LW-2						
	PTXN%11216X33N	1	●		.472 12.0	.630 16	.472 12	4.724 120	— —	0.0 0.0	LCS33	LW-2						
	PTXN%11616X33N	1	○		.630 16.0	.630 16	.630 16	4.724 120	— —	0.0 0.0	LCS33	LW-2						
	PTXN%12020X33N	1	○		.787 20.0	.787 20	.787 20	4.724 120	— —	0.0 0.0	LCS33	LW-2						
TN..33..	STXNR1016X33N	2	○		.394 10.0	.630 16.0	.394 10.0	4.724 120	— —	0.0 0.0	LR-5 3.5 × 10	LLR-20S						
	STXNR1216X33N	2	○		.472 12.0	.630 16.0	.472 12.0	4.724 120	— —	0.0 0.0	LR-5 3.5 × 10	LLR-20S						
	STXNR1616X33N	2	○		.630 16.0	.630 16.0	.630 16.0	4.724 120	— —	0.0 0.0	LR-5 3.5 × 10	LLR-20S						
TN..33..	PTAN%11616X33N	3	○		.630 16.0	.630 16	.630 16	4.724 120	— —	0.0 0.0	LCS3	LW-2.5						
TN..33..	PTLN%12020L33	4	○	○	.787 20.0	.787 20	.787 20	5.512 140	— —	.984 25	LCS3	LW-2.5						



DS-PTX / DS-PTX-ACH

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TN..33..	DS-PTX%119-33	5	○		3/4 19.050	.709 18.0	.709 18	4.724 120	.433 11.0	LCS33	LW-2					
	DS-PTX%120-33	5	○		.787 20.000	.748 19.0	.748 19	4.724 120	.433 11.0	LCS33	LW-2					
	DS-PTX%122-33	5	○		.866 22.000	.827 21.0	.827 21	4.724 120	.472 12.0	LCS33	LW-2					
	DS-PTX%125M-33	5	○		1 25.400	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2					
TN..33..	DS-PTX%116-33-ACH	6	●		.630 16.000	.610 15.5	.591 15	4.724 120	.433 11.0	LCS33	LW-2					
	DS-PTX%119-33-ACH	6	●		3/4 19.050	.709 18.0	.709 18	4.724 120	.433 11.0	LCS33	LW-2					
	DS-PTX%120-33-ACH	6	●		.787 20.000	.748 19.0	.748 19	4.724 120	.433 11.0	LCS33	LW-2					
	DS-PTX%122-33-ACH	6	●		.866 22.000	.827 21.0	.827 21	4.724 120	.472 12.0	LCS33	LW-2					
	DS-PTX%125-33MET-ACH	1	●		1 25.000	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2					
	DS-PTX%125-33-ACH	6	●		1 25.400	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2					

Note: All angles shown are obtained when insert is set in the holder

Inserts **⇒Q36**

Cutting condition **⇒Q4**

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
Ⓜ : Coolant through

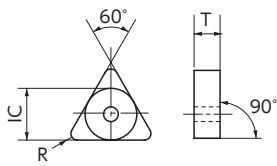
Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Front Turning

TN..33 inserts - Carbide

(inch)	IC	T
TN..33	3/8	3/16

● : 1st Choice ● : 2nd choice



Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

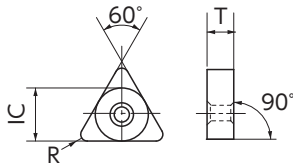
Shape	Item Number	ISO Item Number	IC	R	Carbide												CVD	Diamond Coating	Graph		
					PVD Coated								KM1	CP1	UC1						
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3										
	TNEG 3308 F 3/8 D1	TNEG 160402 F 3/8 D1	3/8	.008																	
	TNEG 331 F 3/8 D1	TNEG 160404 F 3/8 D1	3/8	.016																	
	TNEG 332 F 3/8 D1	TNEG 160408 F 3/8 D1	3/8	.031																	
	TNGG 3308 F 3/8 C	TNGG 160402 F 3/8 C	3/8	.008																	
	TNGG 3304 F 3/8 DA	TNGG 160401 F 3/8 DA	3/8	.004																	
	TNGG 3304 F 3/8 U2	TNGG 160401 F 3/8 U2	3/8	.004																	
	TNGG 3308 F 3/8 U2	TNGG 160402 F 3/8 U2	3/8	.008																	
	TNGG 331 F 3/8 U2	TNGG 160404 F 3/8 U2	3/8	.016																	
	TNGG 332 F 3/8 U2	TNGG 160408 F 3/8 U2	3/8	.031																	
	TNGG 3304M FNUL	TNGG 160401M FNUL	3/8	.003	○	●			○	●											
	TNGG 3308M FNUL	TNGG 160402M FNUL	3/8	.007	○	●			○	●											
	TNGG 331M FNUL	TNGG 160404M FNUL	3/8	.015	○	●			○	●											
	TNGG 332M FNUL	TNGG 160408M FNUL	3/8	.031	○	●			○	●											
	TNGG 3308 FNZP	TNGG 160402 FNZP	3/8	.008		○			○			○	○								
	TNGG 331 FNZP	TNGG 160404 FNZP	3/8	.016		○			○			○	●								
	TNGG 332 FNZP	TNGG 160408 FNZP	3/8	.031		○			○			○	●								

Front Turning

TN..33 Inserts - CBN / PCD

(inch)	IC	T
TN.. 33	3/8	3/16

● : 1st Choice ● : 2nd choice



Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material											PCD			Diamond Coating	
								Steel		Stainless Steel		Cast Iron		Non-Ferrous Material		Heat Resistant Alloy		Hardened Material		PD1	PD2		UC1
								P	M	K	N	S	H										
								BIDEMICS Coated	Solid CBN	CBN (Brazed)													
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30							
	TNGA 3304 PH FNX	TNGA 160401 PH FNX	None	3/8	.004	6	.083																
	TNGA 3304 PH S0415	TNGA 160401 PH S01015	S0415	3/8	.004	6	.083																
	TNGA 3304 PH S0525	TNGA 160401 PH S01325	S0525	3/8	.004	6	.083																
	TNGA 3304 PH S0635	TNGA 160401 PH S01535	S0635	3/8	.004	6	.083																
	TNGA 3308 PT FNX	TNGA 160402 PT FNX	None	3/8	.008	3	.087																
	TNGA 3308 PH FNX	TNGA 160402 PH FNX	None	3/8	.008	6	.087																
	TNGA 3308 PH S0415	TNGA 160402 PH S01015	S0415	3/8	.008	6	.087																
	TNGA 3308 PH S0525	TNGA 160402 PH S01325	S0525	3/8	.008	6	.087																
	TNGA 3308 PH S0635	TNGA 160402 PH S01535	S0635	3/8	.008	6	.087																
	TNGA 331 PH FNX	TNGA 160404 PH FNX	None	3/8	.016	3	.079																
	TNGA 331 PT FNX	TNGA 160404 PT FNX	None	3/8	.016	3	.079																
	TNGA 331 PH S0415	TNGA 160404 PH S01015	S0415	3/8	.016	6	.079																
	TNGA 331 PH S0420	TNGA 160404 PH S01020	S0420	3/8	.016	6	.079																
	TNGA 331 PH S0525	TNGA 160404 PH S01325	S0525	3/8	.016	6	.079																
	TNGA 331 PH S0635	TNGA 160404 PH S01535	S0635	3/8	.016	6	.079																
	TNGA 331 PH T0420	TNGA 160404 PH T01020	T0420	3/8	.016	6	.079																
	TNGA 332 PT FNX	TNGA 160408 PT FNX	None	3/8	.031	3	.067																
	TNGA 332 PH FNX	TNGA 160408 PH FNX	None	3/8	.031	6	.067																
	TNGA 332 PH S0415	TNGA 160408 PH S01015	S0415	3/8	.031	6	.067																
	TNGA 332 PH T0420	TNGA 160408 PH T01020	T0420	3/8	.031	6	.067																
	TNGA 332 PH S0420	TNGA 160408 PH S01020	S0420	3/8	.031	6	.067																
	TNGA 332 PH S0525	TNGA 160408 PH S01325	S0525	3/8	.031	6	.067																
	TNGA 332 PH S0635	TNGA 160408 PH S01535	S0635	3/8	.031	6	.067																
	TNGA 333 PT FNX	TNGA 160412 PT FNX	None	3/8	.047	3	.091																
TNGA 333 PH FNX	TNGA 160412 PH FNX	None	3/8	.047	6	.091																	
TNGA 333 PH S0415	TNGA 160412 PH S01015	S0415	3/8	.047	6	.091																	
TNGA 333 PH T0420	TNGA 160412 PH T01020	T0420	3/8	.047	6	.091																	
TNGA 333 PH S0420	TNGA 160412 PH S01020	S0420	3/8	.047	6	.091																	
TNGA 333 PH S0525	TNGA 160412 PH S01325	S0525	3/8	.047	6	.091																	
TNGA 333 PH S0635	TNGA 160412 PH S01535	S0635	3/8	.047	6	.091																	
TNGA 334 PH S0415	TNGA 160416 PH S01015	S0415	3/8	.063	6	.083																	
TNGA 334 PH T0420	TNGA 160416 PH T01020	T0420	3/8	.063	6	.083																	
TNGA 334 PH S0525	TNGA 160416 PH S01325	S0525	3/8	.063	6	.083																	
TNGA 334 PH S0635	TNGA 160416 PH S01535	S0635	3/8	.063	6	.083																	
TNGA 433 PH S0415	TNGA 220412 PH S01015	S0415	1/2	.047	6	.091																	
TNGA 433 PH S0635	TNGA 220412 PH S01535	S0635	1/2	.047	6	.091																	
	TNMX 331 PF	TNMX 160404 PF	None	3/8	.016	1	—																
	TNMX 332 PF	TNMX 160408 PF	None	3/8	.031	1	—																
	TNMG 3308 FNZP	TNMG 160402 FNZP	None	3/8	.008	6	—																
	TNMG 331 FNZP	TNMG 160404 FNZP	None	3/8	.016	6	—																
	TNMG 332 FNZP	TNMG 160408 FNZP	None	3/8	.031	6	—																

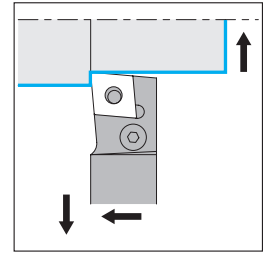
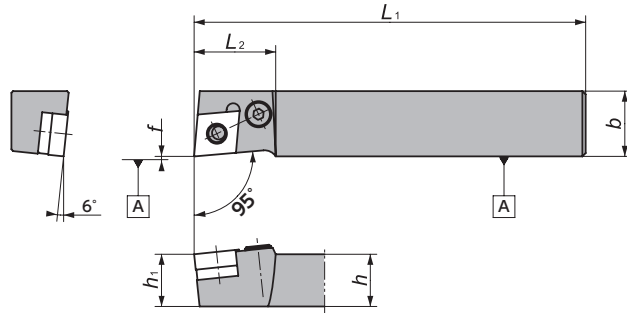
Front Turning

Holders → Q34 Cutting condition → Q4
Chipbreaker → P23

● : Stock ● : Stock (Newly added) ■ □ □ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through (R)L : 1-2 week delivery (Right / Left-hand only) (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

Toolholders for CN.. Inserts

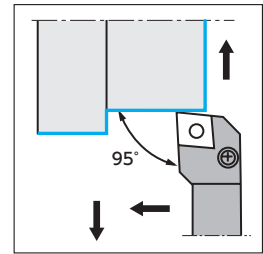
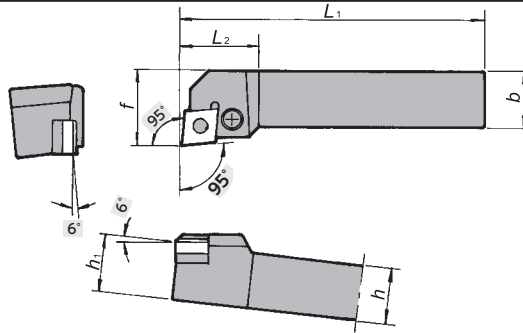
PCLN-N



Right-Hand style shown

Figure-1

PCLN



Right-Hand style shown

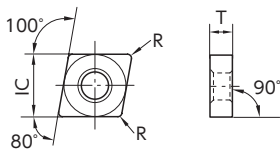
Figure-2

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	Shim	Clamp Pin	Clamp Screw	Spring	Wrench
			R	L											
	PCLN%1620X43N	1	○		.630 16	.787 20	.630 16	4.724 120	0.0 0.0	.984 25	LSC42	LCL4	LCS4CA	LSP4	LW-3
	PCLN%2020K43	2	○	○	.787 20	.787 20	.787 20	4.921 125	.984 25	1.102 28	LSD42	LCL4	LCS4	LSP4	LW-3
	PCLN%2525M43	2	○	○	.984 25	.984 25	.984 25	5.906 150	1.260 32	1.102 28	LSD42	LCL4	LCS4	LSP4	LW-3

CN..43 Inserts - Carbide

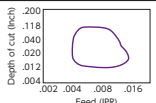
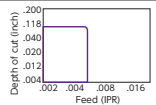
● : 1st Choice ● : 2nd choice

(inch)	IC	T
CN..43	1/2	3/16



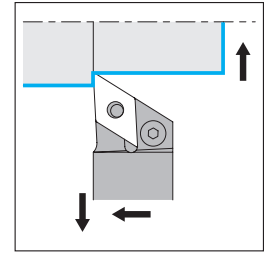
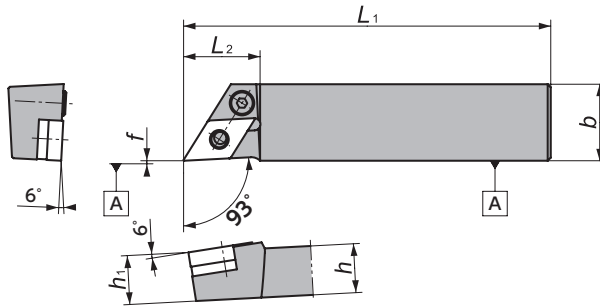
Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating
					PVD Coated								CP1	UC1			
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1					
	CNGG 431 FNUL	CNGG 120404 FNUL	1/2	.016	●	●	●	●	●	○							
	CNGG 432 FNUL	CNGG 120408 FNUL	1/2	.031	●	●	●	●	○								
	CNGG 431 FNZP	CNGG 120404 FNZP	1/2	.016	●	●	●	●	○	●							
	CNGG 432 FNZP	CNGG 120408 FNZP	1/2	.031	●	●	●	●	○	●							



Toolholders for DN.. Inserts

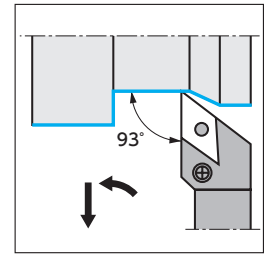
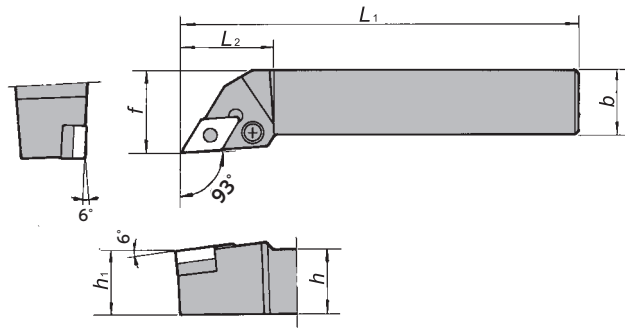
PDJN-N



Right-Hand style shown

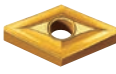
Figure-1

PDJN



Right-Hand style shown

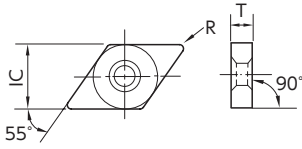

Figure-2

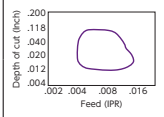
Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	Shim	Clamp Pin	Clamp Screw	Spring	Wrench
			R	L											
 DN..43..	PDJN%{1625X43N	1	○		.630 16	.984 25	.630 16	4.724 120	0.0 0.0	.984 25	LSD42	LCL4	LCS4CA	LSP4	LW-3
	PDJN%{2020K43	2	○	○	.787 20	.787 20	.787 20	4.921 125	.984 25	1.260 32	LSD42	LCL4	LCS4	LSP4	LW-3
	PDJN%{2525M43	2	○		.984 25	.984 25	.984 25	5.906 150	1.260 32	1.260 32	LSD42	LCL4	LCS4	LSP4	LW-3

Note: All angles shown are obtained when insert is set in the holder

DN.. Inserts - Carbide

[Molded Chipbreakers]

												(inch)	IC	T		
												DN..43	1/2	3/16		
												● : 1st Choice ● : 2nd choice				
		Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●
		Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●
		Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●
		Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●
		Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●
		Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●
Shape	Item Number	ISO Item Number	IC	R	Carbide											
					PVD Coated							CVD	Diamond Coating			
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3			KM1	CP1	UC1
	DNGG 431 FNZP	DNGG 150404 FNZP	1/2	.016	●	●	●	●	●	●	●	●	●	●	●	●
	DNGG 432 FNZP	DNGG 150408 FNZP	1/2	.031	●	●	●	●	●	●	●	●	●	●	●	●



Cutting condition →Q4

Chipbreaker →P23

MEMO

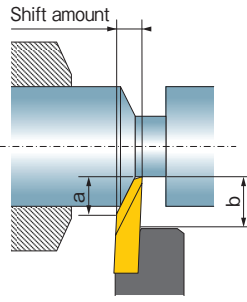
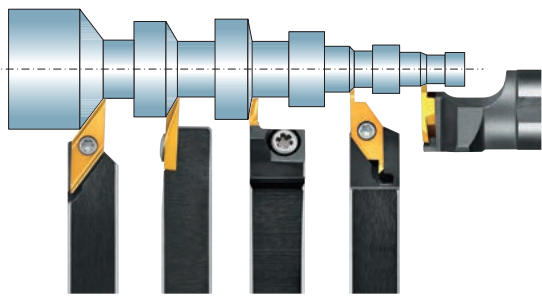
R





Back Turning


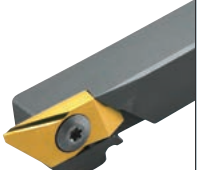




■ Back Turning Tools	R2
■ Recommended Cutting conditions.....	R3
■ General Information	R4
■ Tool list	R6
● CSV Series	R6
● CTPS Series	R7
● TBP Series	R8
● TBPA Series	R10
● TBDP Series	R12
● TBVC Series	R14
● TB Series	R16
● TBMH Series.....	R18





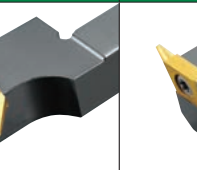
NTK Back Turning Tools - Product Lines



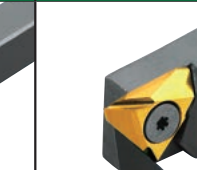
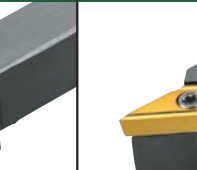
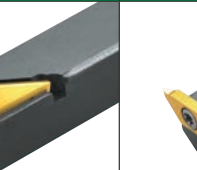


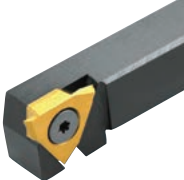





a: Length of Blade
b: Max Depth of Cut

Insert	CSVB ➔R6	
	CSV-NC	DS-CSV
Holder	 ➔R6	 ➔R6
a	~.039" (~1.0mm)	
b	~.079" (~2.0mm)	
Shift amount	.043"-.055" (1.1-1.5mm)	

Insert	TBPS ➔R7		TBP ➔R9			
	CTPS	TBP	TBP-OH2/OH	Y-TBP	Y-TBP-OH2/OH	DS-TBP
Holder	 ➔R7	 ➔R8	 ➔R8 Coolant through	 ➔R8 Y-axis	 ➔R8 Y-axis w/ Coolant through	 ➔R9
a	~.189" (~4.8mm)	~.189" (~4.8mm)				
b	~.189" (~4.8mm)	~.209" (~5.3mm)				
Shift amount	.094" (2.4mm)		.138" (3.5mm)			

Insert	TBPA ➔R11				
	CTPA	CTPA-OH2/OH	TBPA-OH	Y-CTPA	CH-TBPA
Holder	 ➔R10	 ➔R10 Coolant through	 ➔R10 Coolant through	 ➔R10 Y-axis	 ➔R10
a	~.248" (~6.3mm)				
b	~.268" (~6.8mm)				
Shift amount	.134" (3.4mm)				

Insert	TBDP ➔R13		TB ➔R17	VC..22 ➔R15	
	TBDP	Y-TBDP	TB	TBVC ➔R14	CH-SVXCL
Holder	 ➔R12	 ➔R12 Y-axis	 ➔R16	 ➔R14	 ➔R14
a	.138" (3.5mm)		~.157" (~4.0mm)	.315" (8.0mm)	—
b	~.204" (~5.0mm)		~.335" (~8.8mm)	.315" (8.0mm)	—
Shift amount	.081" (2.05mm)		.157" (4.0mm)	.295"/.394" (7.5/10mm)	.394" (10mm)

Insert	TBMH →R20					
	GTT	GTT-OH2/OH	Y-GTT	Y-GTT-OH2/OH	DS-GTT	CH-GTT
Holder						
	→R18	→R18 Coolant through	→R19 Y-axis	→R19 Y-axis w/ Coolant through	→R20	→R20
a	~.051" (~1.3mm)					
b	~.106" (~2.7mm)					
Shift amount	.039"/.059" (1.0/1.5mm)					

Recommended Cutting conditions

■ Back Turning

CSVB

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut	Free cutting	5120 4137	1045 1046	
Common Name				304 316 17-4PH	303 430F			
Grade	1st choice	DM4 / DT4				VM1		
	2nd choice	VM1				DM4 / DT4		
Cutting Speed (SFM)	75 125 225	100 200 275			100 200 300			
Feed Rate (IPR)	X Direction	.0004 .0008 .0012						
	Z Direction	.0004 .0012 .0016						

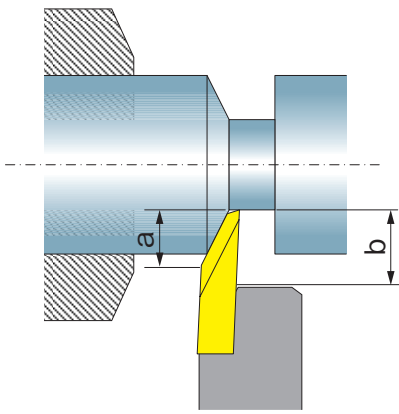
TBDP / TBMH / TBP / TBPA / TBVC

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Common Name							
Grade	1st choice	DM4 / DT4		ST4 DM4	DM4 DT4 QM3	TM4	QM3
	2nd choice	TM4 / QM3		VM1		QM3	TM4 / DM4 / DT4
Cutting Speed (SFM)	75 125 225	100 200 275			150 300 500		
Feed Rate (IPR)	X Direction	.0004 .0008 .0012			.0004 .0008 .0016		
	Z Direction	.0008 .0016 .0024			.0008 .0016 .0031		

TB32 / TB43

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Common Name								
Grade	1st choice	ZM3					ZM3	
	2nd choice							
Cutting Speed (SFM)	50 100 150			ZM3 150 300 425 Z15 400 600 800				
Feed Rate (IPR)	X Direction	.0004 .0012 .0020			.0004 .0012 .0020			
	Z Direction	.0016 .0020 .0031			.0016 .0031 .0059			

Back Turning



Recommended max. depth of cut for each pass

(Multiply this ratio by the length of blade (a) to obtain the max. depth of cut for each pass)

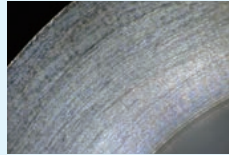
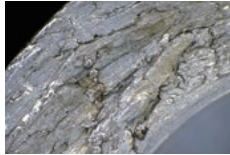
Grade	PVD Coated Carbide
Work material	ST4 · QM3 · DT4 · DM4 · TM4 · VM1 · ZM3
Steel	0.7
Stainless Steel	0.6
Non-ferrous material	0.9
Plastic	0.9

a : Length of Blade b : Max. Depth of Cut

Back Turning

When the length of blade (a) is not long enough

Back turning can be performed multiple times until the total depth of cut reaches (b).

End face	
NTK BM-chipbreaker	Competitor
	
Excellent surface	Rough surface

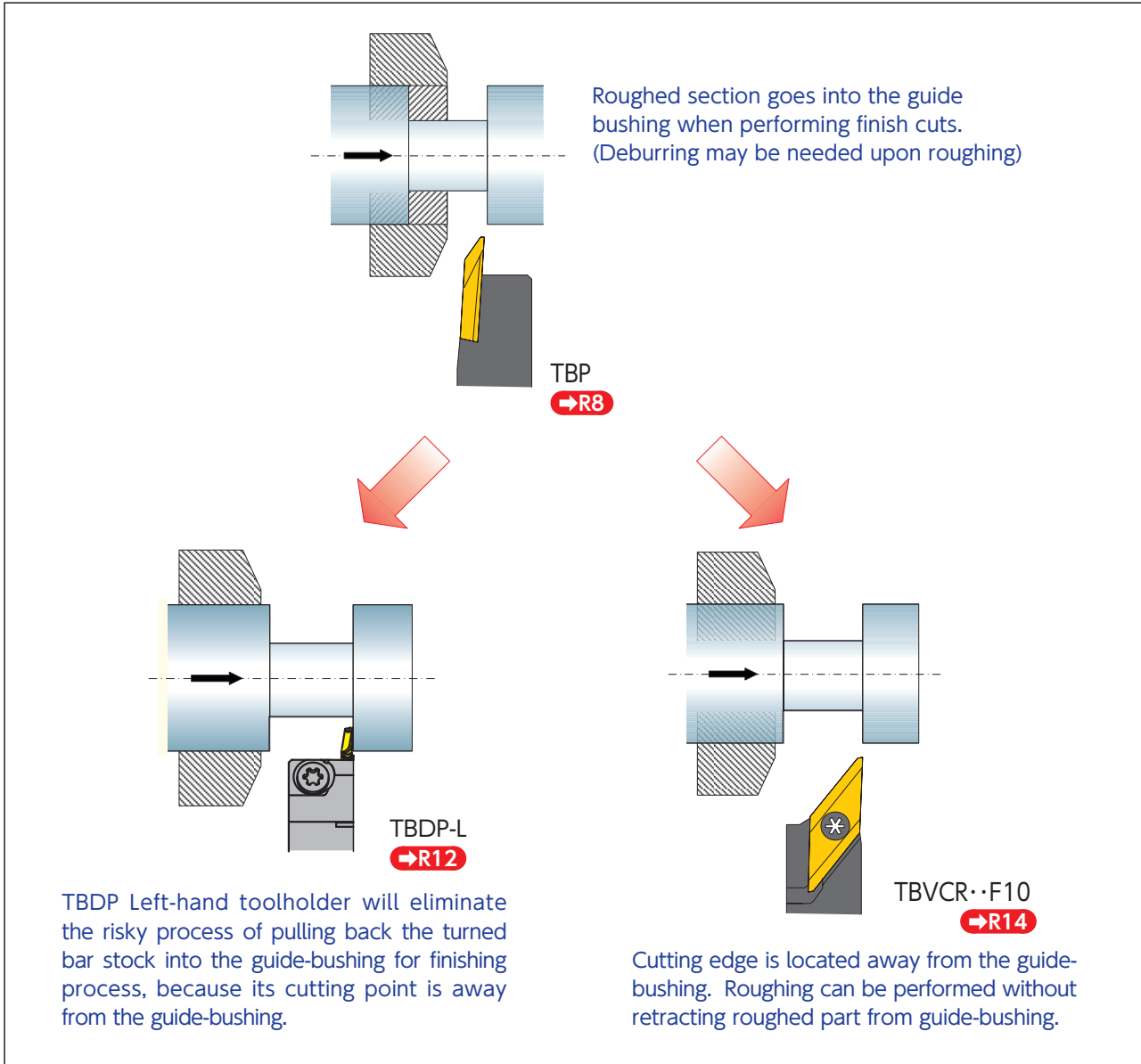
When experiencing rough finish on shoulder

Turning the shoulder twice can improve the finish.
 This problem can be solved by using TBP-BM, TBPA-BM, TBDP inserts without increasing the number of passes

TBP-BM, TBPA-BM, TBDP come with NTK's uniquely designed molded chipbreaker providing single pass machining. These inserts can provide excellent surface finish.

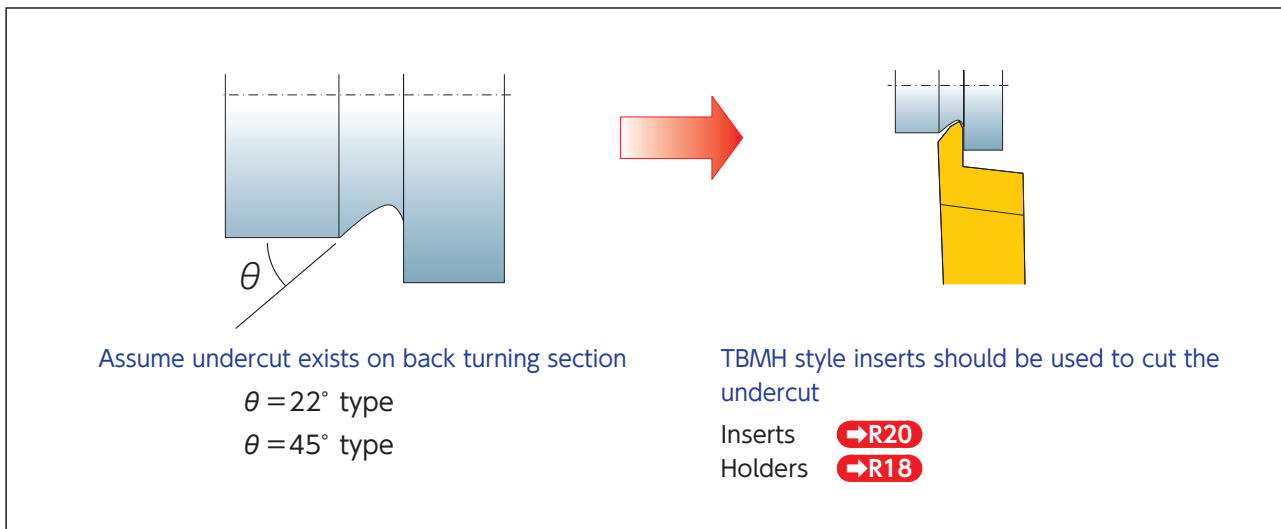
TBP-BM ➡R9
 TBPA-BM ➡R11
 TBDP ➡R13

Finishing cut



Back Turning

Undercut



CSV Series

Best for up to .200" diameter material

CSV-NC For Gang-style machine

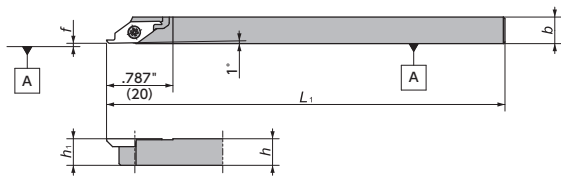


Figure-1

Right-Hand style shown

CSV For Cam-style machine

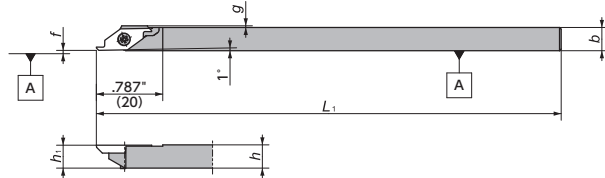


Figure-2

Right-Hand style shown

DS-CSVL

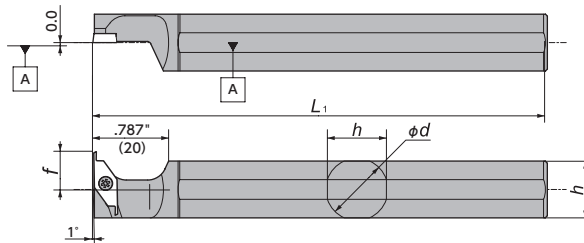




Figure-3

Left-Hand style shown
Takes Right-hand insert

CSV^R/_L / CSV^R/_L-NC

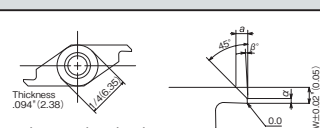
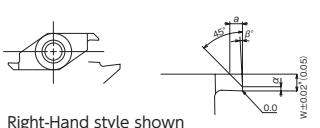

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	g (Inch) (mm)	Clamp Screw	Wrench
			R	L								
	CSV ^R / _L 06-IN-NC	1	●	●	3/8	3/8	3/8	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08-IN-NC	1	●	●	1/2	1/2	1/2	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC	1	○	○	.315 8	.315 8	.315 8	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC-F	1	○	○	.315 8	.315 8	.315 8	4.724 120	0-.004 0.0-0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10GXNC	1	○	○	.394 10	.394 10	.394 10	3.346 85	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10NC	1	○	○	.394 10	.394 10	.394 10	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12NC	1	○	○	.472 12	.472 12	.472 12	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07GX	2	○	○	.275 7	.275 7	.275 7	3.346 85	.004 0.1	.020 0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07	2	○	●	.275 7	.275 7	.275 7	5.512 140	.004 0.1	.020 0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08GX	2	○	○	.315 8	.315 8	.315 8	3.346 85	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08	2	○	●	.315 8	.315 8	.315 8	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 095	2	○	○	.374 9.5	.374 9.5	.374 9.5	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10	2	○	○	.394 10	.394 10	.394 10	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12GX	2	○	○	.472 12	.472 12	.472 12	3.346 85	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
CSV ^R / _L 12	2	○	●	.472 12	.472 12	.472 12	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D _s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
			R	L							
	DS-CSVL15	3	○	●	5/8 15.875	.591 15	.591 15	4.724 120	.394 10	LRIS-2.5 × 7	CLR-15S

CSVB - Back Turning

Mirror finish

Shape	Item Number	Chip-breaker	Length of Blade		Max Depth of Cut		W		Edge Geometry (α × β°)		Coated Carbide					
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	DT4		VM1		ZM3	
			R	L	R	L	R	L	R	L	R	L	R	L		
 <p>Right-Hand style shown</p>	CSVB11F ^R / _L V	No	.028	0.7	.079	2.0	.039	1.00	.012 × 5°	0.3 × 5°			○	○		
	CSVB11F ^R / _L V-A	No	.028	0.7	.079	2.0	.039	1.00	.012 × 2°	0.3 × 2°			○	○		
	CSVB11F ^R / _L V-M	No	.028	0.7	.079	2.0	.039	1.00	.006 × 2°	0.15 × 2°	●	●	○	○		
	CSVB11F ^R / _L V-C	No	.028	0.7	.079	2.0	.039	1.00	.006 × 5°	0.15 × 5°			○	○		
	CSVB11F ^R / _L V12	No	.031	0.8	.079	2.0	.047	1.20	.012 × 5°	0.3 × 5°			○	○		
	CSVB11F ^R / _L V14	No	.039	1.0	.079	2.0	.055	1.40	.012 × 5°	0.3 × 5°			○	○		
 <p>Right-Hand style shown</p>	CSVB11F ^R / _L VB	Yes	.028	0.7	.079	2.0	.039	1.00	.012 × 5°	0.3 × 5°			○	○		
	CSVB11F ^R / _L VB-A	Yes	.028	0.7	.079	2.0	.039	1.00	.012 × 2°	0.3 × 2°			○	○		
	CSVB11F ^R / _L VB-M	Yes	.028	0.7	.079	2.0	.039	1.00	.006 × 2°	0.15 × 2°	●	●	○	○		
	CSVB11F ^R / _L VB-C	Yes	.028	0.7	.079	2.0	.039	1.00	.006 × 5°	0.15 × 5°			○	○		
	CSVB11F ^R / _L VB12	Yes	.031	0.8	.079	2.0	.047	1.20	.012 × 2°	0.3 × 5°			○	○		
	CSVB11F ^R / _L VB14	Yes	.039	1.0	.079	2.0	.055	1.40	.012 × 2°	0.3 × 5°			○	○		
<p>Profiling</p>  <p>Left-Hand style shown</p>	CSVB11F ^R / _L VX	No	-	-	-	-	-	-	-	-				○		

Note: All angles shown are obtained when insert is set in the holder

CSV series 

CTPS Series

CTPS

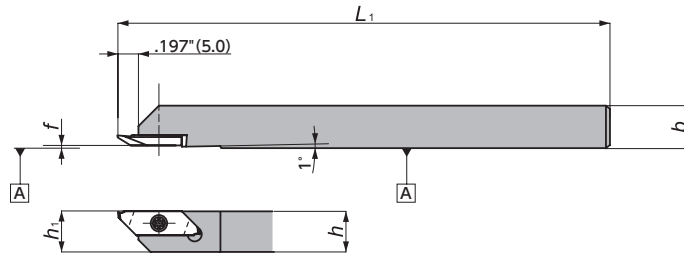



Figure-1

Right-Hand style shown

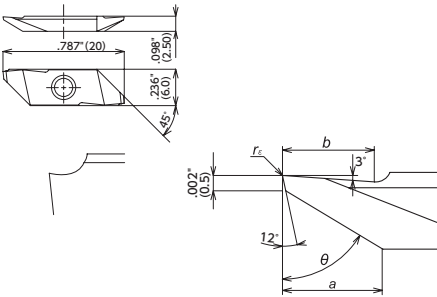
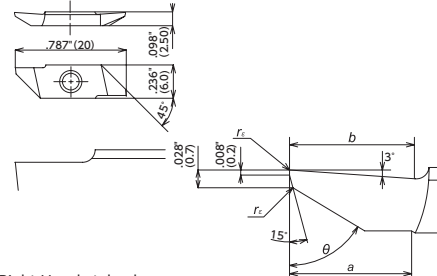

CTPS Series - Toolholders

CTPS

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TBPS..	CTPS%06-IN	1	●		3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPS%08-IN	1	●		1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPS%10	1	○		.394	10	.394	10	.394	10	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPS%12	1	○		.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S

TBPS Series - Inserts

TBPS - Back Turning

Shape	Item Number	Chip-breaker	Length of Blade a		Max Depth of Cut b		θ	r_e		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	VM1	ZM3
with Chipbreaker  Right-Hand style shown	TBPS60FR00	Yes	.122	3.1	.138	3.5	60°	0.0	0.0	○	○
	TBPS60FR10	Yes	.122	3.1	.138	3.5	60°	.004	0.1	○	○
without Chipbreaker Mirror finish  Right-Hand style shown	TBPS60FRV 	No	.189	4.8	.189	4.8	60°	0.0	0.0	○	○

Note: All angles shown are obtained when insert is set in the holder

Cutting condition 

TBP Series

TBP

Screw accessible from both sides

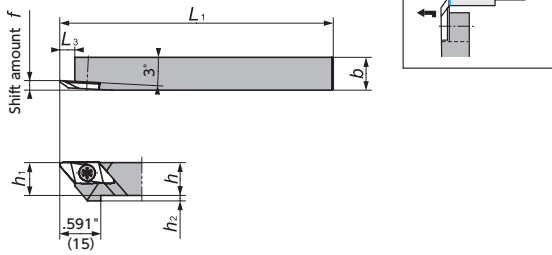


Figure-1

Right-Hand style shown

TBP-OH2 (Coolant through)

Screw accessible from both sides

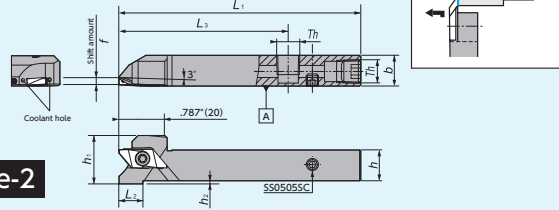


Figure-2

Th (Thread type)
 3/8" holder : M6 x 1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Right-Hand style shown

TBP-OH (Coolant through)

Screw accessible from both sides

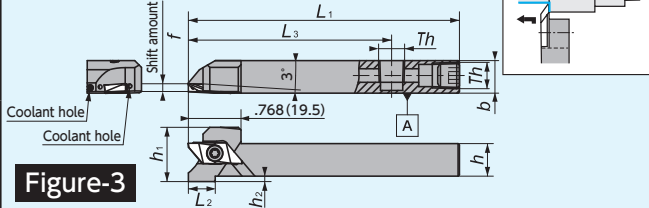


Figure-3

Th (Thread type)
 3/8" holder : M6 x 1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Right-Hand style shown

Y-TBP

Screw accessible from both sides

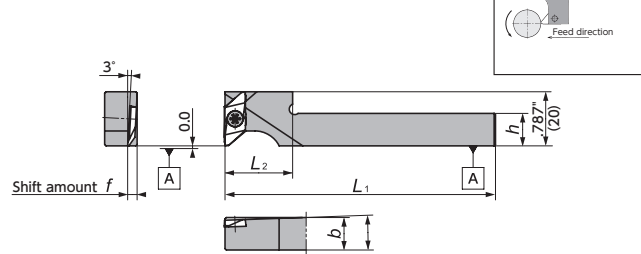


Figure-4

Right-Hand style shown
 Takes Right-hand Insert

Y-TBP-OH2 (Coolant through)

Screw accessible from both sides

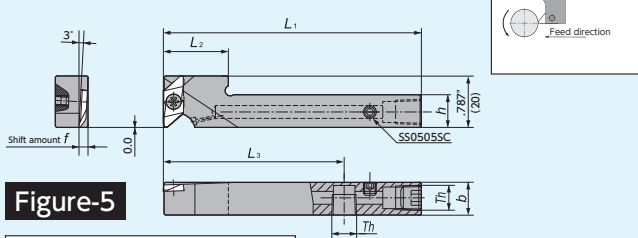


Figure-5

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder : M6, Rc1/8 (PT1/8)

Right-Hand style shown
 Takes Right-hand Insert

Y-TBP-OH (Coolant through)

Screw accessible from both sides

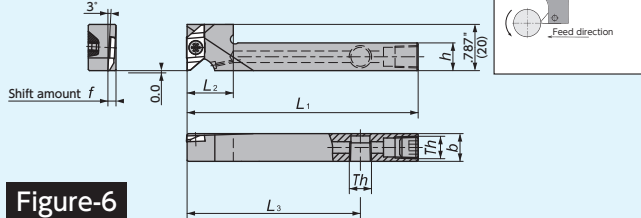


Figure-6

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder : M6, Rc1/8 (PT1/8)

Right-Hand style shown
 Takes Right-hand Insert

DS-TBP

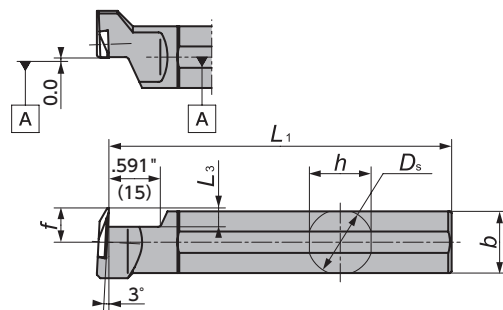


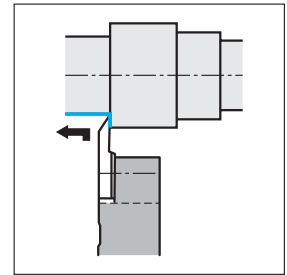
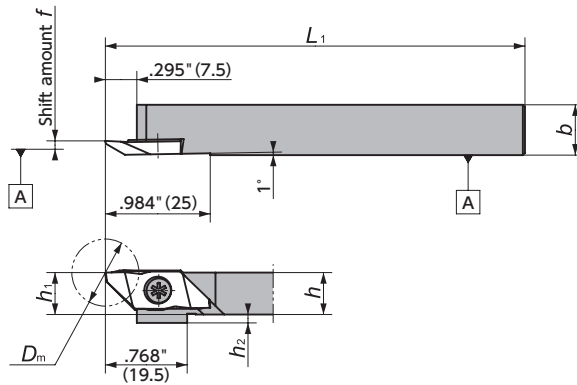
Figure-7

Left-Hand style shown
 Takes Right-hand Insert

TBPA (CTPA Series) *Can use same holder with CTPA inserts.

CTPA

Screw accessible from both sides

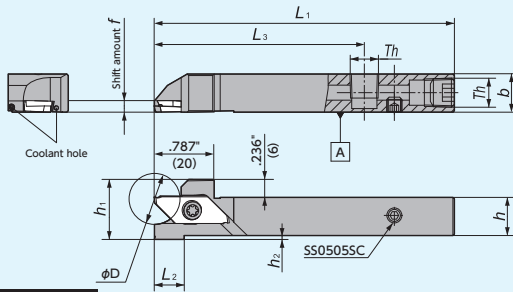


Right-Hand style shown

Figure-1

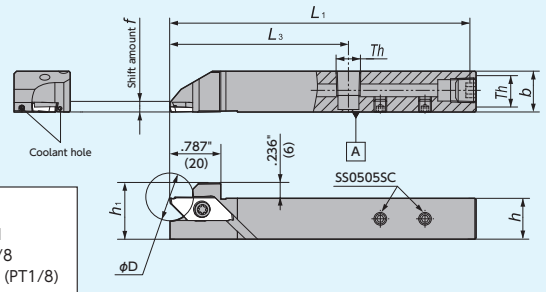
CTPA-OH2 (Coolant through)

Screw accessible from both sides



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

CTPA[®] 1/2 10X, CTPA[®] 1/2 16X



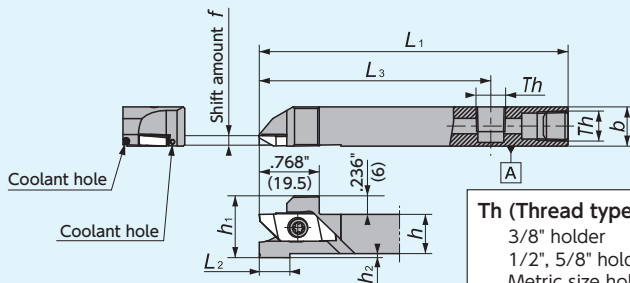
Right-Hand style shown

Figure-2

● Left-Hand coolant through holders are designed for Right-Hand machines.

CTPA-OH / TBPA-OH (Coolant through)

Screw accessible from both sides

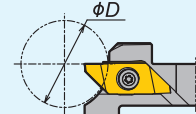
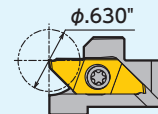


Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Max Bar Dia at Max DOC

CTPA-OH

TBPA-OH



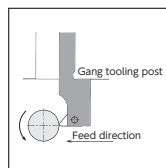
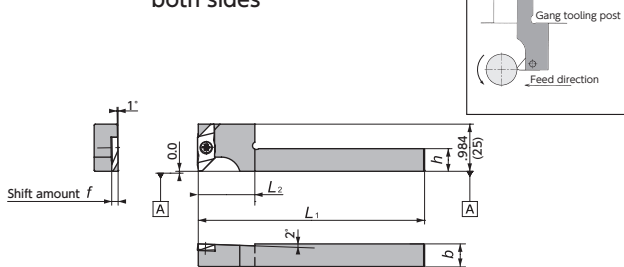
Right-Hand style shown

Figure-3

● Left-Hand coolant through holders are designed for Right-Hand machines.

Y-CTPA

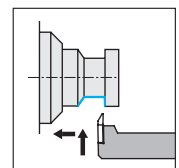
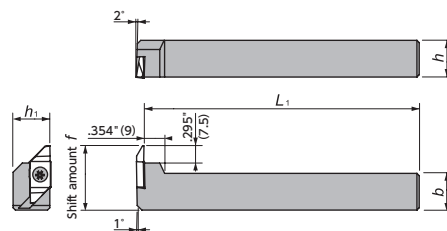
Screw accessible from both sides



Right-Hand style shown
 Takes Right-hand Insert

Figure-4

CH-TBPA



Left-Hand style shown
 Takes Right-hand Insert

Figure-5

TBPA (CTPA) Series - Toolholders

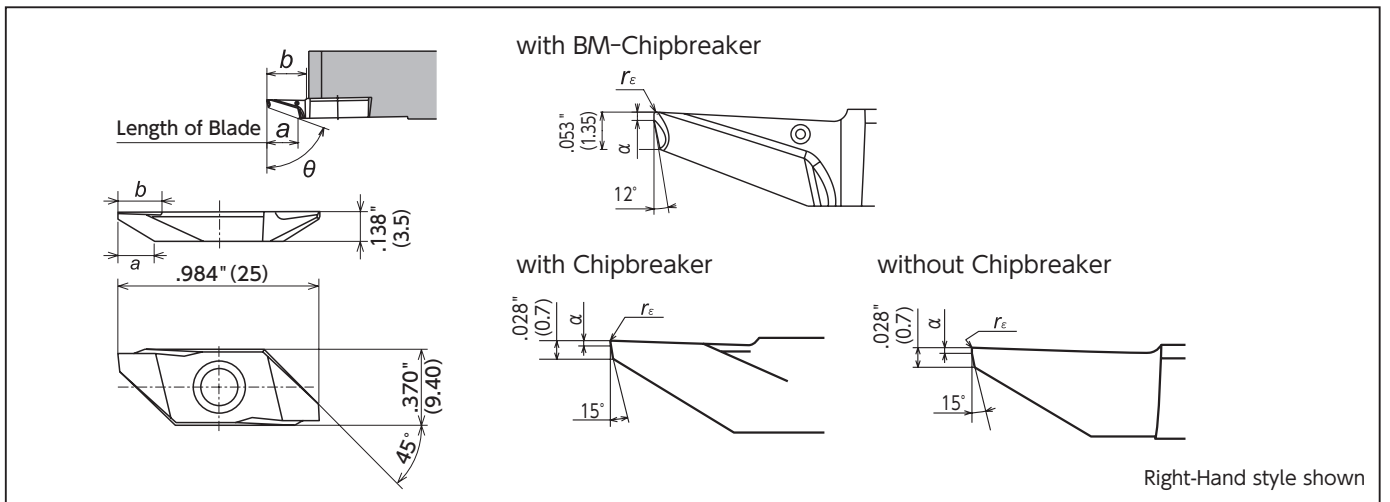
CTPA (Compatible with TBPA & CTPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. ϕD		h		h_1		b		L_1		h_2		L_2		L_3		Th	f	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)				
	CTPA $\frac{1}{4}$ 06-IN	1	●	●	—	—	3/8	3/8	3/8	3/8	4.724	120	0	0	—	—	—	—	—	—	.134	3.4	LRIS-4×10PW	CLR-15S
	CTPA $\frac{1}{4}$ 08-IN	1	●	●	—	—	1/2	1/2	1/2	1/2	4.724	120	0	0	—	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA $\frac{1}{4}$ 10-IN	1	●	●	—	—	5/8	5/8	5/8	5/8	4.724	120	0	0	—	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA $\frac{1}{4}$ 10	1	○	○	—	—	.394	10	.394	10	4.724	120	.790	2	—	—	—	—	—	—	.134	3.4	LRIS-4×10PW	CLR-15S
	CTPA $\frac{1}{4}$ 12	1	●	●	—	—	.472	12	.472	12	4.724	120	0	0	—	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA $\frac{1}{4}$ 16	1	○	○	—	—	.630	16	.630	16	4.724	120	0	0	—	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA $\frac{1}{4}$ 20F	1	○	○	—	—	.787	20	.787	20	3.150	80	0	0	—	—	—	—	—	—	.134	3.4	LRIS-4×10	LLR-15S
	CTPA $\frac{1}{4}$ 06H-IN-OH	3	●	●	.630	16	3/8	3/8	3/8	3/8	3.937	100	.176	4.475	.787	20	2.165	55	M6×1	.134	3.4	LRIS-4×10PW	CLR-15S	
	CTPA $\frac{1}{4}$ 08H-IN-OH	3	■	■	.630	16	1/2	1/2	1/2	1/2	3.937	100	.051	1.3	.394	10	2.953	75	NPT1/8	.134	3.4	LRIS-4×12PW	CLR-15S	
	CTPA $\frac{1}{4}$ 08H-IN-OH2	2	●	●	.630	16	1/2	1/2	1/2	1/2	3.937	100	.051	1.3	.394	10	2.756	70	NPT1/8	.134	3.4	LRIS-4×12PW	CLR-15S	
	CTPA $\frac{1}{4}$ 10H-IN-OH	3	●	●	.630	16	5/8	5/8	5/8	5/8	3.937	100	0	0	0	0	2.953	75	NPT1/8	.134	3.4	LRIS-4×12PW	CLR-15S	
	CTPA $\frac{1}{4}$ 10X-IN-OH2	2	●	●	.630	16	5/8	5/8	5/8	5/8	4.724	120	0	0	0	0	2.953	75	NPT1/8	.134	3.4	LRIS-4×12PW	CLR-15S	
	CTPA $\frac{1}{4}$ 12H-OH	3	■	■	.630	16	.472	12	.472	12	3.937	100	.079	2	.394	10	2.953	75	Rc1/8(PT1/8)	.134	3.4	LRIS-4×12PW	CLR-15S	
	CTPA $\frac{1}{4}$ 12H-OH2	2	●	●	.630	16	.472	12	.472	12	3.937	100	.079	2	.394	10	2.756	70	Rc1/8(PT1/8)	.134	3.4	LRIS-4×12PW	CLR-15S	
	CTPA $\frac{1}{4}$ 16H-OH	3	○	○	.630	16	.630	16	.630	16	3.937	100	0	0	—	0	2.953	75	Rc1/8(PT1/8)	.134	3.4	LRIS-4×12PW	CLR-15S	
	CTPA $\frac{1}{4}$ 16X-OH2	2	●	●	.630	16	.630	16	.630	16	4.724	120	0	0	—	0	2.756	70	Rc1/8(PT1/8)	.134	3.4	LRIS-4×12PW	CLR-15S	
	Y-CTPA $\frac{1}{4}$ 08L-IN	4	●	●	—	—	1/2	—	—	1/2	4.724	120	—	—	1.181	30	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CH-TBPAL16	5	○	○	—	—	.630	16	.630	16	4.724	120	—	—	—	—	—	—	—	—	1.102	28	LRIS-4×10	LLR-15S
	CH-TBPAL20	5	○	○	—	—	.787	20	.787	20	4.724	120	—	—	—	—	—	—	—	—	1.260	32	LRIS-4×10	LLR-15S

TBPA (Optimized for TBPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. ϕD		h		h_1		b		L_1		h_2		L_2		L_3		Th	f	Clamp Screw	Wrench	
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)							
	TBPA $\frac{1}{4}$ 12H-OH	3	○	○	.984	25	.472	12	.472	12	.472	12	3.937	100	.157	4	.394	10	2.513	75	Rc1/8(PT1/8)	.134	3.4	LRIS-4X12PW	CLR-15S
	TBPA $\frac{1}{4}$ 16H-OH	3	○	○	1.378	35	.630	16	.630	16	.630	16	3.937	100	.079	2	1	10	2.513	75	Rc1/8(PT1/8)	.134	3.4	LRIS-4X12PW	CLR-15S
	TBPA $\frac{1}{4}$ 20H-OH	3	○	○	1.969	50	.787	20	.787	20	.787	20	3.937	100	0	0	0	0	2.513	75	Rc1/8(PT1/8)	.134	3.4	LRIS-4X12PW	CLR-15S

TBPA Series - Inserts



TBPA - Back Turning

Item Number	Chip-breaker	Length of Blade a		Max Depth of Cut b		θ	r_ϵ		Wiper Length α		Coated Carbide																						
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	(Inch)	(mm)	ST4		DM4		DT4		QM3		TM4		VM1		ZM3										
		R	L	R	L		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L									
TBPA70F $\frac{1}{4}$ 05-BM	Yes-BM	.217	5.5	.256	6.5	70°	.002	0.05	.012	0.3	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
TBPA70F $\frac{1}{4}$ 10M-BM	Yes-BM	.217	5.5	.256	6.5	70°	.003	0.08	.012	0.3	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TBPA70F $\frac{1}{4}$ 20M-BM	Yes-BM	.217	5.5	.256	6.5	70°	.007	0.18	.012	0.3	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TBPA60F $\frac{1}{4}$ VB	Yes	.177	4.5	.209	5.3	60°	.000	0.00	.008	0.2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TBPA60F $\frac{1}{4}$ 10M	Yes	.177	4.5	.209	5.3	60°	.003	0.08	.012	0.3	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TBPA60F $\frac{1}{4}$ PB10M	Yes	.177	4.5	.209	5.3	60°	.003	0.08	.012	0.3	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TBPA60F $\frac{1}{4}$ PB10	Yes	.177	4.5	.209	5.3	60°	.004	0.10	.012	0.3	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TBPA60F $\frac{1}{4}$ PB20M	Yes	.177	4.5	.209	5.3	60°	.007	0.18	.012	0.3	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TBPA60F $\frac{1}{4}$ V	No	.248	6.3	.268	6.8	60°	.000	0.00	.008	0.2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Cutting condition → R3

● : Stock
 ● : Stock (Newly added)
 ■ : While stocks last

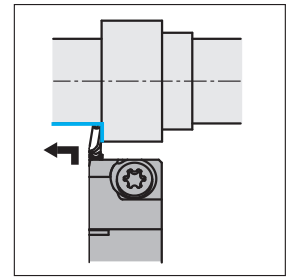
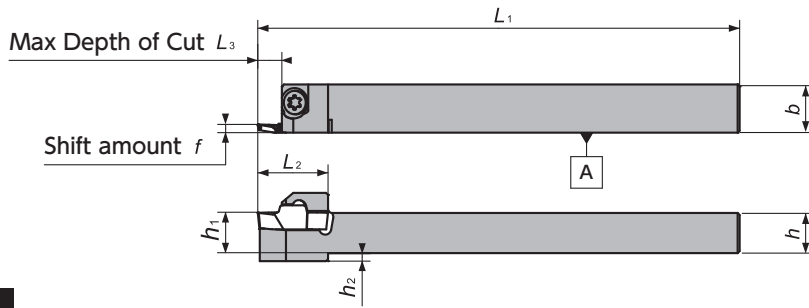
R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish

○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through

Ⓡ : 1-2 week delivery (Right / Left-hand only)
 Ⓡ : 1-2 week delivery (Right / Left-hand only, Newly added)

TBDP (Back Duo) Series

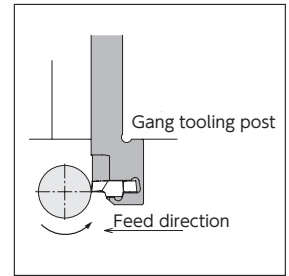
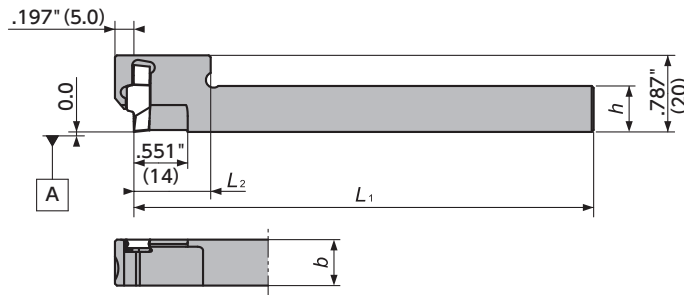
TBDP



Right-Hand style shown

Figure-1

Y-TBDP




Right-Hand style shown

Figure-2

TBDP Series - Toolholders

TBDP

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	L ₃ (Inch) (mm)	h ₂ (Inch) (mm)	Clamp Screw	Wrench
			R	L										
 TBDP..	TBDP%{06-IN}	1	●		3/8	.472 12	3/8	4.724 120	.081 2.05	.571 14.5	.118 3	.079 2	LRIS-4 × 12	LLR-25S
	TBDP%{08-IN}	1	●		1/2	1/2	1/2	4.724 120	.081 2.05	.689 17.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{10-IN}	1	●		5/8	5/8	5/8	4.724 120	.081 2.05	.768 19.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{1012H}	1	○		.394 10	.472 12	.394 10	3.937 100	.081 2.05	.591 15	.118 3	.079 2	LRIS-4 × 12	LLR-25S
	TBDP%{1012}	1	○	○	.394 10	.472 12	.394 10	4.724 120	.081 2.05	.591 15	.118 3	.079 2	LRIS-4 × 12	LLR-25S
	TBDP%{12}	1	●	○	.472 12	.472 12	.472 12	4.724 120	.081 2.05	.709 18	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{16}	1	○	○	.630 16	.630 16	.630 16	4.724 120	.081 2.05	.768 19.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{20}	1	○		.787 20	.787 20	.787 20	4.724 120	.081 2.05	.768 19.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	Y-TBDP%{12S}	2	○		.472 12	.472 12	— —	4.724 120	.081 2.05	.787 20	— —	— —	— —	LRIS-4 × 12	LLR-25S

TBDP Series - Inserts

TBDP

Shape	Item Number	Length of Blade a		θ	r_ϵ		Coated Carbide		
		(Inch)	(mm)		(Inch)	(mm)	QM3	DM4	TM4
	TBDP22005R	.138	3.5	80	.002	0.05	●	○	●
	TBDP2201MR	.138	3.5	80	.003	0.08	●	○	●
	TBDP2202MR	.138	3.5	80	.007	0.18	●	○	●

Back Turning

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

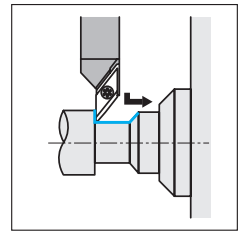
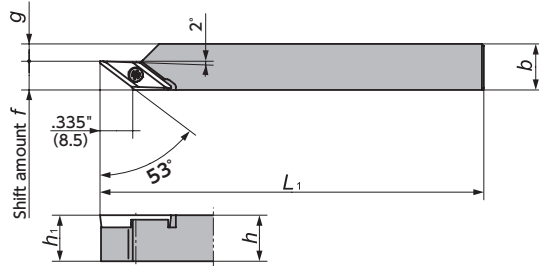
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Cutting condition → R3

TBVC Series

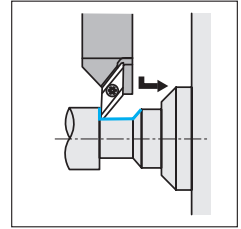
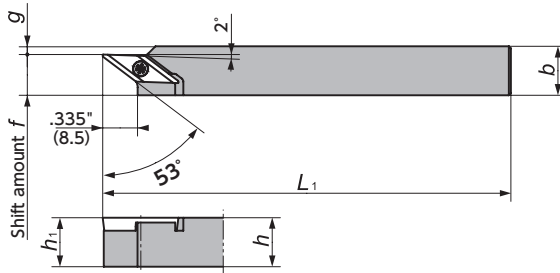
TBVC



Right-Hand style shown
For non-ferrous materials

Figure-1

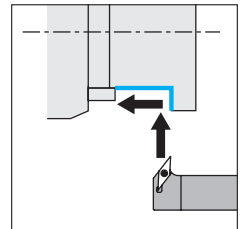
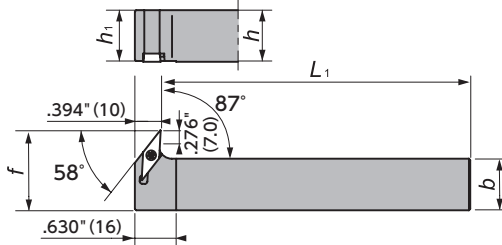
TBVC-F10



Right-Hand style shown
For steel materials

Figure-2


CH-SVXCL



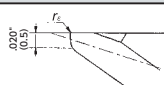
Left-Hand style shown
Takes Right-hand or Neutral chip breaker

Figure-3

TBVC Series - Toolholders

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	TBVC%110	1	○		.394	10	.394	10	.394	10	4.724	120	.295	7.5	.098	2.5	LRIS-2.5 × 7	CLR-15S
	TBVC%112	1	○		.472	12	.472	12	.472	12	4.724	120	.295	7.5	.098	4.5	LRIS-2.5 × 7	CLR-15S
	TBVC%116	1	○		.630	16	.630	16	.630	16	4.724	120	.295	7.5	.098	8.5	LRIS-2.5 × 7	CLR-15S
	TBVC%108-F10-IN	2	●		1/2		1/2		1/2		4.724	120	.394	10	0	0	LRIS-2.5 × 7	CLR-15S
	TBVC%110-F10	2	○		.394	10	.394	10	.394	10	4.724	120	.394	10	0	0	LRIS-2.5 × 7	CLR-15S
	TBVC%112GX-F10	2	○		.472	12	.472	12	.472	12	3.346	85	.394	10	.079	2	LRIS-2.5 × 7	CLR-15S
	TBVC%112-F10	2	●		.472	12	.472	12	.472	12	4.724	120	.394	10	.079	2	LRIS-2.5 × 7	CLR-15S
	TBVC%116H-F10	2	○		.630	16	.630	16	.630	16	3.150	100	.394	10	.234	6	LRIS-2.5 × 7	CLR-15S
	TBVC%116-F10	2	●		.630	16	.630	16	.630	16	4.724	120	.394	10	.234	6	LRIS-2.5 × 7	CLR-15S
	TBVC%120F-F10	2	○		.787	20	.787	20	.787	20	3.150	80	.394	10	.394	10	LRIS-2.5 × 7	CLR-15S
CH-SVXC%1616 × 11	3		○		.630	16	.630	16	.787	20	4.724	120	1.063	27	—	—	LRIS-2.5 × 7	CLR-15S
CH-SVXC%2020 × 11	3		○		.630	16	.630	16	.787	20	4.724	120	1.220	31	—	—	LRIS-2.5 × 7	CLR-15S

TBVC Series - Inserts

Shape	Item Number	d		s		r _e		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1		ZM3	
		R	L	R	L	R	L	R	L		
 Right-Hand style shown	TBVC11F%05U	1/4	6.35	1/8	3.18	.002	0.05			●	
	TBVC11F%10U	1/4	6.35	1/8	3.18	.004	0.10	●		●	
	TBVC11F%10S	1/4	6.35	1/8	3.18	.004	0.10			●	

Cutting condition → R3

VC.. Inserts - Carbide

(inch)	IC	T
VC..22	1/4	1/8

• : 1st Choice • : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide												
					PVD Coated								CVD	Diamond Coating			
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1			CP1	UC1	
	VCVT 2204M YL	VCVT 110301M YL	1/4	.003	●	●	●	●	●	●	●	●	●	●	●	●	
	VCVT 2208M YL	VCVT 110302M YL	1/4	.007	●	●	●	●	●	●	●	●	●	●	●		
	VCVT 221M YL	VCVT 110304M YL	1/4	.015	●	●	●	●	●	●	●	●	●	●			
	VCVT 2204M CL	VCVT 110301M CL	1/4	.003	○	○	●	○	●								
	VCVT 2208M CL	VCVT 110302M CL	1/4	.007	○	○	●	○	●								
	VCVT 2201 FNAM3	VCVT 110300 FNAM3	1/4	.001	○		●	●	○	●	■						
	VCVT 2204M FNAM3	VCVT 110301M FNAM3	1/4	.003	○		●	●	○	●							
	VCVT 2204 FNAM3	VCVT 110301 FNAM3	1/4	.004	○		●	●	○	●							
	VCVT 2208M FNAM3	VCVT 110302M FNAM3	1/4	.007	○		●	●	○	●							
	VCVT 2208 FNAM3	VCVT 110302 FNAM3	1/4	.008	○		●	●	○	●							
	VCVT 221M FNAM3	VCVT 110304M FNAM3	1/4	.015	○		●	●	○	●							
	VCMT 2208 FNAM3	VCVT 110302 FNAM3	1/4	.008		○											
VCMT 221 FNAM3	VCVT 110304 FNAM3	1/4	.016		○												
	VCVT 2201 AZ7	VCVT 110300 AZ7	1/4	.001				●			○						
	VCVT 2204M AZ7	VCVT 110301M AZ7	1/4	.003				●			○						
	VCVT 2208M AZ7	VCVT 110302M AZ7	1/4	.007				●			○						
	VCVT 221M AZ7	VCVT 110304M AZ7	1/4	.015				●			○						
wiper insert	VCVT 2202 3/4 S-WP*	TFV 11F 3/4 05SX	1/4	.002							R	Ⓜ					
	VCVT 2204 3/4 S-WP*	TFV 11F 3/4 10SX	1/4	.004							R	Ⓜ					
	VCVT 2201 3/4 U	VCVT 110300 3/4 U	1/4	.001							Ⓜ	Ⓜ					
	VCVT 2204M 3/4 U	VCVT 110301M 3/4 U	1/4	.003							Ⓜ	Ⓜ					
	VCVT 2204 3/4 U	VCVT 110301 3/4 U	1/4	.004							Ⓜ	Ⓜ					
	VCVT 2208M 3/4 U	VCVT 110302M 3/4 U	1/4	.007							Ⓜ	Ⓜ					
	VCVT 2208 3/4 U	VCVT 110302 3/4 U	1/4	.008							Ⓜ	Ⓜ					
wiper insert	VCVT 2202 3/4 U-WP*	TFV 11F 3/4 05U	1/4	.002							Ⓜ	Ⓜ					
	VCVT 2204 3/4 U-WP*	TFV 11F 3/4 10U	1/4	.004							Ⓜ	Ⓜ					
	VCGW 2201 H	VCGW 110300 H	1/4	.001								●					
	VCGW 2204 H	VCGW 110301 H	1/4	.004								●					
	VCGW 2208 H	VCGW 110302 H	1/4	.008								●					



* Note: NTK WP style inserts have a wiper facet design. The insert has a 0.2mm (.008") flat on the cutting edge when the insert is set into the toolholder. The flat on the cutting edge ensures a superior surface finish when feed rates are increased. WP style inserts can be used in toolholders: SVAC

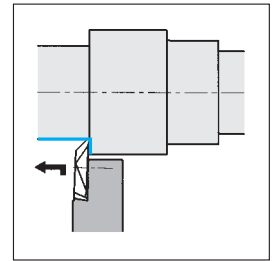
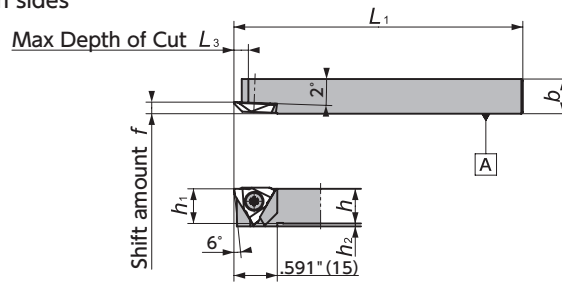
• : 1st Choice • : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Coating												
								BIDEMICS Coated		Solid CBN		CBN (Brazed)						PCD		Diamond Coating
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	UC1	
	VCGW 2208 PD S0415	VCGW 110302 PD S01015	S0415	1/4	.008	2	.102	●												
	VCGW 2208 PD S0635	VCGW 110302 PD S01535	S0635	1/4	.008	2	.102													
	VCGW 221 PD S0415	VCGW 110304 PD S01015	S0415	1/4	.016	2	.098													
	VCGW 221 PD S0635	VCGW 110304 PD S01535	S0635	1/4	.016	2	.098													
	VCGW 222 PD S0415	VCGW 110308 PD S01015	S0415	1/4	.031	2	.098													
	VCGW 222 PD S0635	VCGW 110308 PD S01535	S0635	1/4	.031	2	.098													
	VCGW 223 PD S0415	VCGW 110312 PD S01015	S0415	1/4	.047	2	.106													
VCGW 223 PD S0635	VCGW 110312 PD S01535	S0635	1/4	.047	2	.106														
	VCMW 2204	VCMW 110301	None	1/4	.004	1	—													
	VCMW 2208	VCMW 110302	None	1/4	.008	1	—													
	VCMW 221	VCMW 110304	None	1/4	.016	1	—													

● : Stock ● : Stock (Newly added) □ : White stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through Ⓜ : Mirror finish

TB Series

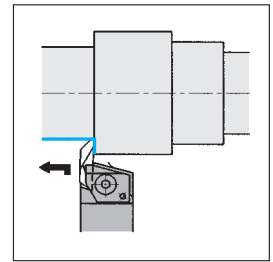
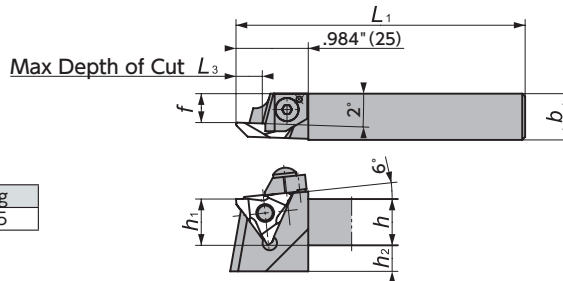
TBT Screw accessible from both sides



Right-Hand style shown

Figure-1

TB-N



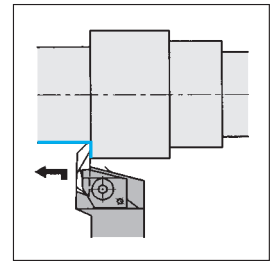
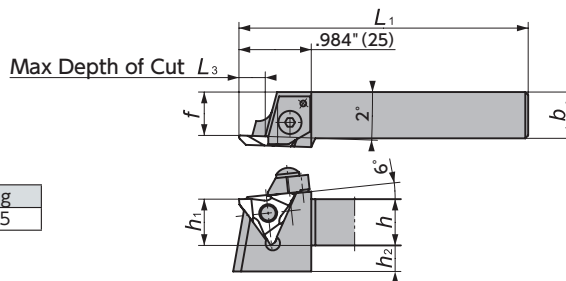
Right-Hand style shown

(Parts)

Clamp	Clamp Bolt	Spring
CPR/L5S	AOS-5*25	ASG-5

Figure-2

TB-F



Right-Hand style shown



(Parts)

Clamp	Clamp Bolt	Spring
CPR/L5S	AOS-5*25	ASG-5

Figure-3

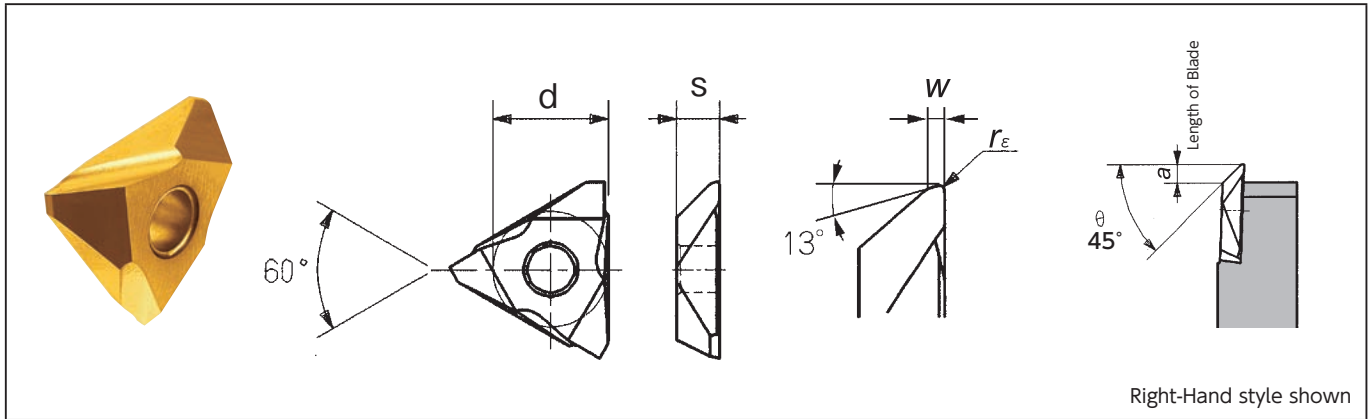
TB Series - Toolholders

TB

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	h ₂ (Inch) (mm)	f (Inch) (mm)	L ₃ (Inch) (mm)	Clamp Screw	Wrench
			R	L									
 TB32	TBT%06-IN	1	●	○	3/8	3/8	3/8	4.724 120	.118 3	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%08-IN	1	●	○	1/2	1/2	1/2	4.724 120	.039 1	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%08F	1	○	○	.315 8	.315 8	.315 8	3.150 80	.157 5	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%08K	1	○	○	.315 8	.315 8	.315 8	4.724 120	.157 5	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%10F	1	○	○	.394 10	.394 10	.394 10	3.150 80	.118 3	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%10K	1	○	○	.394 10	.394 10	.394 10	4.724 120	.118 3	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%12F	1	○	○	.472 12	.472 12	.472 12	3.150 80	.039 1	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
TBT%12K	1	○	○	.472 12	.472 12	.472 12	4.724 120	.039 1	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S	
TB42	TB%16N-42	2	○	○	.630 16	.630 16	.630 16	3.071 78	.354 9	.453 11.5	.354 9.0	—	LW-2.5
 TB43	TB%16NS	2	○	○	.630 16	.630 16	.630 16	3.071 78	.354 9	.394 10	.197 5.0	—	LW-2.5
	TB%16N	2	○	○	.630 16	.630 16	.630 16	3.071 78	.354 9	.394 10	.354 9.0	—	LW-2.5
	TB%16N-H	2	○	○	.630 16	.630 16	.630 16	3.937 100	.354 9	.394 10	.354 9.0	—	LW-2.5
	TB%16N-K	2	○	○	.630 16	.630 16	.630 16	4.921 125	.354 9	.394 10	.354 9.0	—	LW-2.5
	TB%20N	2	○	○	.787 20	.787 20	.787 20	3.937 100	.157 5	.394 10	.354 9.0	—	LW-2.5
	TB%25N	2	○	○	.984 25	.984 25	.984 25	5.906 150	0 0	.394 10	.354 9.0	—	LW-2.5
	TB%16FS	3	○	○	.630 16	.630 16	.630 16	3.937 100	.354 9	.591 15	.197 5.0	—	LW-2.5
	TB%16F	3	○	○	.630 16	.630 16	.630 16	3.937 100	.354 9	.591 15	.354 9.0	—	LW-2.5
	TB%20FS	3	○	○	.787 20	.787 20	.787 20	3.937 100	.157 5	.787 20	.197 5.0	—	LW-2.5
	TB%20F	3	○	○	.787 20	.787 20	.787 20	3.937 100	.157 5	.787 20	.354 9.0	—	LW-2.5
TB%25F	3	○	○	.984 25	.984 25	.984 25	5.906 150	0 0	.984 25	.354 9.0	—	LW-2.5	

TB32 • 42 • 43 - Inserts

TB32 • 42 • 43



Item Number	Chip-breaker	a		θ	r_ϵ		w		d		s		Coated Carbide ZM3	
		(Inch)	(mm)		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L
		TB3200%	Yes		.106	2.7	45°	0	0.00	.020	0.5	3/8	9.525	1/8	3.18	●
TB3205%	Yes	.106	2.7	45°	.002	0.05	.020	0.5	3/8	9.525	1/8	3.18	●	○
TB3215%	Yes	.106	2.7	45°	.006	0.15	.020	0.5	3/8	9.525	1/8	3.18	●	○
TB3220%	Yes	.106	2.7	45°	.008	0.20	.020	0.5	3/8	9.525	1/8	3.18	○	
TB4215%	Yes	.091	2.3	45°	.006	0.15	.040	1.0	1/2	12.70	1/8	3.18	○	
TB4305%	Yes	.157	4.0	45°	.002	0.05	.040	1.0	1/2	12.70	3/16	4.76	●	
TB4315%	Yes	.157	4.0	45°	.006	0.15	.040	1.0	1/2	12.70	3/16	4.76	●	
TB4340%	Yes	.154	3.9	45°	.016	0.40	.040	1.0	1/2	12.70	3/16	4.76	●	

Note: All angles shown are obtained when insert is set in the holder

Cutting condition **→R3**

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 Ⓜ : Mirror finish

○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ⚙ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
 Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

GTT Series

GTT

Screw accessible from both sides

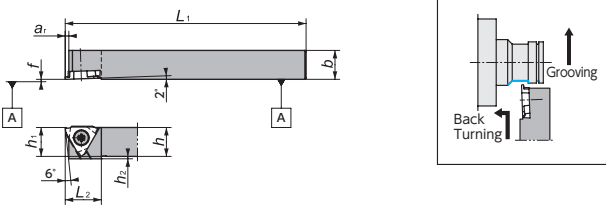


Figure-1

Right-Hand style shown

GTT-OH2 (Coolant through)

Screw accessible from both sides

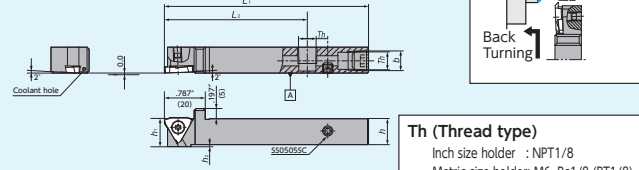


Figure-2

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Right-Hand style shown

GTT-OH (Coolant through)

Screw accessible from both sides

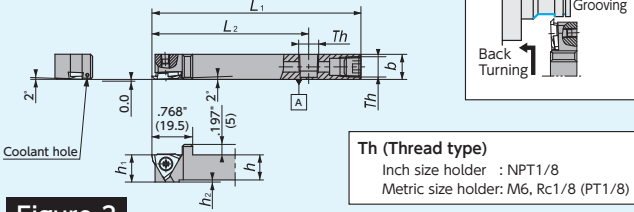


Figure-3

Right-Hand style shown

CH-GTT

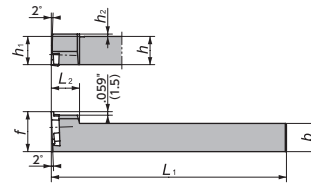


Figure-4

Left-Hand style shown
Takes Right-hand Insert

Back Turning

GTT

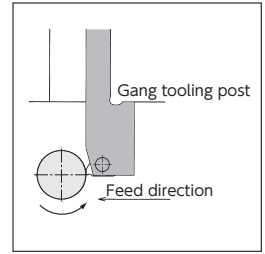
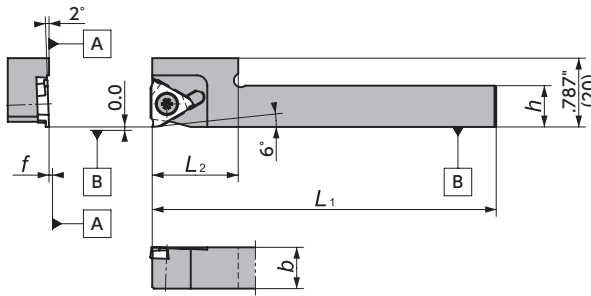
Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	a _r (Inch) (mm)	h ₂ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
GTT%06A-IN		1	●	●	3/8	3/8	3/8	4.724 120	.000 0	.591 15.0	.071 1.8	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%06B-IN		1	●	●	3/8	3/8	3/8	4.724 120	.000 0	.591 15.0	.106 2.7	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%08A-IN		1	●	●	1/2	1/2	1/2	4.724 120	.000 0	.591 15.0	.071 1.8	.039 1	—	LR-5-4x10PW	CLR-15S
GTT%08B-IN		1	●	●	1/2	1/2	1/2	4.724 120	.000 0	.591 15.0	.106 2.7	.039 1	—	LR-5-4x10PW	CLR-15S
GTT%10A-IN		1	●	●	5/8	5/8	5/8	4.724 120	.000 0	.591 15.0	.071 1.8	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%10B-IN		1	●	●	5/8	5/8	5/8	4.724 120	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%12A-IN		1	●	●	3/4	3/4	3/4	4.724 120	.000 0	.591 15.0	.071 1.8	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%12B-IN		1	●	●	3/4	3/4	3/4	4.724 120	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%08F00		1	○	○	.315 8	.315 8	.315 8	3.150 80	.000 0	.591 15.0	.071 1.8	.157 5	—	R:LR-5-4x10PW L:LR-5-4x5.8	CLR-15S
GTT%0810F00		1	○	○	.315 8	.394 10	.315 8	3.150 80	.000 0	.591 15.0	.071 1.8	.157 5	—	LR-5-4x10PW	CLR-15S
GTT%08K00		1	○	○	.315 8	.315 8	.315 8	4.724 120	.000 0	.591 15.0	.071 1.8	.157 5	—	R:LR-5-4x10PW L:LR-5-4x5.8	CLR-15S
GTT%0810K00		1	○	○	.315 8	.394 10	.315 8	4.724 120	.000 0	.591 15.0	.071 1.8	.157 5	—	LR-5-4x10PW	CLR-15S
GTT%10F00		1	○	○	.394 10	.394 10	.394 10	3.150 80	.000 0	.591 15.0	.071 1.8	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%10K00		1	○	○	.394 10	.394 10	.394 10	4.724 120	.000 0	.591 15.0	.071 1.8	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%12F00		1	○	○	.472 12	.472 12	.472 12	3.150 80	.000 0	.591 15.0	.071 1.8	.040 1	—	LR-5-4x10PW	CLR-15S
GTT%12K00		1	○	○	.472 12	.472 12	.472 12	4.724 120	.000 0	.591 15.0	.071 1.8	.040 1	—	LR-5-4x10PW	CLR-15S
GTT%16H00		1	○	○	.630 16	.630 16	.630 16	3.937 100	.000 0	.591 15.0	.071 1.8	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%16K00		1	○	○	.630 16	.630 16	.630 16	4.724 120	.000 0	.591 15.0	.071 1.8	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%20K00		1	○	○	.787 20	.787 20	.787 20	4.921 125	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%25M00		1	○	○	.984 25	.984 25	.984 25	5.906 150	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%10F15		1	○	○	.394 10	.394 10	.394 10	3.150 80	.000 0	.591 15.0	.106 2.7	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%10K15		1	○	○	.394 10	.394 10	.394 10	4.724 120	.000 0	.591 15.0	.106 2.7	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%12F15		1	○	○	.472 12	.472 12	.472 12	3.150 80	.000 0	.591 15.0	.106 2.7	.040 1	—	LR-5-4x10PW	CLR-15S
GTT%12K15		1	○	○	.472 12	.472 12	.472 12	4.724 120	.000 0	.591 15.0	.106 2.7	.040 1	—	LR-5-4x10PW	CLR-15S
GTT%16H15		1	○	○	.630 16	.630 16	.630 16	3.937 100	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%16K15		1	●	○	.630 16	.630 16	.630 16	4.724 120	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%10F25		1	○	○	.394 10	.394 10	.394 10	3.150 80	.000 0	.591 15.0	.106 2.7	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%10K25		1	○	○	.394 10	.394 10	.394 10	4.724 120	.000 0	.591 15.0	.106 2.7	.118 3	—	LR-5-4x10PW	CLR-15S
GTT%12F25		1	○	○	.472 12	.472 12	.472 12	3.150 80	.000 0	.591 15.0	.106 2.7	.040 1	—	LR-5-4x10PW	CLR-15S
GTT%12K25		1	○	○	.472 12	.472 12	.472 12	4.724 120	.000 0	.591 15.0	.106 2.7	.040 1	—	LR-5-4x10PW	CLR-15S
GTT%16H25		1	○	○	.630 16	.630 16	.630 16	3.937 100	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%16K25		1	○	○	.630 16	.630 16	.630 16	4.724 120	.000 0	.591 15.0	.106 2.7	.000 0	—	LR-5-4x10PW	CLR-15S
GTT%08HA-IN-OH		3	■	●	1/2	1/2	1/2	3.937 100	.000 0	2.953 75	.071 1.8	.039 1	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%08HA-IN-OH2		2	■	●	1/2	1/2	1/2	3.937 100	.000 0	2.756 70	.071 1.8	.039 1	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%08HB-IN-OH		3	■	●	1/2	1/2	1/2	3.937 100	.000 0	2.953 75	.106 2.7	.039 1	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%08HB-IN-OH2		2	■	●	1/2	1/2	1/2	3.937 100	.000 0	2.756 70	.106 2.7	.039 1	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%10HA-IN-OH		3	■	●	5/8	5/8	5/8	3.937 100	.000 0	.768 19.5	.071 1.8	.000 0	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%10XA-IN-OH2		2	■	●	5/8	5/8	5/8	4.724 120	.000 0	.768 19.5	.071 1.8	.000 0	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%10HB-IN-OH		3	■	●	5/8	5/8	5/8	3.937 100	.000 0	.768 19.5	.106 2.7	.000 0	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%10XB-IN-OH2		2	■	●	5/8	5/8	5/8	4.724 120	.000 0	.768 19.5	.106 2.7	.000 0	NPT1/8	LR-5-4x10PW	CLR-15S
GTT%1012H00-OH		3	○	○	.394 10	.472 12	.394 10	3.937 100	.000 0	.768 19.5	.071 1.8	.039 1	M6 x 1	LR-5-4x10PW	CLR-15S
GTT%12H00-OH		3	■	●	.472 12	.472 12	.472 12	3.937 100	.000 0	.768 19.5	.071 1.8	.039 1	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-15S
GTT%12H00-OH2		2	■	●	.472 12	.472 12	.472 12	3.937 100	.000 0	2.756 70	.071 1.8	.039 1	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-15S
GTT%16H00-OH		3	○	○	.630 16	.630 16	.630 16	3.937 100	.000 0	.768 19.5	.071 1.8	0	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-15S
GTT%16X00-OH2		2	○	○	.630 16	.630 16	.630 16	4.724 120	.000 0	.768 19.5	.071 1.8	0	Rc1/8 (PT1/8)	LR-5-4x10PW	CLR-15S
CH-GTT%10H00		4	○	○	.394 10	.394 10	.394 10	4.724 120	.591 15	.472 12.0	.059 1.5	.118 3	—	LR-5-4x10PW	CLR-15S
CH-GTT%12H00		4	○	○	.472 12	.472 12	.472 12	4.724 120	.669 17	.472 12.0	.059 1.5	.040 1	—	LR-5-4x10PW	CLR-15S



TBMH32..

Y-GTT

Screw accessible from both sides

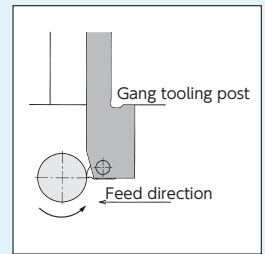
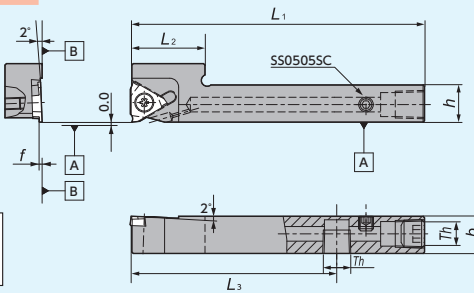


Right-Hand style shown
Takes Right-hand Insert

Figure-5

Y-GTT-OH2 (Coolant through)

Screw accessible from both sides



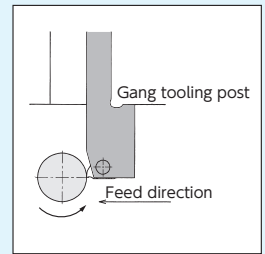
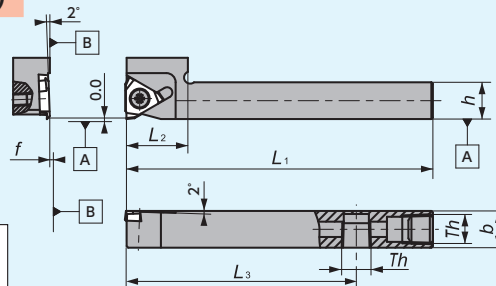
Right-Hand style shown
Takes Right-hand Insert

Figure-6

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Y-GTT-OH (Coolant through)

Screw accessible from both sides



Right-Hand style shown
Takes Right-hand Insert

Figure-7

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

GTT

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	a _r (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
TBMH32..	Y-GTTR%06-IN	5	●		3/8	3/8	-	4.724 120	.000 0	.984 25.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTTR%108-IN	5	●		1/2	1/2	-	4.724 120	.000 0	.984 25.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTTR%110-IN	5	●		5/8	5/8	-	4.724 120	.000 0	.984 25.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%10MS	7	○		.394 10	.394 10	-	4.724 120	.000 0	.866 22.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%10S	5	○		.394 10	.394 10	-	4.724 120	.000 0	.787 20.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%12MS	7	○		.472 12	.472 12	-	4.724 120	.000 0	.866 22.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%12S	5	○		.472 12	.472 12	-	4.724 120	.000 0	.787 20.0	.063 1.6	-	-	LR-5-4×10PW	CLR-15S
	Y-GTT%08H-IN-OH	7	■		1/2	1/2	-	3.937 100	.000 0	.984 25.0	.063 1.6	2.756 70	NPT1/8	LR-5-4×10PW	CLR-15S
	Y-GTT%08H-IN-OH2	6	■		1/2	1/2	-	3.937 100	.000 0	.984 25.0	.063 1.6	2.953 75	NPT1/8	LR-5-4×10PW	CLR-15S
	Y-GTT%12H00S-OH	7	■		.472 12	.472 12	-	3.937 100	.000 0	.787 20.0	.063 1.6	2.756 70	Rc1/8 (PT1/8)	LR-5-4×10PW	CLR-15S
	Y-GTT%12H00S-OH2	6	■		.472 12	.472 12	-	3.937 100	.000 0	.787 20.0	.063 1.6	2.953 75	Rc1/8 (PT1/8)	LR-5-4×10PW	CLR-15S
	Y-GTT%16H00-OH	7	○		.630 16	.472 16	-	3.937 100	.000 0	.984 25.0	.063 1.6	2.953 75	Rc1/8 (PT1/8)	LR-5-4×10PW	CLR-15S

Cutting condition → R3

● : Stock
● : Stock (Newly added)
■□□ : While stocks last

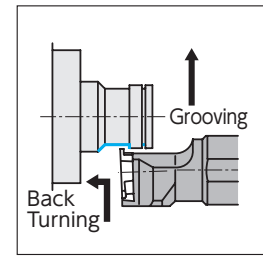
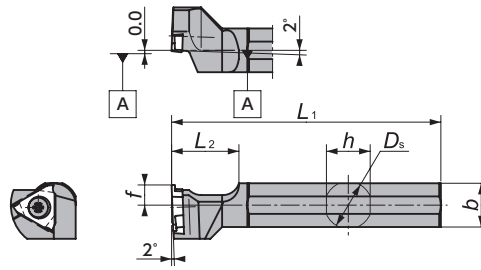
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
⊕ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⊕ : Coolant through

ⓇⓁ : 1-2 week delivery (Right / Left-hand only)
ⓇⓁ : 1-2 week delivery (Right / Left-hand only, Newly added)

Back Turning

DS-GTT



Left-Hand style shown
Takes Right-hand Insert

Figure-8

DS-GTT

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		L_2		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TBMH32..	DS-GTT%{14F	8	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{15H	8	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{16X	8	●	○	.630	16.000	.591	15	.591	15	3.740	95	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{19	8	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{20	8	●	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{22	8	●	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{25-MET	8	○	○	.984	25.000	.945	24	.945	24	4.724	120	.394	10	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{25	8	●	○	1	25.400	.945	24	.945	24	5.906	150	.394	10	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT%{32	8	○	○	.984	25.000	.945	24	.945	24	5.906	150	.394	10	.787	20	LR-5-4 × 9	RLR-20S

GTT Series - Inserts

TBMH32

Shape	Item Number	Chip-breaker	Length of Blade		Max Depth of Cut		w	θ	r_ϵ		Coated Carbide		
			a	b	a	b			(Inch)	(mm)	R	L	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
	TBMH32100%{05-22	Yes	.012	0.3	.071	1.8	.039	1.0	22°	.002	0.05	●	
	TBMH32100%{05-45	Yes	.035	0.9	.071	1.8	.039	1.0	45°	.002	0.05	●	
	TBMH32150%{05-22	Yes	.020	0.5	.106	2.7	.059	1.5	22°	.002	0.05	●	
	TBMH32150%{05-45	Yes	.051	1.3	.102	2.6	.059	1.5	45°	.002	0.05	●	

Note: All angles shown are obtained when insert is set in the holder

Cutting condition → R3

S

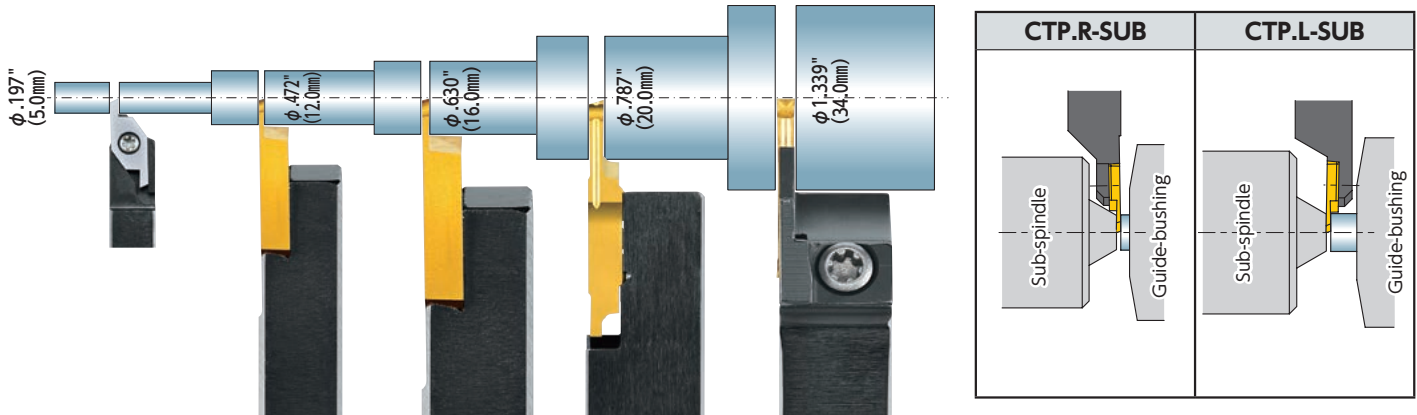


Cut-off / Parting


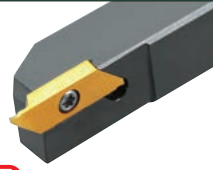

■ Cut-off Tools	S2
■ Cut-off Tool Selection Guide	S4
■ Recommended Cutting Conditions	S5
■ Tool List	S6
● CSV Series (Up to dia. .197")	S6
● CTPS Series (Up to dia. .394")	S7
● CTP Series (Up to dia. .472")	S8
● CTPA Series (Up to dia. .630")	S12
● CTDP Series (Up to dia. 1.339")	S16
● CTPW Series (Up to dia. .787")	S18
● CTWP Series (Up to dia. 1.653")	S19
● CTV-S Series (Up to dia. .787")	S20
● CTV Series (Up to dia. 1.772")	S21


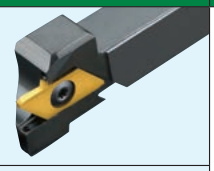


NTK Cut-off Tools - Product Lines


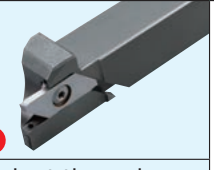


NTK offers a variety of cut-off tools with as narrow a width as .020" (0.5mm)
 NTK cut-off tools are specialized for small part applications











Cut-off

Insert	CSV →S6	CTPS →S7	CTPS-001 →S7
Holder	CSV-NC  →S6	CTPS  →S7	CTPSR-SUB  →S7
Max Cut-off Diameter	~φ.197" (~5.0mm)	~φ.394" (~10.0mm)	~φ.157" (~4.0mm)
Blade width	.024" - .059" (0.6 - 1.5mm)	.047" - .079" (1.2 - 2.0mm)	.028" (0.7mm)

Insert	CTP →S10 · S11			
Holder	CTP  →S8	CTP-OH2/OH  →S8 Coolant through	CTPR-SUB  →S8	CTPL-SUB  →S8
Max Cut-off Diameter	~φ.472" (~12.0mm)			
Blade width	.020" - .079" (0.5 - 2.0mm)			

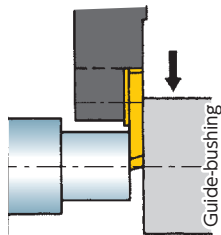
Insert	CTPA →S14 · S15			
Holder	CTPA  →S12	CTPA-OH2/OH  →S12 Coolant through	CTPAR-SUB  →S12	CTPAL-SUB  →S12
Max Cut-off Diameter	~φ.630" (~16.0mm)			
Blade width	.028" - .118" (0.7 - 3.0mm)			

Insert	CTPW →S18	CTDP →S17	GWPFM →S19
Holder	CTPW  →S18	CTDP  →S16	CTWP  →S19
Max Cut-off Diameter	~ ϕ .787" (~20.0mm)	~ ϕ 1.339" (~34.0mm)	~ ϕ 1.653" (~42.0mm)
Blade width	.098" (2.5mm)	.079"*.098" (2.0*2.5mm)	.118" (3.0mm)

Insert	CTV-S →S20		CTV →S22		
Holder	CTV-K2  →S20	CTVN-K2  →S20	CTV-S  →S21	CTV-M (B)  →S21	CTV-X  →S21
Max Cut-off Diameter	~ ϕ .787" (~20.0mm)		~ ϕ 1.378" (~35.0mm)	~ ϕ 1.772" (~45.0mm)	~ 1.378" (~35.0mm)
Blade width	.087" - .098" (2.2 - 2.5mm)		.098"*.118" (2.5*3.0mm)	.098"*.118" (2.5*3.0mm)	.118" (3.0mm)

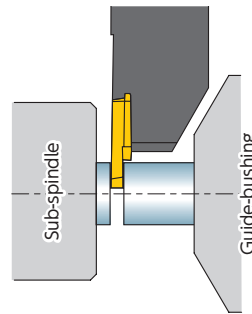
■ CTP/CTPA/CTPS/CTPW selection guide : Right hand? Or Left hand?

Right-hand recommended



R-hand Toolholder using a R-hand insert with lead angle

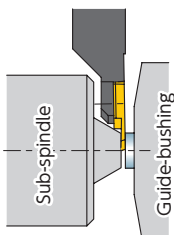
Left-hand recommended



L-hand Toolholder with a non-lead angle insert when the bar stock is held by sub-spindle

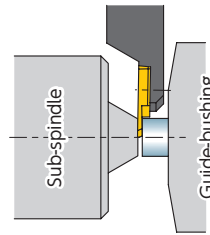
■ CTP/CTPA-SUB selection guide Right hand? Or Left hand?

Right-hand recommended



R-hand Toolholder with R-hand insert with lead angle for longer parts or small diameter part. When part length is too short for sub-spindle to hold, use L-hand with slower speed.

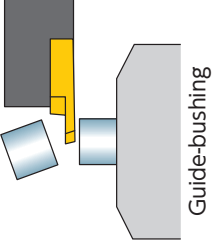
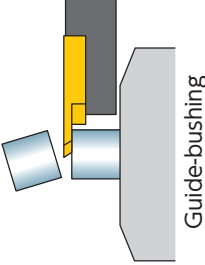
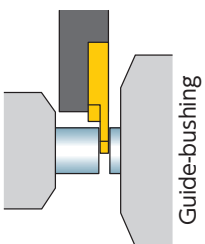
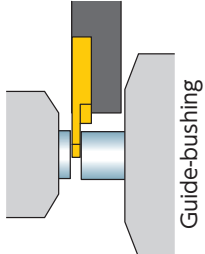
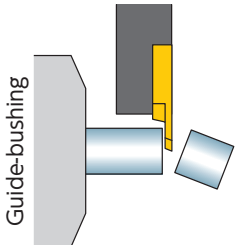
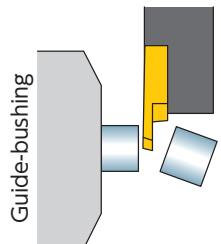
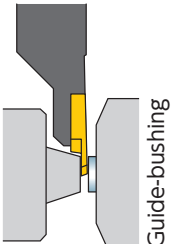
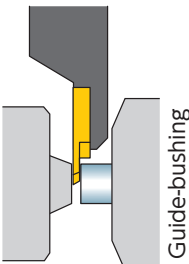
Left-hand recommended



L-hand with L-hand insert with lead angle for short part

More information **→S4**

Cut-off Tool Selection Guide

Right-hand combination		Left-hand combination	
FR, FRFT, FRV Style		FLK, FLKFT, FLKV Style	
 <p>FRFT: Flat top FRV : Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Common geometry in cut-off ● Lead angle minimizes center-boss ● End face is likely to get scratched from chip control because of lead angle and chip-breaker configuration ● Good for small diameter machining as it cuts near guide-bushing 	 <p>FLKFT: Flat top FLKV : Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Can cut-off closer to the sub-spindle ● Less burrs with hollow work ● Sub-spindle should hold the work
FRN, FRS,FRNV Style		FLN, FLS Style	
 <p>FRS : Flat top FRNV: Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Good for small diameter machining as it cuts near guide-bushing ● 1st recommendation when sub-spindle holds the part ● No lead angle helps to prevent scratches on both faces 	 <p>FLS: Flat top</p>	<ul style="list-style-type: none"> ● Recommended when required to cut-off close to the sub-spindle due to short part length ● Good for big diameter part ● No lead angle helps to prevent scratches on both faces ● Sub-spindle should hold the work
FRK Style		FL, FLV Style	
 <p>Guide-bushing</p>	<ul style="list-style-type: none"> ● Used with inverse spindle rotation ● Short part length and using sub-spindle ● Less burrs with hollow work 	 <p>Guide-bushing</p> <p>FLV: Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Used with inverse spindle rotation ● Without sub-spindle ● Less burrs with hollow work
CTP. R-SUB		CTP. L-SUB	
 <p>Guide-bushing</p>	<ul style="list-style-type: none"> ● Recommended when cut-off point is close to guide-bushing for small and thin parts ● When the part length is short, extended sub-spindle guide-bushing is generally used 	 <p>Guide-bushing</p>	<ul style="list-style-type: none"> ● Recommended when required to cut-off close to the sub-spindle especially with small diameters ● Can cut much closer to the sub-spindle than the other left-handed tool holders ● Sub-spindle should hold the work

Recommended Cutting Conditions

Cut Off

CSV

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
				Hard to cut	Free cutting		
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4				VM1	
	2nd choice	VM1				DM4 / DT4	
Cutting Speed (SFM)		100 160 230			100 200 300		
Feed Rate (IPR)		.0004 .0008 .0012			.0004 .0012 .0020		

CTP / CTPA / CTPS / CTPW

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
				Hard to cut	Free cutting			
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4		ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4		QM3 / VM1		QM3	TM4 / DM4 / DT4	
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0008 .0012 .0020			.0008 .0016 .0024			

CTDP / CTWP / CTV

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
				Hard to cut	Free cutting			
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4		ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4 / QM3				QM3	TM4 / DM4	
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0012 .0020 .0031			.0016 .0031 .0047			

1st Recommendation style for Cut-off Diameter

Cut-off diameter (ϕ)	Style	Code	Image
< .197"	CSV style	→S6	
.197"-.472"	CTP style	→S8	
.472"-.630"	CTPA style	→S12	
	CTDP style	→S16	
.630"-1.340"	CTDP style	→S16	
1.340"-	CTWP style	→S19	

CSV Series

Best for up to .200" diameter material

CSV-NC For Gang-style machine

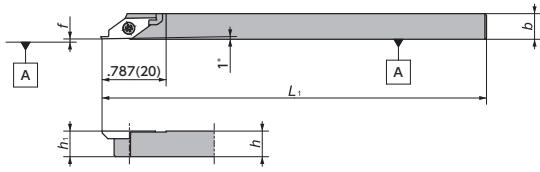


Figure-1

Right-Hand style shown

CSV For Cam-style machine

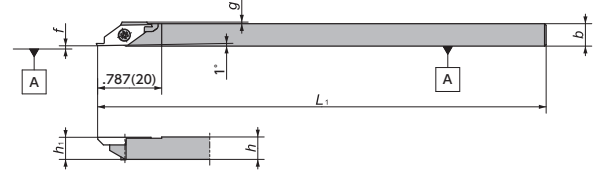



Figure-2

Right-Hand style shown

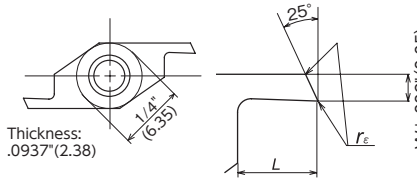
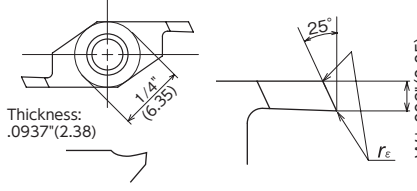
CSV Series - Toolholders

CSV^R/_L / CSV^R/_L-NC

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV ^R / _L 06-IN-NC	1	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08-IN-NC	1	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12NC	1	○	○	.472	12	.472	12	.472	12	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08	2	○	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10	2	○	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV ^R / _L 12	2	○	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

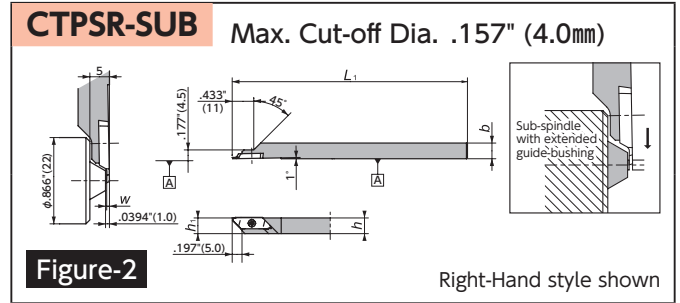
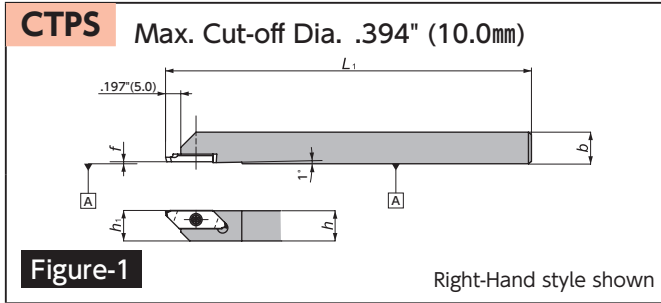
CSV Series - Inserts

CSV^R/_LC - Cut-off Mirror finish

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		r_e		VM1	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L
 <p>Thickness: .0937(2.38)</p> <p>Right-Hand style shown</p>	CSV11F ^R / _L V06 (M)	No	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	○
	CSV11F ^R / _L V07 (M)	No	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	●
	CSV11F ^R / _L V08 (M)	No	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L V09 (M)	No	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L V10 (M)	No	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	●
	CSV11F ^R / _L V13 (M)	No	.197	5.0	.051	1.3	.118	3.0	0	0.0	●	○
 <p>Thickness: .0937(2.38)</p> <p>Right-Hand style shown</p>	CSV11F ^R / _L VB06 (M)	Yes	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	○
	CSV11F ^R / _L VB07 (M)	Yes	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	●
	CSV11F ^R / _L VB08 (M)	Yes	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L VB09 (M)	Yes	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L VB10 (M)	Yes	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	○
	CSV11F ^R / _L VB13 (M)	Yes	.197	5.0	.051	1.3	.118	3.0	0	0.0	○	○
CSV11F ^R / _L VB15 (M)	Yes	.197	5.0	.059	1.5	.118	3.0	0	0.0	○	○	

Note: All angles shown are obtained when insert is set in the holder

CTPS Series



CTPS Series - Toolholders

CTPS / CTPSR-SUB

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	CTPS%06-IN	1	●	●	.394	10.0	3/8	3/8	3/8	3/8	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S		
	CTPS%08-IN	1	●	●	.394	10.0	1/2	1/2	1/2	1/2	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S		
	CTPS%10	1	○	○	.394	10.0	.394	10	.394	10	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S		
	CTPS%12	1	○	○	.394	10.0	.472	12	.472	12	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S		
CTPS-001	CTPS%08-SUB04	2	○	○	.157	4.0	.315	8	.315	8	.315	8	4.724	120	—	LRIS-2.5 × 5	CLR-15S	

CTPS Series - Inserts

CTPS - Cut-off

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	r_ϵ		Coated Carbide			
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	VM1		ZM3	
			R	L	R	L	R	L		R	L	R	L	R	L
<p>with chipbreaker</p> <p>Right-Hand style shown</p>	CTPS12FR	Yes	.157	4.0	.047	1.2	.138	3.5	16°	.002	0.05	○	○	●	○
	CTPS15FR	Yes	.197	5.0	.059	1.5	.157	4.0	16°	.002	0.05	○	○	●	○
	CTPS18FR	Yes	.335	8.5	.071	1.8	.217	5.5	16°	.002	0.05	○	○	●	○
	CTPS20FR	Yes	.394	10.0	.079	2.0	.236	6.0	16°	.002	0.05	○	○	○	○
<p>without chipbreaker</p> <p>Mirror finish</p> <p>Right-Hand style shown</p>	CTPS12FRV M	No	.157	4.0	.047	1.2	.138	3.5	20°	0	0.0	●	○	○	○
	CTPS15FRV M	No	.197	5.0	.059	1.5	.157	4.0	20°	0	0.0	○	○	○	○
	CTPS18FRV M	No	.335	8.5	.071	1.8	.217	5.5	20°	0	0.0	○	○	○	○
	CTPS20FRV M	No	.394	10.0	.079	2.0	.236	6.0	20°	0	0.0	○	○	○	○

Note: All angles shown are obtained when insert is set in the holder

CTPS-001 - Cut-off

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w	θ	r_ϵ		Coated Carbide		
			(Inch)	(mm)			(Inch)	(mm)	ZM3		
			R	L			R	L	R	L	
<p>Right-Hand style shown</p>	CTPS07FRN-001	Yes	.157	4.0	.028	0.7	0°	.002	0.05	○	○
	CTPS07FR-001	Yes	.157	4.0	.028	0.7	16°	.002	0.05	○	○
	CTPS07FRV-001 M	No	.157	4.0	.028	0.7	20°	0	0.0	○	○

Note: All angles shown are obtained when insert is set in the holder

Cutting condition **→S5**

- : Stock
- : Stock (Newly added)
- : While stocks last
- R L : Stock (Right / Left-hand only)
- R L : Stock (Right / Left-hand only, Newly added)
- : 1-2 week delivery
- : 1-2 week delivery (Newly added)
- ⦿ : Coolant through
- Ⓜ : 1-2 week delivery (Right / Left-hand only)
- Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

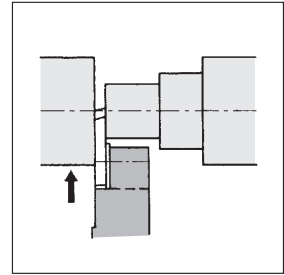
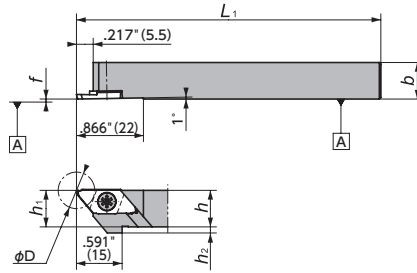
Cut-off

CTP Series - Toolholders

Max. Cut-off Dia. - ϕ .472"(12.0mm)

CTP

Screw Accessible from both sides

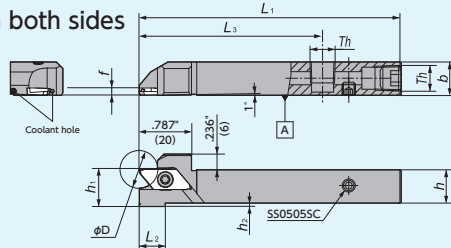


Right-Hand style shown

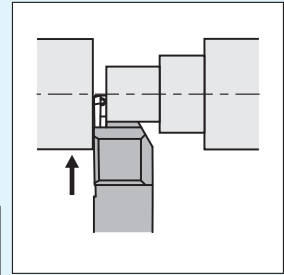
Figure-1

CTP-OH2 (Coolant through)

Screw Accessible from both sides



Th (Thread type)
 3/8" holder : M6 x 1
 1/2", 5/8" holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

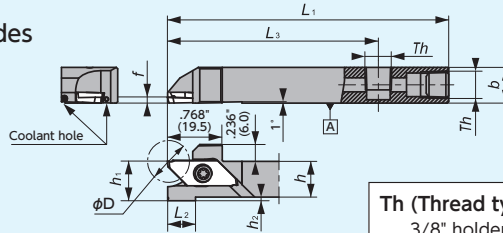


Right-Hand style shown

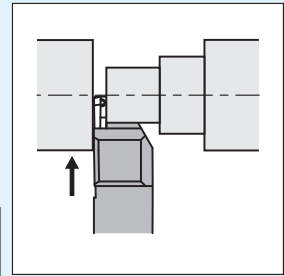
Figure-2 • Left-Hand holders are designed for Right-Hand machines

CTP-OH (Coolant through)

Screw Accessible from both sides



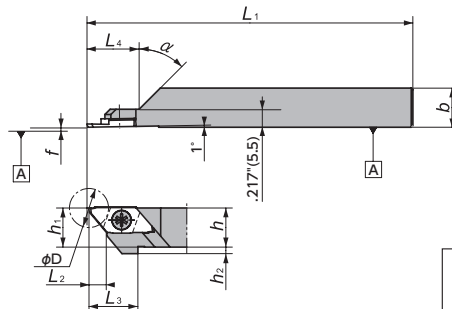
Th (Thread type)
 3/8" holder : M6 x 1
 1/2", 5/8" holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)



Right-Hand style shown

Figure-3 • Left-Hand holders are designed for Right-Hand machines

CTPR-SUB



phi Ds
 CTPR-SUB: ϕ 1.18" (ϕ 30mm)

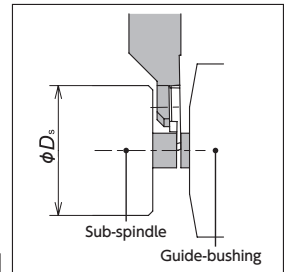
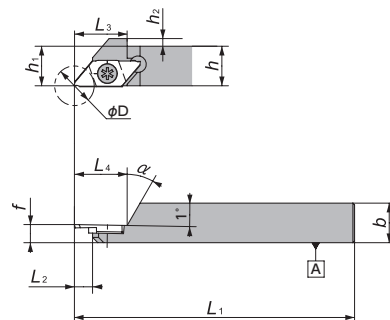


Figure-4

CTPL-SUB



phi Ds
 CTPL-SUB: ϕ 1.18" (ϕ 30mm)

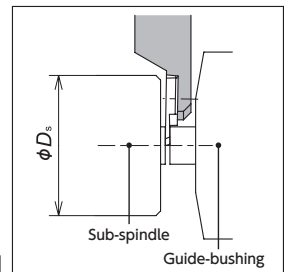



Figure-5


CTP

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h	h_1	b	L_1	h_2	L_2	L_3	Th	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)		(mm)	(Inch)			(mm)
 CTP FR../FL..	CTP%06-IN	1	●	●	.472	12	3/8	3/8	3/8	4.724 120	.079 2	—	—	—	0.0	0.0	LRIS-4×10PW	CLR-15S
	CTP%08-IN	1	●	●	.472	12	1/2	1/2	1/2	4.724 120	0 0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%10-IN	1	●	●	.472	12	5/8	5/8	5/8	4.724 120	0 0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%08	1	●	●	.472	12	.315 8	.315 8	.394 10	4.724 120	.157 4	—	—	—	0.0	0.0	LRIS-4×10PW	CLR-15S
	CTP%10H	1	○	○	.472	12	.394 10	.394 10	.394 10	3.937 100	.079 2	—	—	—	0.0	0.0	LRIS-4×10PW	CLR-15S
	CTP%10	1	○	○	.472	12	.394 10	.394 10	.394 10	4.724 120	.079 2	—	—	—	0.0	0.0	LRIS-4×10PW	CLR-15S
	CTP%12GX	1	○	○	.472	12	.472 12	.472 12	.472 12	3.346 85	0 0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%12	1	○	○	.472	12	.472 12	.472 12	.472 12	4.724 120	0 0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%13	1	○	○	.472	12	.519 13	.519 13	.519 13	4.724 120	0 0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%16H	1	○	○	.472	12	.630 16	.630 16	.630 16	3.937 100	0 0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%16	1	○	○	.472	12	.630 16	.630 16	.630 16	4.724 120	0 0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%06H-IN-OH	3	●	●	.472	12	3/8	.472 12	3/8	3.937 100	.176 4.475	.748 19	2.953 75	M6 × 1	0.0	0.0	LRIS-4×10PW	CLR-15S
	CTP%08H-IN-OH	3	■	■	.472	12	1/2	1/2	1/2	3.937 100	.051 1.3	.394 10	2.953 75	NPT1/8	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%08H-IN-OH2	2	●	●	.472	12	1/2	1/2	1/2	3.937 100	.051 1.3	.394 10	2.756 70	NPT1/8	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%1012H-OH	3	○	○	.472	12	.394 10	.472 12	.394 10	3.937 100	.176 4.475	.748 19	2.953 75	M6 × 1	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%12H-OH	3	■	■	.472	12	.472 12	.472 12	.472 12	3.937 100	.051 1.3	.394 10	2.953 75	Rc1/8(PT1/8)	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTP%12H-OH2	2	●	●	.472	12	.472 12	.472 12	.472 12	3.937 100	.051 1.3	.394 10	2.756 70	Rc1/8(PT1/8)	0.0	0.0	LRIS-4×12PW	CLR-15S
CTP%16H-OH	3	○	○	.472	12	.630 16	.630 16	.630 16	3.937 100	0 0	—	2.953 75	Rc1/8(PT1/8)	0.0	0.0	LRIS-4×12PW	CLR-15S	

● Left-Hand coolant through holders are designed for Right-Hand machines


* Would be changed by insert

CTPR-SUB

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h	h_1	b	L_1	h_2	L_2	L_3	L_4	α	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
 CTPR..FR..	CTPR06-IN-SUB	4	●	●	.472	12	3/8	3/8	3/8	4.724 120	.079 2	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR08-IN-SUB	4	●	●	.472	12	1/2	1/2	1/2	4.724 120	0 0	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR10-IN-SUB	4	●	●	.472	12	5/8	5/8	5/8	4.724 120	0 0	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR08-SUB	4	○	○	.472	12	.315 8	.315 8	.315 8	4.724 120	.157 4	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR08J-SUB	4	○	○	.472	12	.315 8	.315 8	.315 8	4.331 110	.157 4	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR10F-SUB	4	○	○	.472	12	.394 10	.394 10	.394 10	3.150 80	.079 2	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR10KX-SUB	4	○	○	.472	12	.394 10	.394 10	.394 10	4.724 120	.079 2	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR12GX-SUB	4	○	○	.472	12	.472 12	.472 12	.472 12	3.346 85	0 0	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPR12-SUB	4	○	○	.472	12	.472 12	.472 12	.472 12	4.724 120	0 0	.217 5.5	.591 15	.630 16	45°	.217 5.5	LRIS-4×5	LLR-25S	

* Would be changed by insert

CTPL-SUB

Gage Insert	Item number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h	h_1	b	L_1	h_2	L_2	L_3	L_4	α	f		Clamp screw	Wrench
			L	R	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
 CTPL..FL..	CTPL08-SUB	5	○	○	.472	12	.315 8	.315 8	.394 10	4.724 120	.157 4	.217 5.5	.591 15	.630 16	30°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPL08J-SUB	5	○	○	.472	12	.315 8	.315 8	.315 8	4.331 110	.157 4	.217 5.5	.591 15	.630 16	30°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPL10GX-SUB	5	○	○	.472	12	.394 10	.394 10	.394 10	3.346 85	.079 2	.217 5.5	.591 15	.630 16	30°	.217 5.5	LRIS-4×5	LLR-25S	
	CTPL12GX-SUB	5	○	○	.472	12	.472 12	.472 12	.472 12	3.346 85	0 0	.217 5.5	.591 15	.630 16	30°	.217 5.5	LRIS-4×5	LLR-25S	

* Would be changed by insert

Cutting condition **→S5**

Inserts (Right-hand) **→S10** Inserts (Left-hand) **→S11**

● : Stock
 ● : Stock (Newly added)
 ■ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ⊕ : Mirror finish
 ⊕ : 1-2 week delivery (Right / Left-hand only)
 ⊕ : 1-2 week delivery (Right / Left-hand only, Newly added)
 ⊕ : Coolant through

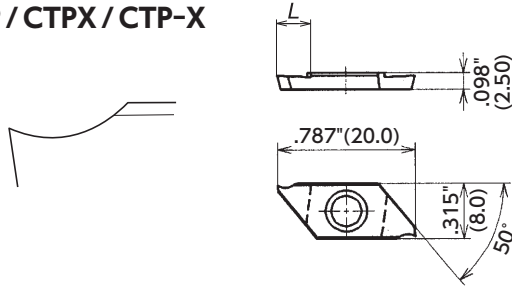
Cut-off

CTP Series Inserts (Right-Hand)

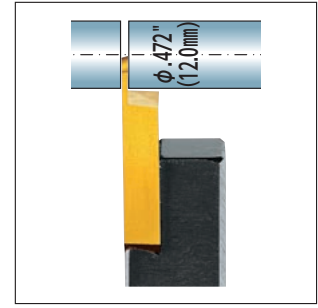
Two-sided insert

Max. Cut-off Dia. - ϕ .472" (12.0mm)

■ CTP / CTPX / CTP-X



CX-Chipbreaker



Right-Hand style shown

All angles shown are obtained when insert is set in the holder.

■ FR

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide						Carbide	PCD			
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3			KM1	PD1	
Figure-1	CTP05FR-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	15°	.001	0.03											
	CTP07FR	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05											
	CTP10FR-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	15°	.002	0.05											
	CTP10FR	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05											
Figure-2	CTP10FR-CX	2	Yes-CX	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05	●	●									
	CTP10FR-TH	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05	●										
Figure-3	CTP10FRFT	4	No	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05	●										
	CTP10FRV	3	No	.472	12.0	.039	1.0	.264	6.7	20°	0.0	0.0											
Figure-4	CTP13FR-CX	2	Yes-CX	.472	12.0	.051	1.3	.264	6.7	16°	.002	0.05	●	●									
	CTP15FR	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05											
Figure-3	CTPX15FR	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05											
	CTP15FRX	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05											
Figure-4	CTP15FR-CX	2	Yes-CX	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05	●	●									
	CTP15FR-TH	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05	●										
Figure-4	CTP15FRV	3	No	.472	12.0	.059	1.5	.264	6.7	20°	0.0	0.0											
	CTP20FR	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05											
Figure-3	CTP20FR	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05											
	CTP20FRX	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05											
Figure-4	CTP20FR-TH	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05	●										
	CTP20FRV	3	No	.472	12.0	.079	2.0	.264	6.7	20°	0.0	0.0											

■ FRN

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide						Carbide	PCD			
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3			KM1	PD1	
Figure-1	CTP05FRN-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	0°	.001	0.03											
	CTP10FRN-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	0°	.002	0.05											
	CTP10FRN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05											
	CTP10FRN-CX	2	Yes-CX	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05	●	●									
Figure-2	CTP10FRN-TH	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05	●										
	CTP13FRN02-CX	2	Yes-CX	.472	12.0	.051	1.3	.264	6.7	0°	.002	0.05	●	●									
Figure-3	CTP15FRN-CX	2	Yes-CX	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05	●	●									
	CTP15FRN02-CX	2	Yes-CX	.472	12.0	.059	1.5	.264	6.7	0°	.008	0.2	●	●									
Figure-3	CTP15FRN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05											
	CTPX15FRN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05											
Figure-3	CTP15FRNX	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05											
	CTP15FRN-TH	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05	●										
Figure-3	CTP15FRNV	3	No	.472	12.0	.059	1.5	.264	6.7	0°	0.0	0.0											
	CTP20FRN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05											
Figure-3	CTPX20FRN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05											
	CTP20FRNX	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05											
Figure-3	CTP20FRN-TH	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05	●										
	CTP20FRNV	3	No	.472	12.0	.079	2.0	.264	6.7	0°	0.0	0.0											

■ FRK

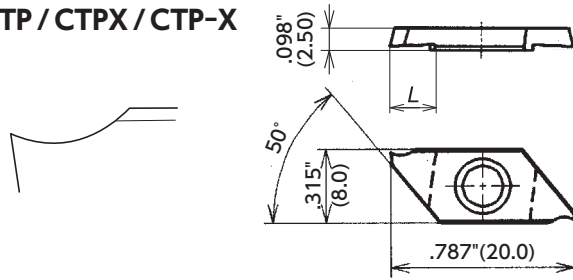
Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide						Carbide	PCD			
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DT4	QM3	VM1	ZM3	KM1			PD1		
Figure-1	CTP10FRK	1	Yes	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05											
	CTP15FRK	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05											
	CTP20FRK	1	Yes	.433	11.0	.079	2.0	.264	6.7	16°	.002	0.05											

CTP Series Inserts (Left-Hand)

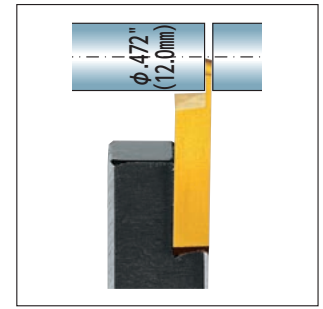
Two-sided insert

Max. Cut-off Dia. - ϕ .472" (12.0mm)

■ CTP / CTPX / CTP-X



CX-Chipbreaker
(Right-hand shown)



Left-Hand style shown

All angles shown are obtained when insert is set in the holder.

■ FLK

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide					Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3	KM1	PD1
Figure-1	CTP05FLK-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	17°	.001	0.03						●	
	CTP10FLK-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	17°	.002	0.05			○			○	
	CTP10FLK	1	Yes	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05			●			●	
Figure-2	CTP10FLK-CX	2	Yes-CX	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05	●	●					
	CTP10FLK-TH	1	Yes	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05	●						
	CTP10FLK-211	1	Yes	.472	12.0	.039	1.0	.295	7.5	16°	.002	0.05					●		
Figure-3 Flat top	CTP13FLK-CX	2	Yes-CX	.472	12.0	.051	1.3	.264	6.7	16°	.002	0.05	●	●					
	CTP15FLK	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05					○	●	
	CTP15FLKB	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05					○	○	
	CTPX15FLK	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05							
	CTP15FLK-CX	2	Yes-CX	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05	●	●					
	CTP15FLK-TH	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05	●						
	CTP15FLKV (M)	3	No	.433	11.0	.059	1.5	.264	6.7	20°	0.0	0.0					●	●	
CTP20FLK	1	Yes	.433	11.0	.079	2.0	.264	6.7	16°	.002	0.05					○	●		
CTPX20FLK	1	Yes	.433	11.0	.079	2.0	.264	6.7	16°	.002	0.05								
CTP20FLK-TH	1	Yes	.433	11.0	.079	2.0	.264	6.7	16°	.002	0.05	●							

■ FLN

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide					Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3	KM1	PD1
Figure-1	CTP05FLN-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	0°	.001	0.03						●	
	CTP10FLN-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	0°	.002	0.05			○			○	
	CTP10FLN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05			●			●	
Figure-2	CTP10FLN-CX	2	Yes-CX	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05	●	●					
	CTP10FLN-TH	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05	●						
	CTP13FLN-CX	2	Yes-CX	.472	12.0	.051	1.3	.264	6.7	0°	.002	0.05	●	●					
Figure-3 Flat top	CTP13FLN02-CX	2	Yes-CX	.472	12.0	.051	1.3	.264	6.7	0°	.008	0.2	●	●					
	CTP15FLN-CX	2	Yes-CX	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05	●	●					
	CTP15FLN02-CX	2	Yes-CX	.472	12.0	.059	1.5	.264	6.7	0°	.008	0.2	●	●					
	CTP15FLN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05					○	●	
	CTPX15FLN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05							
	CTP15FLN-TH	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05	●						
	CTP15FLNV (M)	3	No	.472	12.0	.059	1.5	.264	6.7	0°	0.0	0.0						●	
CTP20FLN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05					○	●		
CTPX20FLN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05								
CTP20FLN-TH	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05	●							
CTP20FLNV (M)	3	No	.472	12.0	.079	2.0	.264	6.7	0°	0.0	0.0							●	

■ FL

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide					Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DT4	QM3	VM1	ZM3	KM1	PD1
Figure-1	CTP07FL	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05						●	
	CTP10FL	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05						○	
Figure-2 Flat top	CTP10FLV (M)	2	No	.472	12.0	.039	1.0	.264	6.7	20°	0.0	0.0						○	
	CTP15FL	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05						○	
	CTPX15FL	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05							
	CTP15FLV (M)	2	No	.472	12.0	.059	1.5	.264	6.7	20°	0.0	0.0						○	
	CTP20FL	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05						○	●
	CTPX20FL	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05							
	CTP20FLV (M)	2	No	.472	12.0	.079	2.0	.264	6.7	20°	0.0	0.0						○	○

Holders →S8 Tool selection guide →S4 Cutting Condition →S5

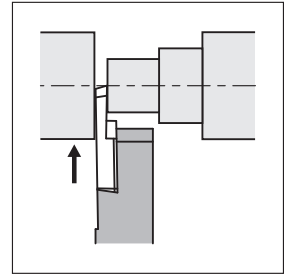
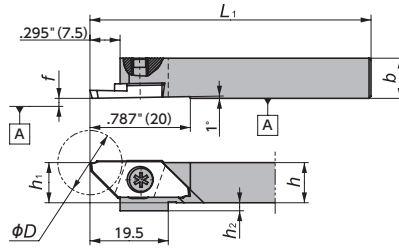
● : Stock
 ● : Stock (Newly added)
 ■ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R) : 1-2 week delivery (Right / Left-hand only)
 (R) : 1-2 week delivery (Right / Left-hand only, Newly added)

CTPA Series - Toolholders

Max. Cut-off Dia. - ϕ .630"(16.0mm)

CTPA

Screw Accessible from both sides

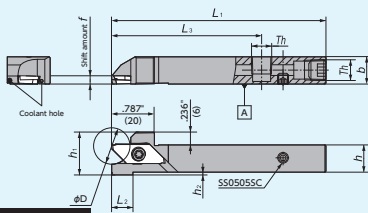


Right-Hand style shown

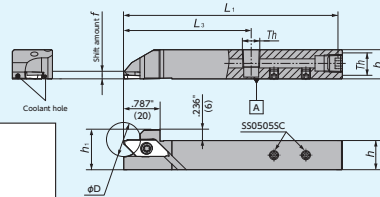
Figure-1

CTPA-OH2 (Coolant through)

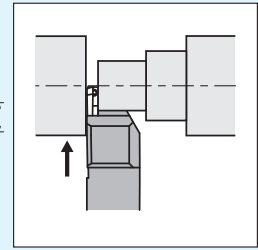
Screw Accessible from both sides



CTPA[®] 10X, CTPA[®] 16X



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

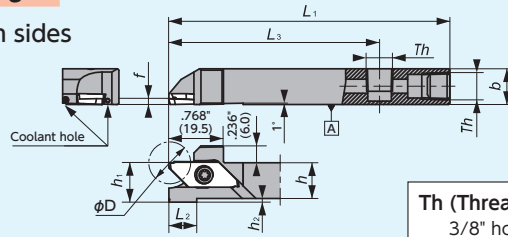


Right-Hand style shown

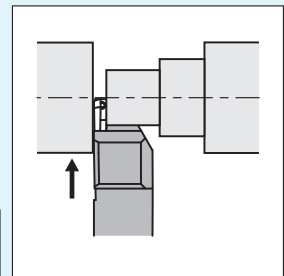
Figure-2 • Left-Hand holders are designed for Right-Hand machines

CTPA-OH (Coolant through)

Screw Accessible from both sides



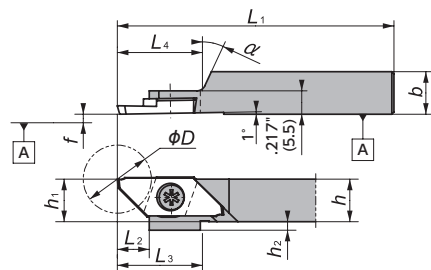
Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)



Right-Hand style shown

Figure-3 • Left-Hand holders are designed for Right-Hand machines

CTPAR-SUB



ϕD_s
 CTPAR-SUB: ϕ 1.42" (ϕ 36mm)

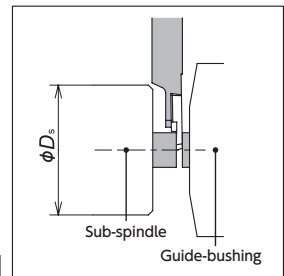
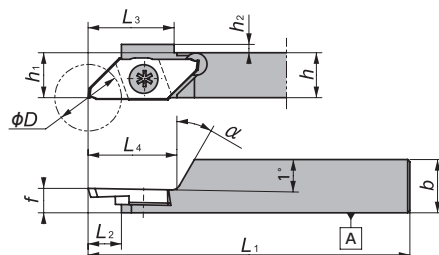


Figure-4

CTPAL-SUB



ϕD_s
 CTPAL-SUB: ϕ 1.42" (ϕ 36mm)

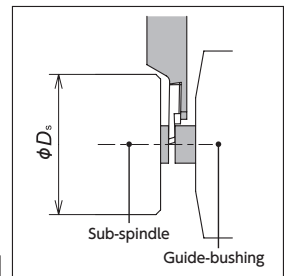



Figure-5


CTPA

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h		h_1		b		L_1		h_2		L_2		L_3		Th	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
 CTPA FR./FL..	CTPA%106-IN	1	●	●	.630	16	3/8	3/8	3/8	4.724	120	.079	2	—	—	—	0.0	0.0	LRIS-4×10PW	CLR-15S					
	CTPA%108-IN	1	●	●	.630	16	1/2	1/2	1/2	4.724	120	0	0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S					
	CTPA%110-IN	1	●	●	.630	16	5/8	5/8	5/8	4.724	120	0	0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S					
	CTPA%110	1	○	○	.630	16	.394	10	.394	10	.394	10	4.724	120	.079	2	—	—	—	0.0	0.0	LRIS-4×10PW	CLR-15S		
	CTPA%112	1	●	●	.630	16	.472	12	.472	12	.472	12	4.724	120	0	0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S		
	CTPA%116	1	○	○	.630	16	.630	16	.630	16	.630	16	4.724	120	0	0	—	—	—	0.0	0.0	LRIS-4×12PW	CLR-15S		
	CTPA%120F	1	○	○	.630	16	.787	20	.787	20	.787	20	3.150	80	0	0	—	—	—	0.0	0.0	LRIS-4×10	LLR-25S		
	CTPA%106H-IN-OH	3	●	●	.630	16	3/8	.472	12	3/8	3.937	100	.176	4.475	.787	20	2.953	75	M6 × 1	0.0	0.0	LRIS-4×10PW	CLR-15S		
	CTPA%108H-IN-OH	3	■	■	.630	16	1/2	1/2	1/2	3.937	100	.051	1.3	.394	10	2.953	75	NPT1/8	0.0	0.0	LRIS-4×12PW	CLR-15S			
	CTPA%108H-IN-OH2	2	●	●	.630	16	1/2	1/2	1/2	3.937	100	.051	1.3	.394	10	2.756	70	NPT1/8	0.0	0.0	LRIS-4×12PW	CLR-15S			
	CTPA%110H-IN-OH	3	●	●	.630	16	5/8	5/8	5/8	3.937	100	0	0	—	2.953	75	NPT1/8	0.0	0.0	LRIS-4×12PW	CLR-15S				
	CTPA%110X-IN-OH2	2	●	●	.630	16	5/8	5/8	5/8	4.724	120	0	0	—	2.756	70	NPT1/8	0.0	0.0	LRIS-4×12PW	CLR-15S				
	CTPA%112H-OH	3	■	■	.630	16	.472	12	.472	12	.472	12	3.937	100	.079	2	.394	10	2.953	75	Rc1/8(PT1/8)	0.0	0.0	LRIS-4×12PW	CLR-15S
	CTPA%112H-OH2	2	●	●	.630	16	.472	12	.472	12	.472	12	3.937	100	.079	2	.394	10	2.756	70	Rc1/8(PT1/8)	0.0	0.0	LRIS-4×12PW	CLR-15S
CTPA%116H-OH	3	○	○	.630	16	.630	16	.630	16	.630	16	3.937	100	0	0	0	0	2.953	75	Rc1/8(PT1/8)	0.0	0.0	LRIS-4×12PW	CLR-15S	
CTPA%116X-OH2	2	●	●	.630	16	.630	16	.630	16	.630	16	4.724	120	0	0	0	0	2.756	70	Rc1/8(PT1/8)	0.0	0.0	LRIS-4×12PW	CLR-15S	

● Left-Hand coolant through holders are designed for Right-Hand machines


* Would be changed by insert

CTPAR-SUB

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h		h_1		b		L_1		h_2		L_2		L_3		L_4		α	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)					
 CTPA..FR..	CTPAR06-IN-SUB	4	●	●	.630	16	3/8	3/8	3/8	4.724	120	.079	2	.295	7.5	.768	19.5	.787	20	25°	0	0.0	LRIS-4×5	LLR-25S			
	CTPAR08-IN-SUB	4	●	●	.630	16	1/2	1/2	1/2	4.724	120	0	0	.295	7.5	.768	19.5	.787	20	25°	0	0.0	LRIS-4×5	LLR-25S			
	CTPAR10-IN-SUB	4	●	●	.630	16	5/8	5/8	5/8	4.724	120	0	0	.295	7.5	.768	19.5	.787	20	25°	0	0.0	LRIS-4×5	LLR-25S			
	CTPAR10GX-SUB	4	○	○	.630	16	.394	10	.394	10	.394	10	3.346	85	.079	2	.787	20	.768	19.5	.787	20	25°	0	0.0	LRIS-4×5	LLR-25S
	CTPAR12GX-SUB	4	○	○	.630	16	.472	12	.472	12	.472	12	3.346	85	0	0	.787	20	.768	19.5	.787	20	25°	0	0.0	LRIS-4×5	LLR-25S
	CTPAR12KX-SUB	4	○	○	.630	16	.472	12	.472	12	.472	12	4.724	120	0	0	.787	20	.768	19.5	.787	20	25°	0	0.0	LRIS-4×5	LLR-25S

* Would be changed by insert

CTPAL-SUB

Gage Insert	Item number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h		h_1		b		L_1		h_2		L_2		L_3		L_4		α	f		Clamp screw	Wrench
			L	R	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)							
 CTPA..FL..	CTPAL06-IN-SUB	5	●	●	.630	16	3/8	3/8	3/8	4.724	120	.079	2	.295	7.5	.768	19.5	.787	20	30°	.217	5.5	LRIS-4×5	LLR-25S			
	CTPAL08-IN-SUB	5	●	●	.630	16	1/2	1/2	1/2	4.724	120	0	0	.295	7.5	.768	19.5	.787	20	30°	.217	5.5	LRIS-4×5	LLR-25S			
	CTPAL10-IN-SUB	5	●	●	.630	16	5/8	5/8	5/8	4.724	120	0	0	.295	7.5	.768	19.5	.787	20	30°	.217	5.5	LRIS-4×5	LLR-25S			
	CTPAL10GX-SUB	5	○	○	.630	16	.394	10	.394	10	.394	10	3.346	85	.079	2	.787	20	.768	19.5	.787	20	30°	.217	5.5	LRIS-4×5	LLR-25S
	CTPAL12GX-SUB	5	○	○	.630	16	.472	12	.472	12	.472	12	3.346	85	0	0	.787	20	.768	19.5	.787	20	30°	.217	5.5	LRIS-4×5	LLR-25S
	CTPAL12KX-SUB	5	○	○	.630	16	.472	12	.472	12	.472	12	4.724	120	0	0	.787	20	.768	19.5	.787	20	30°	.217	5.5	LRIS-4×5	LLR-25S
	CTPAL16GX-SUB	5	○	○	.630	16	.630	16	.630	16	.630	16	3.346	85	0	0	1.102	28	.768	19.5	1.102	28	30°	.217	5.5	LRIS-4×5	LLR-25S

* Would be changed by insert

Cutting condition **➔S5**

Inserts (Right-hand) **➔S14**

Inserts (Left-hand) **➔S15**

● : Stock
● : Stock (Newly added)
■ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
Ⓜ : Mirror finish

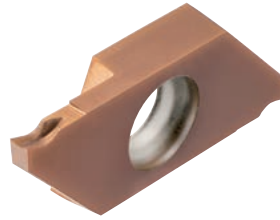
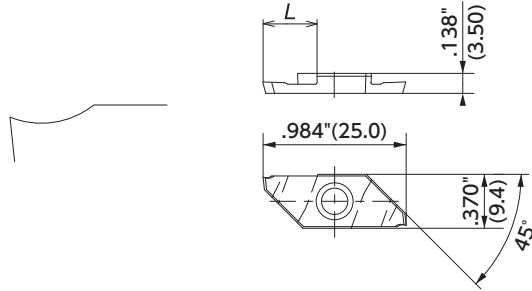
Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

CTPA Series Inserts (Right-Hand)

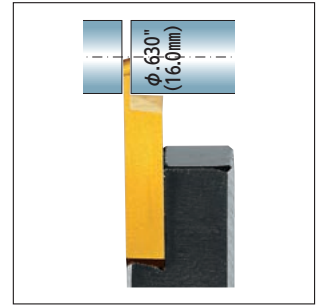
Two-sided insert

Max. Cut-off Dia. - ϕ .630"(16.0mm)

CTPA / CTPAX



CX-Chipbreaker



Right-Hand style shown

All angles shown are obtained when insert is set in the holder.

FR

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	r_{e1}		Coated Carbide						Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3			KM1	PD1
Figure-1 	CTPA07FR	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05						●		
	CTPA10FR	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05				●	●	●		
	CTPA10FRFT	4	No	.472	12.0	.039	1.0	.264	6.7	20°	.002	0.05				●				
Figure-2 Flat top 	CTPA15FR	1	Yes	.630	16.0	.059	1.5	.362	9.2	16°	.002	0.05			●	●	●	●		
	CTPA15FR-CX	2	Yes-CX	.630	16.0	.059	1.5	.362	9.2	16°	.002	0.05	●	●						
Figure-3 Flat top 	CTPA15FR-TH	1	Yes	.630	16.0	.059	1.5	.362	9.2	16°	.002	0.05	●							
	CTPA15FRFT	4	No	.630	16.0	.059	1.5	.362	9.2	20°	.002	0.05				●				
Figure-4 Flat top 	CTPA20FR	1	Yes	.630	16.0	.079	2.0	.362	9.2	16°	.002	0.05			●	●	●	●		
	CTPA20FR-TH	1	Yes	.630	16.0	.079	2.0	.362	9.2	16°	.002	0.05	●							
	CTPA20FRV	3	No	.630	16.0	.079	2.0	.362	9.2	20°	0.0	0.0					○	●		

FRN

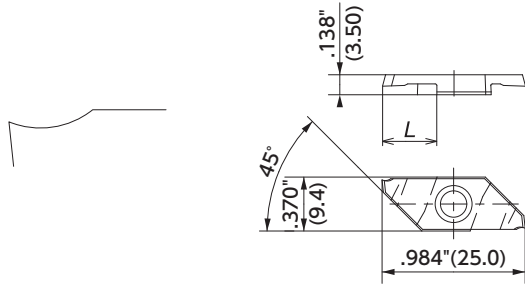
Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	r_{e1}		Coated Carbide						Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3			KM1	PD1
Figure-1 	CTPA07FRN	1	Yes	.315	8.0	.028	0.7	.177	4.5	0°	.002	0.05						●		
	CTPA10FRN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05				●		●		
	CTPA10FRS	3	No	.630	16.0	.039	1.0	.362	9.2	0°	.002	0.05				●				
Figure-2 	CTPA15FRN	1	Yes	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05			●	●	●	●		
	CTPA15FRN-CX	2	Yes-CX	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●	●						
Figure-3 Flat top 	CTPA15FRN-TH	1	Yes	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●							
	CTPA15FRS	3	No	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05				●				
Figure-4 PCD tipped 	CTPA20FRN	1	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05			●	●	●	●		
	CTPA20FRN-TH	1	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05	●							
	CTPA20FRS	3	No	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05				●		○		
CTPA20FRNV	3	No	.630	16.0	.079	2.0	.362	9.2	0°	0.0	0.0							●		
CTPA20FRN-P	4	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.004	0.1								○	
CTPA30FRN	1	Yes	.630	16.0	.118	3.0	.362	9.2	0°	.002	0.05				○					

CTPA Series Inserts (Left-Hand)

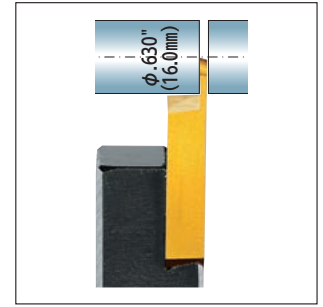
Two-sided insert

Max. Cut-off Dia. - ϕ .630" (16.0mm)

CTPA / CTPAX



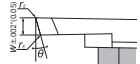
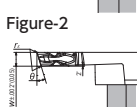
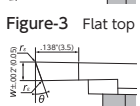
CX-Chipbreaker
(Right-hand shown)






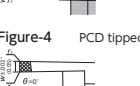
Left-Hand style shown

All angles shown are obtained when insert is set in the holder.

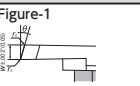
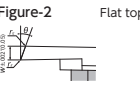
FLK

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide						Carbide	PCD			
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3			KM1	PD1	
Figure-1 	CTPA07FLK	1	Yes	.256	6.5	.028	0.7	.177	4.5	16°	.002	0.05											
	CTPA10FLK	1	Yes	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05											
	CTPA10FLKD	1	Yes	.630	16.0	.039	1.0	.362	9.2	16°	.002	0.05											
	CTPA10FLKFT	3	No	.472	12.0	.039	1.0	.311	7.9	16°	.0	0.0											
Figure-2 	CTPA15FLK	1	Yes	.571	14.5	.059	1.5	.362	9.2	16°	.002	0.05											
	CTPA15FLK-CX	2	Yes-CX	.571	14.5	.059	1.5	.362	9.2	16°	.002	0.05	●	●									
	CTPA15FLK-TH	1	Yes	.571	14.5	.059	1.5	.362	9.2	16°	.002	0.05	●	●									
Figure-3 Flat top 	CTPA15FLKFT	3	No	.630	16.0	.059	1.5	.394	10.0	16°	0.0	0.0											
	CTPA15FLKV ^M	3	No	.571	14.5	.059	1.5	.362	9.2	20°	0.0	0.0											
	CTPA20FLK	1	Yes	.571	14.5	.079	2.0	.362	9.2	16°	.002	0.05											
	CTPA20FLK-TH	1	Yes	.571	14.5	.079	2.0	.362	9.2	16°	.002	0.05	●	●									
	CTPA20FLKV ^M	3	No	.571	14.5	.079	2.0	.362	9.2	20°	0.0	0.0											

FLN

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide						Carbide	PCD			
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DM4	DT4	QM3	VM1	ZM3			KM1	PD1	
Figure-1 	CTPA10FLN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05											
	CTPA10FLND	1	Yes	.630	16.0	.039	1.0	.362	9.2	0°	.002	0.05											
	CTPA10FLS	3	No	.630	16.0	.039	1.0	.362	9.2	0°	.002	0.05											
Figure-2 	CTPA15FLN	1	Yes	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05											
	CTPA15FLN-CX	2	Yes-CX	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●	●									
Figure-3 Flat top 	CTPA15FLN-TH	1	Yes	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●	●									
	CTPA15FLS	3	No	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05											
Figure-4 PCD tipped 	CTPA20FLN	1	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05											
	CTPA20FLN-TH	1	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05	●	●									
	CTPA20FLS	3	No	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05											
	CTPA20FLNV ^M	3	No	.630	16.0	.079	2.0	.362	9.2	0°	0.0	0.0											
	CTPA20FLN-P	4	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.004	0.1											
	CTPA30FLN	1	Yes	.630	16.0	.118	3.0	.362	9.2	0°	.002	0.05											

FL

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide						Carbide	PCD			
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ST4	DT4	QM3	VM1	ZM3	KM1			PD1		
Figure-1 	CTPA07FL	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05											
	CTPA10FL	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05											
Figure-2 Flat top 	CTPA15FL	1	Yes	.630	16.0	.059	1.5	.362	9.2	16°	.002	0.05											
	CTPA20FL	1	Yes	.630	16.0	.079	2.0	.362	9.2	16°	.002	0.05											
	CTPA20FLV ^M	2	No	.630	16.0	.079	2.0	.362	9.2	20°	0.0	0.0											

Holders **→S12** Tool selection guide **→S4** Cutting Condition **→S5**

● : Stock
 ● : Stock (Newly added)
 ■ (R/L) : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● (R/L) : 1-2 week delivery (Right / Left-hand only)
 ● (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)
 ● : Coolant through

CTDP (Cut Duo) Series

Max. Cut-off Dia. - ϕ .787"(20.0mm), - ϕ 1.339"(34.0mm)

CTDP

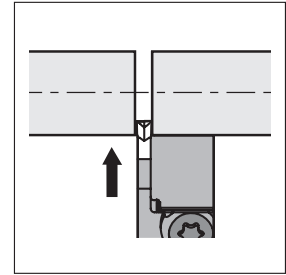
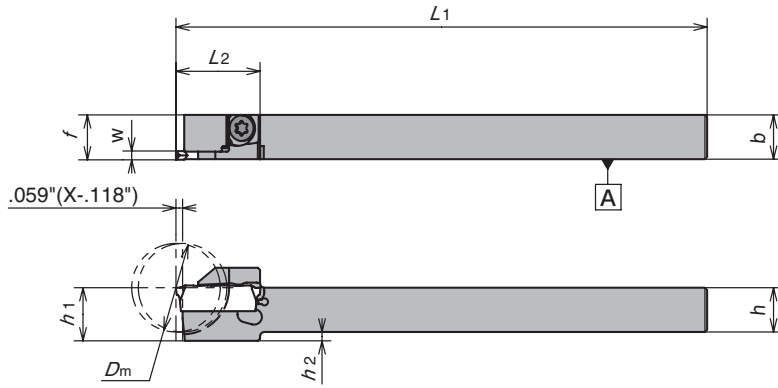


Figure-1

Right-Hand style shown

CTDP-OH2 (Coolant through)

CTDP $\frac{1}{2}$ " 10-IN, CTDP $\frac{1}{2}$ " 16

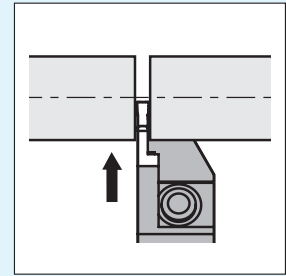
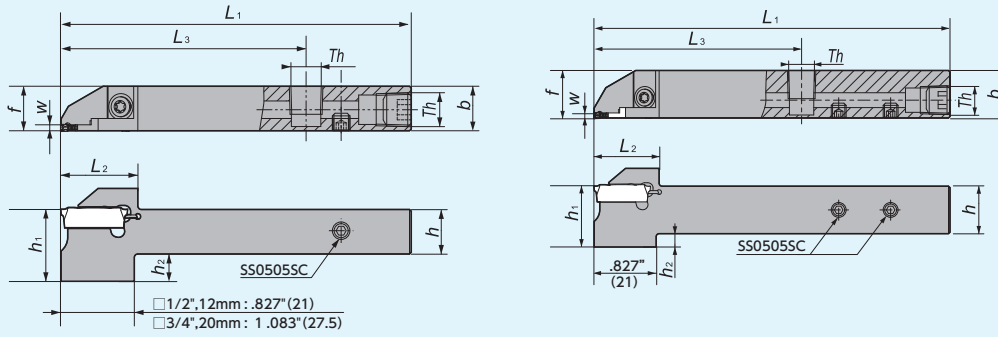


Figure-2

● Left-Hand holders are designed for Right-Hand machines

Th (Thread type)	
Inch size holder	: NPT1/8
Metric size holder	: Rc1/8(PT1/8)

Right-Hand style shown

CTDP-OH (Coolant through)

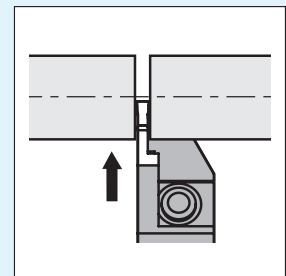
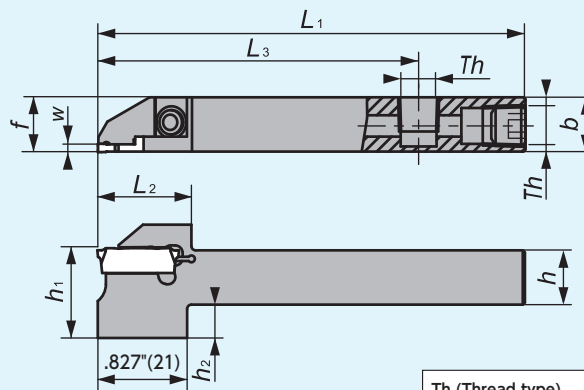


Figure-3

● Left-Hand holders are designed for Right-Hand machines

Th (Thread type)	
Inch size holder	: NPT1/8
Metric size holder	: Rc1/8(PT1/8)

Right-Hand style shown

CTDP Series - Toolholders


CTDP

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. D_m		w		h		b		h_1		L_1		h_2		L_2		L_3		Th	f		Clamp Screw	Wrench	
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)			
CTDP20	CTDP $\frac{1}{4}$ 06-IN-20D20	1	●	●	.787	20.0	.079	2.0	3/8		.394	10	3/8		4.729	120	.019	0.5	.748	19.0	—	—			400	10.150	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 08-IN-20D25	1	●	●	.984	25.0	.079	2.0	1/2		1/2		1/2		4.729	120	0	0	.866	22.0	—	—			506	12.850	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 10-IN-20D32	1	●	●	1.260	32.0	.079	2.0	5/8		5/8		5/8		4.729	120	0	0	1.083	27.5	—	—			631	16.025	LRIS-5 × 10	LLR-285
	CTDP $\frac{1}{4}$ 12-IN-20D32	1	●	●	1.260	32.0	.079	2.0	3/4		3/4		3/4		4.729	120	0	0	1.083	27.5	—	—			756	19.200	LRIS-5 × 10	LLR-285
	CTDP $\frac{1}{4}$ 10-20D20	1	○	○	.787	20.0	.079	2.0	.394	10	.394	10	.394	10	4.724	120	.079	2	.748	19.0	—	—			400	10.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 12-20D20	1	○	○	.787	20.0	.079	2.0	.472	12	.472	12	.472	12	4.724	120	0	0	.748	19.0	—	—			478	12.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 12-20D25	1	●	○	1.000	25.4	.079	2.0	.472	12	.472	12	.472	12	4.724	120	0	0	.866	22.0	—	—			478	12.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 16-20D25	1	●	○	1.000	25.4	.079	2.0	.630	16	.630	16	.630	16	4.724	120	0	0	.866	22.0	—	—			636	16.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 16-20D32A	1	○	○	1.260	32.0	.079	2.0	.630	16	.630	16	.630	16	4.724	120	0	0	1.083	27.5	—	—			636	16.15	LRIS5 × 10	LLR-285
	CTDP $\frac{1}{4}$ 2012-20D32A	1	○	○	1.260	32.0	.079	2.0	.787	20	.472	12	.787	20	4.724	120	0	0	1.161	29.5	—	—			478	12.15	LRIS5 × 10	LLR-285
	CTDP $\frac{1}{4}$ 20-20D32A	1	○	○	1.260	32.0	.079	2.0	.787	20	.787	20	.787	20	4.724	120	0	0	1.161	29.5	—	—			793	20.15	LRIS5 × 10	LLR-285
	CTDP $\frac{1}{4}$ 08-IN-20D25-OH	3	■	■	1.000	25.4	.079	2.0	1/2		1/2		.807	20.5	3.937	100	.307	7.8	.866	22.0	2.953	75	NPT1/8		506	12.85	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 08-IN-20D25-OH2	2	●	●	1.000	25.4	.079	2.0	1/2		1/2		.807	20.5	3.937	100	.307	7.8	.866	22.0	2.756	70	NPT1/8		506	12.85	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 10-IN-20D25-OH	3	●	●	1.000	25.4	.079	2.0	5/8		5/8		.807	20.5	3.937	100	.182	4.625	.866	22.0	2.953	75	NPT1/8		631	16.025	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 10-IN-20D25-OH2	2	●	●	1.000	25.4	.079	2.0	5/8		5/8		.807	20.5	4.729	120	.182	4.625	.866	22.0	2.756	70	NPT1/8		631	16.025	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 12-20D25-OH	3	■	■	1.000	25.4	.079	2.0	.472	12	.472	12	.807	20.5	3.937	100	.335	8.5	.866	22.0	2.953	75	Rc1/8(PT1/8)		478	12.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 12-20D25-OH2	2	●	●	1.000	25.4	.079	2.0	.472	12	.472	12	.807	20.5	3.937	100	.335	8.5	.866	22.0	2.756	70	Rc1/8(PT1/8)		478	12.15	LRIS-4 × 12	LLR-255
	CTDP $\frac{1}{4}$ 16-20D25-OH	3	●	●	1.000	25.4	.079	2.0	.630	16	.630	16	.807	20.5	3.937	100	.177	4.5	.866	22.0	2.953	75	Rc1/8(PT1/8)		636	16.15	LRIS-4 × 12	LLR-255
CTDP $\frac{1}{4}$ 16-20D25-OH2	2	●	●	1.000	25.4	.079	2.0	.630	16	.630	16	.807	20.5	4.729	120	.177	4.5	.866	22.0	2.756	70	Rc1/8(PT1/8)		636	16.15	LRIS-4 × 12	LLR-255	
CTDP25	CTDP $\frac{1}{4}$ 16-25D34A	1	●	○	1.339	34.0	.098	2.5	.630	16	.630	16	.630	16	4.724	120	0	0	1.122	28.5	—	—			636	16.15	CS0516LSH	LW-3
	CTDP $\frac{1}{4}$ 2012-25D34A	1	○	○	1.339	34.0	.098	2.5	.787	20	.472	12	.787	20	4.724	120	0	0	1.161	29.5	—	—			478	12.15	CS0516LSH	LW-3
	CTDP $\frac{1}{4}$ 20-25D34A	1	○	○	1.339	34.0	.098	2.5	.787	20	.787	20	.787	20	4.724	120	0	0	1.161	29.5	—	—			793	20.15	CS0516LSH	LW-3
	CTDP $\frac{1}{4}$ 12-IN-25D32-OH2	2	●	●	1.260	32.0	.098	2.5	3/4		3/4		.945	24	4.729	120	.195	4.95	1.122	28.5	2.953	75	NPT1/8		756	19.2	CS0516LSH	LW-3
	CTDP $\frac{1}{4}$ 20-IN-25D34A-OH2	2	●	●	1.260	32.0	.098	2.5	.787	20	.787	20	.945	24	4.729	120	.157	4.0	1.122	28.5	2.953	75	Rc1/8(PT1/8)		793	20.15	CS0516LSH	LW-3

Cut-off

CTDP Series - Inserts

CTDP

Shape	Item Number	w		L		θ	r_e		Coated Carbide		
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	DM4	QM3	TM4
 <p>Two-sided</p>	CTDP20N	.079	2.0	.752	19.1	0°	.002	0.05	●	●	○
	CTDP20N02	.079	2.0	.752	19.1	0°	.008	0.2	●	●	○
	CTDP20R6	.079	2.0	.752	19.1	6°	.002	0.05	●	●	○
	CTDP20R15	.079	2.0	.752	19.1	15°	.002	0.05	●	●	○
	CTDP25N	.098	2.5	.835	21.2	0°	.002	0.05	●	●	○
	CTDP25N02	.098	2.5	.835	21.2	0°	.008	0.2	●	●	○
	CTDP25R6	.098	2.5	.835	21.2	6°	.002	0.05	●	●	○
	CTDP25R15	.098	2.5	.835	21.2	15°	.002	0.05	●	●	○

Cutting Condition **→S5**

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ □ □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R)(L) : 1-2 week delivery (Right / Left-hand only)
 (R)(L) : 1-2 week delivery (Right / Left-hand only, Newly added)

CTPW Series - Toolholders

Max. Cut-off Dia. - ϕ .787"(20.0mm)

CTPW

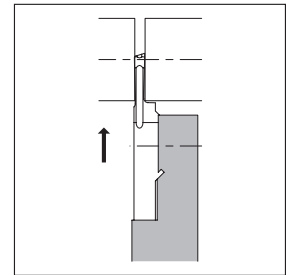
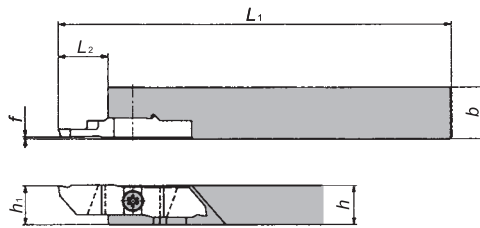


Figure-1

Right-Hand style shown

CTPW

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD		h		h_1		b		L_1		h_2		L_2		L_3		Th	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
	CTPW $\frac{1}{4}$ 08-IN	1	●	●	.787	20	1/2	.498	.630	16	4.724	120	—	—	.591	15	—	—	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S
	CTPW $\frac{1}{4}$ 10-IN	1	●	●	.787	20	5/8	.623	.630	16	4.724	120	—	—	.591	15	—	—	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S
	CTPW $\frac{1}{4}$ 10A	1	○	○	.787	20	.394	10	.392	9.95	.630	16	4.724	120	—	—	.591	15	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S
	CTPW $\frac{1}{4}$ 10	1	○	○	.787	20	.394	10	.392	9.95	.472	12	4.724	120	—	—	.591	15	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S
	CTPW $\frac{1}{4}$ 12A	1	○	○	.787	20	.472	12	.470	11.95	.630	16	4.724	120	—	—	.591	15	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S
	CTPW $\frac{1}{4}$ 12	1	○	○	.787	20	.472	12	.470	11.95	.472	12	4.724	120	—	—	.591	15	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S
	CTPW $\frac{1}{4}$ 16	1	○	○	.787	20	.630	16	.628	15.95	.630	16	4.724	120	—	—	.591	15	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S
	CTPW $\frac{1}{4}$ 20	1	○	○	.787	20	.787	20	.785	19.95	.787	20	4.724	120	—	—	.591	15	—	—	—	0.0	0.0	LRIS-4x10	LLR-25S

Cut-off

CTPW Series Inserts

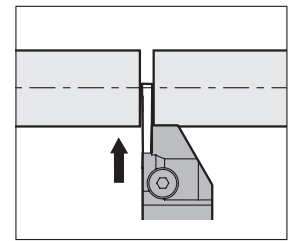
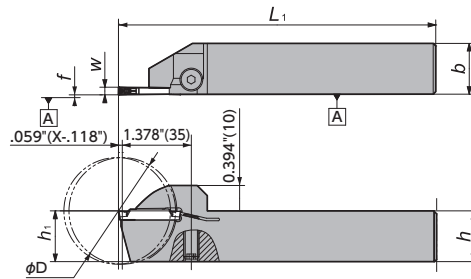
Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		$r_{\epsilon 2}$		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	(Inch)	(mm)	ZM3	
			R	L	R	L	R	L		R	L				
	CTPW25F $\frac{1}{4}$ L	Yes	.787	20.0	.098	2.5	.472	12	17°	.002	0.05	.008	0.20	●	○
	CTPW25F $\frac{1}{4}$ K	Yes	.787	20.0	.098	2.5	.472	12	17°	.002	0.05	.008	0.20	○	●
	CTPW25F $\frac{1}{4}$ LN	Yes	.787	20.0	.098	2.5	.472	12	0°	.002	0.05	.002	0.05	●	●
	CTPW25F $\frac{1}{4}$ P $\text{\textcircled{M}}$	No	.787	20.0	.098	2.5	.472	12	17°	.002	0.05	.008	0.20	○	○
	CTPW25F $\frac{1}{4}$ NV $\text{\textcircled{M}}$	No	.787	20.0	.098	2.5	.472	12	0°	0.0	0.0	0.00	0.00	●	●

Cutting condition \rightarrow S5

CTWP Series

Max. Cut-off Dia. - $\phi 1.653$ "(42.0mm)

CTWP



Right-Hand style shown

CTWP Series - Toolholders

CTWP

Gage Insert	Item Number	Stock		Max. Cut-off Dia. D_m		w		h		b		h_1		L_1		f		Clamp Screw	Wrench
		R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
GWPFM300	CTWP%12-IN-3D42	●	●	1.653	42.0	.118	3.0	3/4	3/4	3/4	5.0	127	.760	19.30	CS0619LSHW	LW-3			
	CTWP%16-IN-3D42	●	●	1.653	42.0	.118	3.0	1	1	1	6.0	152.4	1.010	25.65	CS0623LSHW	LW-4			
	CTWP%2012K-3D42	○	○	1.653	42.0	.118	3.0	.787	20	.472	12	.787	20	4.921	125	.482	12.25	CS0623LSHW	LW-5
	CTWP%2020K-3D42	●	●	1.653	42.0	.118	3.0	.787	20	.787	20	.787	20	4.921	125	.797	20.25	CS0623LSHW	LW-6
	CTWP%2525M-3D42	●	●	1.653	42.0	.118	3.0	.984	25	.984	25	.984	25	5.906	150	.994	25.25	CS0623LSHW	LW-7

CTWP Series - Inserts

CTWP

Shape	Item Number	w		r_e		M		L		Coated Carbide DM4
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	
	GWPFM300N02-GT	.118	3.0	.008	0.2	.087	2.2	.965	24.5	●
	GWPFM300N04-GT	.118	3.0	.016	0.4	.087	2.2	.965	24.5	●

Feed IPR	CUT MAX		Competitor A (3D molded low cutting force type chipbreaker)		Competitor B (3D molded rigid type chipbreaker)	
	Chip	Surface finish	Chip	Surface finish	Chip	Surface finish
	.0012					
.0020						
.0039						
	Excellent machined surface finish		In high feed rate area, rough surface finish		In low feed rate area, rough surface finish	

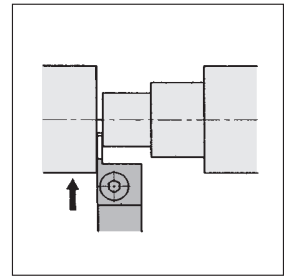
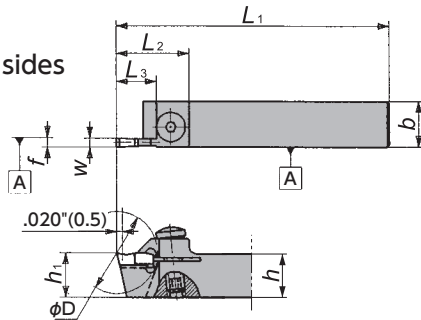
Cutting condition : 330SFM WET Material : 1045 ($\phi 1.653$)
 Holder : CTWPR2020K-3D42 Insert : GWPFM300N02-GT DM4

CTV Series

Max. Cut-off Dia. - ϕ .787"(20.0mm)

CTV-K2

Screw Accessible from both sides



Right-Hand style shown

Figure-1

CTVN-K2

Screw Accessible from both sides

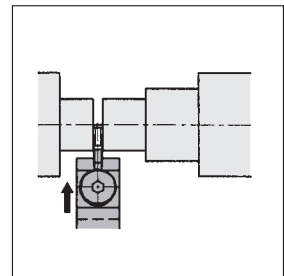
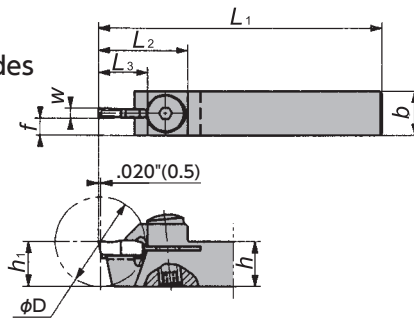


Figure-2

CTV Series - Toolholders

CTV

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕ D	w		h		b		h ₁		L ₁	L ₂	L ₃	f		Clamp Screw	Wrench
			R	L		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)			(mm)
	CTV $\frac{1}{2}$ 10K2	1	<input type="radio"/>	<input type="radio"/>	.787 20.0	.087(.098)	2.2(2.5)	.394 10	.394 10	.394 10	.394 10	.394 10	4.724 120	.787 20.0	.433 11	0.0 0.0	AOS-5 x 16	LW-2.5S		
	CTV $\frac{1}{2}$ 12GX2	1	<input type="radio"/>	<input type="radio"/>	.787 20.0	.087(.098)	2.2(2.5)	.472 12	.472 12	.472 12	.472 12	.472 12	3.346 85	.787 20.0	.433 11	0.0 0.0	AOS-5 x 16	LW-2.5S		
	CTV $\frac{1}{2}$ 12K2	1	<input type="radio"/>	<input type="radio"/>	.787 20.0	.087(.098)	2.2(2.5)	.472 12	.472 12	.472 12	.472 12	.472 12	4.724 120	.787 20.0	.433 11	0.0 0.0	AOS-5 x 16	LW-2.5S		
	CTVN10K2	2	<input type="radio"/>	<input type="radio"/>	.787 20.0	.087(.098)	2.2(2.5)	.394 10	.394 10	.394 10	.394 10	.394 10	4.724 120	.768 19.5	.433 11	.154 3.9	AOS-5 x 16	LW-2.5S		
	CTVN12K2	2	<input type="radio"/>	<input type="radio"/>	.787 20.0	.087(.098)	2.2(2.5)	.472 12	.472 12	.472 12	.472 12	.472 12	4.724 120	.768 19.5	.433 11	.193 4.9	AOS-5 x 16	LW-2.5S		

Note: f shows when takes CTV22.. insert

CTV Series - Inserts

CTV-S

Shape	Item Number	w		L		θ	r_e		Coated Carbide
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	ZM3
<p>Single-sided</p>	CTV22N05S	.087	2.2	.394	10	0°	.002	0.05	<input type="radio"/>
	CTV22N10S	.087	2.2	.394	10	0°	.004	0.10	<input type="radio"/>
	CTV25N05S	.098	2.5	.394	10	0°	.002	0.05	<input type="radio"/>
	CTV25N10S	.098	2.5	.394	10	0°	.004	0.10	<input type="radio"/>
	CTV22R05S	.087	2.2	.394	10	17°	.002	0.05	<input type="radio"/>
	CTV22R10S	.087	2.2	.394	10	17°	.004	0.10	<input type="radio"/>
	CTV25R05S	.098	2.5	.394	10	17°	.002	0.05	<input type="radio"/>
	CTV25R10S	.098	2.5	.394	10	17°	.004	0.10	<input type="radio"/>
	CTV22L05S	.087	2.2	.394	10	17°	.002	0.05	<input type="radio"/>
	CTV22L10S	.087	2.2	.394	10	17°	.004	0.10	<input type="radio"/>
	CTV25L05S	.098	2.5	.394	10	17°	.002	0.05	<input type="radio"/>
	CTV25L10S	.098	2.5	.394	10	17°	.004	0.10	<input type="radio"/>

Cutting condition **→S5**

CTV Series

Max. Cut-off Dia. - ϕ 1.772" (45.0mm)

CTV (-S)

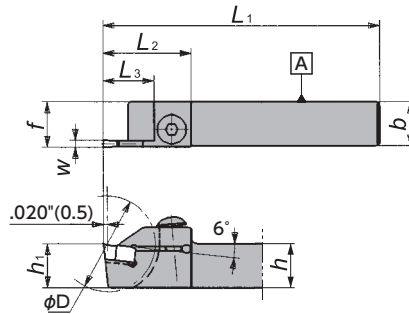
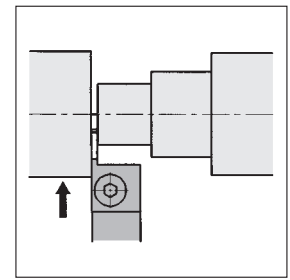


Figure-1



Right-Hand style shown

CTV-X

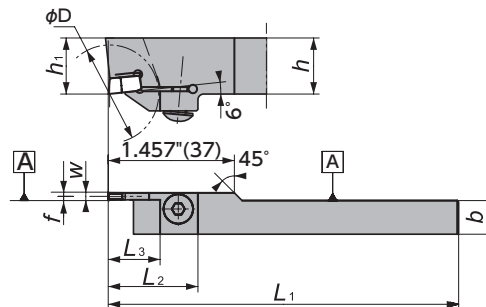
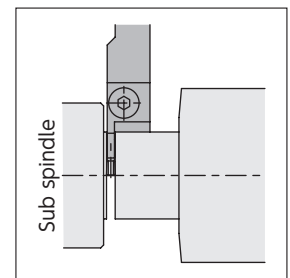


Figure-2



Left-Hand style shown

CTV-M (B)

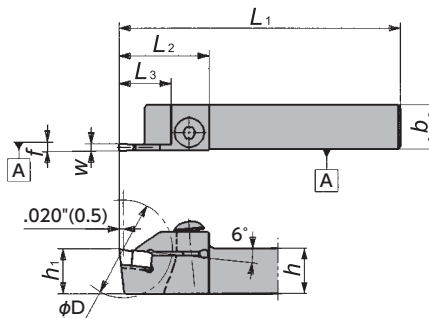
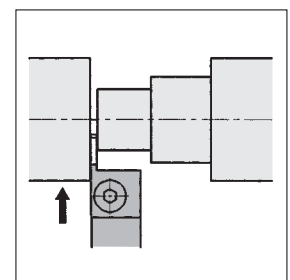


Figure-3



Right-Hand style shown

CTV Series - Toolholders



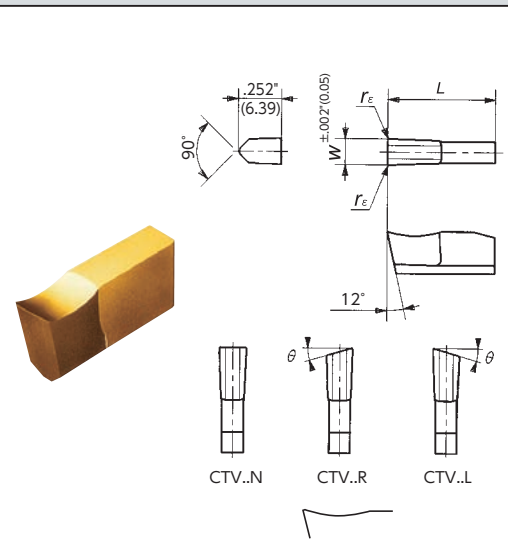
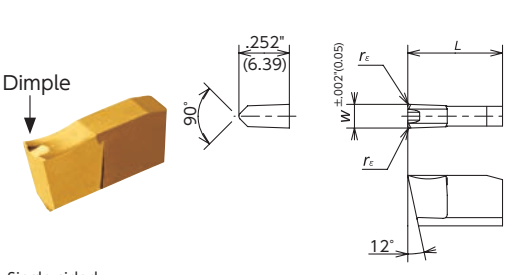
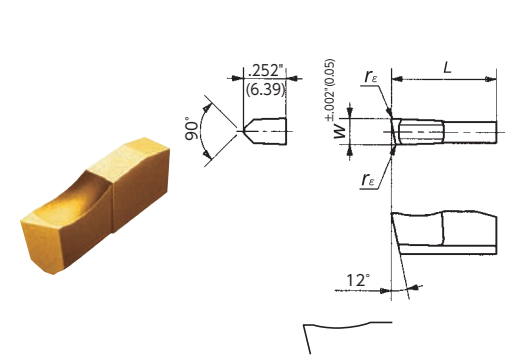
CTV

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. D_m		w		h		b		h_1		L_1		L_2		L_3		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CTV25	CTV%08B	1	●		.900	22.9	.098	2.5	1/2	1/2	1/2	4.5	114	.945	24	.480	12.2	.520	13.2	BS0620	LW-4			
	CTV%16K25	1	●	●	1.378	35.0	.098	2.5	.630	16	.630	16	.630	16	4.921	125	1.260	32	.728	18.5	.650	16.5	BS0620	LW-4
	CTV%16K25S	1	○		.906	23.0	.098	2.5	.630	16	.630	16	.630	16	4.921	125	.945	24	.480	12.2	.650	16.5	BS0620	LW-4
	CTV%16-25M	3	○		1.102	28.0	.098	2.5	.630	16	.630	16	.630	16	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%20K25	1	●	○	1.378	35.0	.098	2.5	.787	20	.787	20	.787	20	4.921	125	1.260	32	.728	18.5	.807	20.5	BS0620	LW-4
	CTV%20K25S	1	○		.906	23.0	.098	2.5	.787	20	.787	20	.787	20	4.921	125	.945	24	.480	12.2	.807	20.5	BS0620	LW-4
	CTV%20-25M	3	○		1.102	28.0	.098	2.5	.787	20	.787	20	.787	20	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%1913L25	1	○	○	1.378	35.0	.098	2.5	.748	19	.512	13	.748	19	5.512	140	1.260	32	.728	18.5	.512	13.0	BS0620	LW-4
CTV30	CTV%16K30	1	○	○	1.378	35.0	.118	3.0	.630	16	.630	16	.630	16	4.921	125	1.260	32	.728	18.5	.650	16.5	BS0620	LW-4
	CTV%16K30S	1	○		.906	23.0	.118	3.0	.630	16	.630	16	.630	16	4.921	125	.945	24	.480	12.2	.650	16.5	BS0620	LW-4
	CTV%16-30M	3	○		1.102	28.0	.118	3.0	.630	16	.630	16	.630	16	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%20K30	1	○	○	1.378	35.0	.118	3.0	.787	20	.787	20	.787	20	4.921	125	1.260	32	.728	18.5	.807	20.5	BS0620	LW-4
	CTV%20K30S	1	○		.906	23.0	.118	3.0	.787	20	.787	20	.787	20	4.921	125	.945	24	.480	12.2	.807	20.5	BS0620	LW-4
	CTV%20-30M	3	○		1.102	28.0	.118	3.0	.787	20	.787	20	.787	20	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%25-30B	3	○	○	1.772	45.0	.118	3.0	.984	25	.984	25	.984	25	5.906	150	1.358	34.5	.925	23.5	.020	0.5	BS0625	LW-4
	CTV%1913L30	1	○	○	1.378	35.0	.118	3.0	.748	19	.512	13	.748	19	5.512	140	1.260	32	.728	18.5	.512	13.0	BS0620	LW-4
CTV%2012K30X-1	2	○		1.378	35.0	.118	3.0	.787	20	.472	12	.787	20	4.921	125	1.260	32	.728	18.5	.118	3.0	BS0620	LW-4	

● : Stock
 ● : Stock (Newly added)
 ■ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R)(L) : 1-2 week delivery (Right / Left-hand only)
 (R)(L) : 1-2 week delivery (Right / Left-hand only, Newly added)

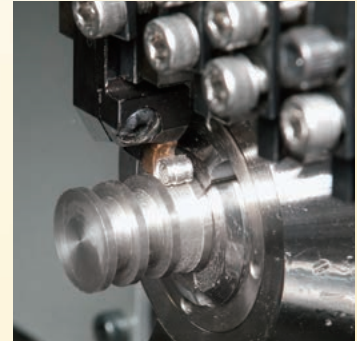
CTV Series - Inserts

CTV

Shape	Item Number	W		L		θ	r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	ZM3
 <p>Single-sided</p>	CTV25N	.098	2.5	.472	12	0°	.008	0.20		○
	CTV30N	.118	3.0	.472	12	0°	.008	0.20	○	○
	CTV25R	.098	2.5	.472	12	8°	.008	0.20		●
	CTV30R	.118	3.0	.472	12	8°	.008	0.20		○
	CTV30L	.118	3.0	.472	12	8°	.008	0.20		○
 <p>Single-sided</p>	CTV30N038	.118	3.0	.472	12	0°	.008	0.20		○
 <p>Single-sided</p>	CTV25R00A	.098	2.5	.472	12	8°	.002 MAX.	0.05 max.		●
	CTV30R00A	.118	3.0	.472	12	8°	.002 MAX.	0.05 max.		○
	CTV25R00B	.098	2.5	.472	12	17°	.002 MAX.	0.05 max.		●
	CTV30R00B	.118	3.0	.472	12	17°	.002 MAX.	0.05 max.		○

Cutting condition → S5

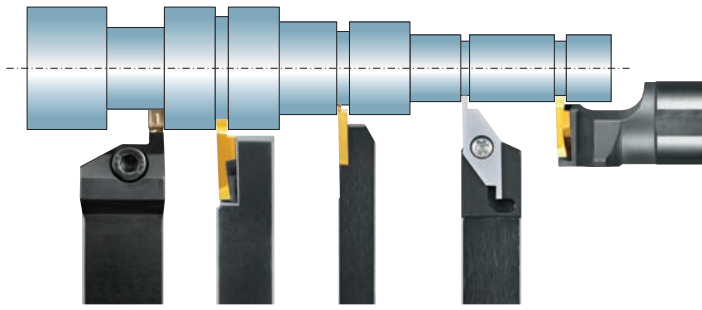
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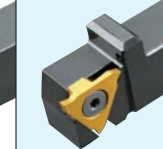
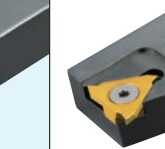
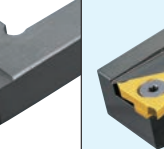
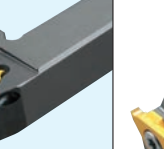

Grooving / Side Turning


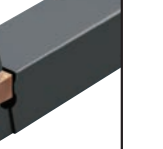


■ Grooving Tools	T2
■ Recommended Cutting Condition ...	T4
■ General Information	T5
■ Tool List	T6
● CSV Series	T6
● CTPS Series	T8
● GTW Series (GROOVE DUO)	T9
● GTM.32 Series.....	T10
● TWG Series	T16
● GTM.43 Series.....	T17
● SATURN DUO Series (Face grooving)	T18
● GTPA Series	T22

NTK Grooving / Side Turning Tools - Product Lines

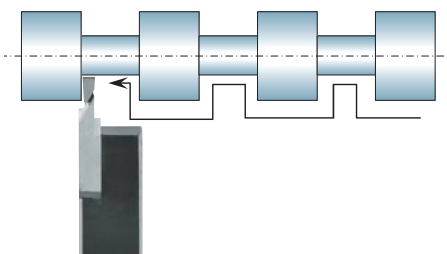




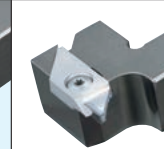
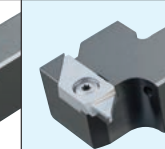
Insert	CSVG →T7		GTPS →T8
	CSV	DS-CSV	CTPS
Holder	 →T6	 →T6	 →T8
Blade width	.010" - .059" (0.25 - 1.50mm)		.030" - .079" (0.75 - 2.0mm)
Depth of cut	~.102" (~2.59mm)		~.098" (~2.50mm)

Insert	GTMH32 / GTMX32 / GTM32 / TMG32 →T12					
	GTT	GTT-OH2/OH	Y-GTT	Y-GTT-OH2/OH	DS-GTT	CH-GTT
Holder	 →T10	 →T10 Coolant through	 →T11 Y-axis	 →T11 Y-axis w/ Coolant through	 →T11	 →T10
Blade width	.012" - .118" (0.3 - 3.0mm)					
Depth of cut	~.106" (~2.69mm)					

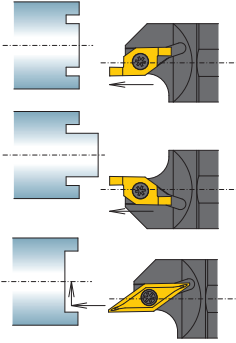
Insert	GWP →T9	GTM43 / GTMA43 / GTMT43 →T17		TWG →T16
	GTWP	NGTN	NGTB	TWG
Holder	 →T9	 →T17	 →T17	 →T16
Blade width	.118" - .236" (3.0 - 5.9mm)	.039" - .216" (1.0 - 5.49mm)		.079" - .118" (2.0 - 3.0mm)
Depth of cut	~.354" (~9.0mm)	.177" (4.50mm)		~.118" (~3.0mm)

■ Multifunctional Grooving for non-ferrous material



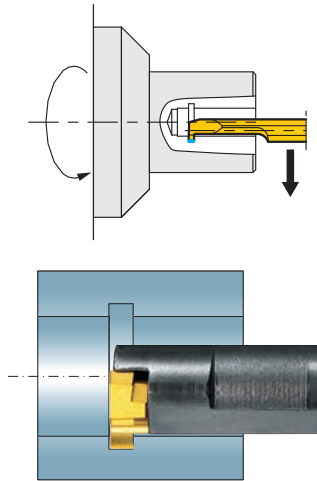
Insert	GTPA →T22			
	GTPA	GTPA-OH	Y-GTPA	Y-GTPA-OH
Holder	 →T22	 →T22 Coolant through	 →T22 Y-axis	 →T22 Y-axis w/ Coolant through
Blade width	.079" - .098" (2.0 - 2.50mm)			
Depth of cut	~.236" (~6.0mm)			

■ Face Grooving



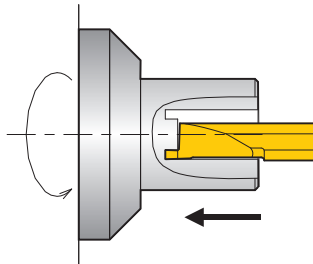
Insert	FGV →T21	FBV →T21	
Holder	FGV →T20	DS-FGV →T20	CH-FGV →T20
Blade width	.039" - .079" (1.0mm - 2.0mm)		
Depth of cut	~.118" (~3.0mm)	FGV: ~.118" (~3.0mm) FBV: ~.157" (~4.0mm)	

■ ID Grooving



Insert	SBG →V18	GTG →V19
Holder	NBH →V14	S-BG / BG →V19
Blade width	.020" - .079" (0.5 - 2.0mm)	.020" - .079" (0.5 - 2.0mm)
Depth of cut	~.079" (~2.0mm)	~.118" (~3.0mm)

■ ID Face Grooving



Insert	SFG →V18
Holder	NBH →V14
Blade width	.039" - .118" (1.0 - 3.0mm)
Depth of cut	~.110" (~2.79mm)

Recommended Cutting Conditions

Grooving

CSV / GTG / GTMH / GTMT / GTMX / SBG

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4			ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4 / QM3			QM3 / VM1		QM3	TM4 / DM4 / DT4	
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	150 300 500		
Feed Rate (IPR) A. Grooving B. Side turning*	Width .010-.020	A. .0002 - .0012 B. .0001 - .0002							
	.020-.040	A. .0008 - .0024 B. .0002 - .0004							A. .0008 - .0028 B. .0002 - .0004
	.040-.080	A. .0012 - .0028 B. .0008 - .0020							A. .0012 - .0031 B. .0012 - .0024
	> .080	A. .0012 - .0079 B. .0012 - .0024							

*When side turning, Max. DOC is under .0079". Under .016" width side turning impossible

GVW / Groove Duo

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	QM3							
	2nd choice	QM3							
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	150 300 500		
Feed Rate (IPR) A. Grooving B. Side turning*	Width .118-.157	A. .0020 - .0059							
	.157-.197	A. .0039 - .0079						A. .0039 - .0098 B. .0059 - .0118	
	> .197	A. .0059 - .0138							

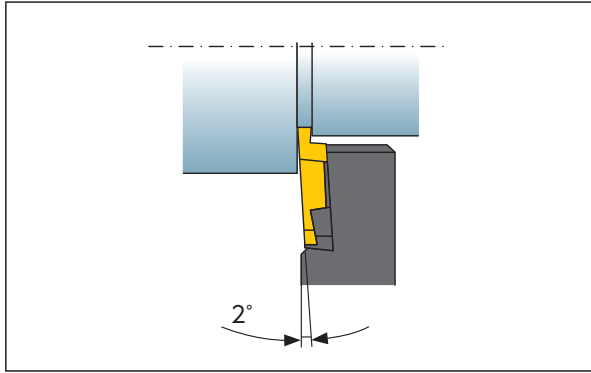
*Max DOC is 80% of width

GTPA

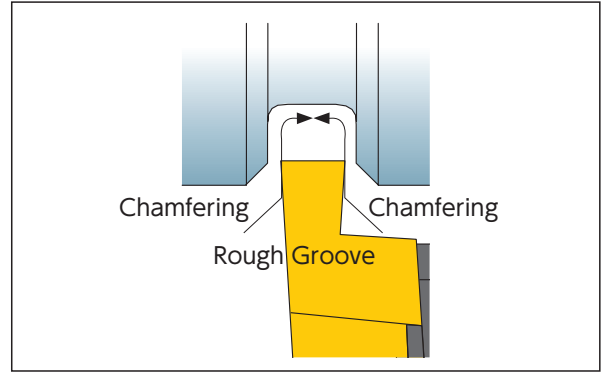
Work Material		Aluminum Alloy
Common Name		ASTM 5056 ASTM 6061
Grade	1st choice	PD1
	2nd choice	KM1
Cutting Speed (SFM)		PD1 330 650 1000 KM1 160 330 650
Feed Rate (IPR) A. Grooving B. Side turning		A. .0020 - .0079 B. .0039 - .0079

OD Grooving

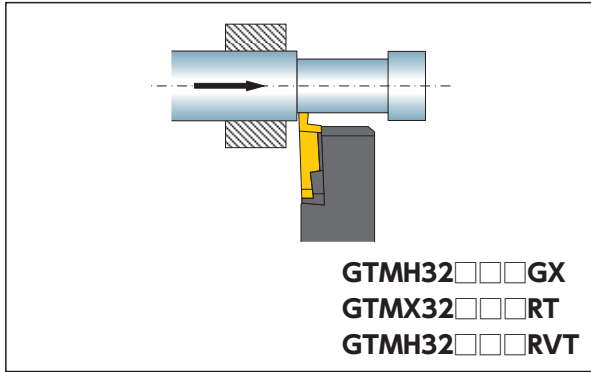
NTK GTMT / GTMH series can be used for uneven diameter grooving thanks to the 2 degree slanted insert mounting on the toolholder



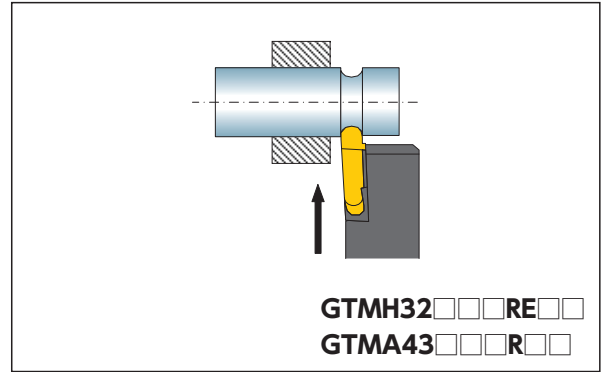
Chamfering and radius machining can be done after the rough grooving process at the center of the groove



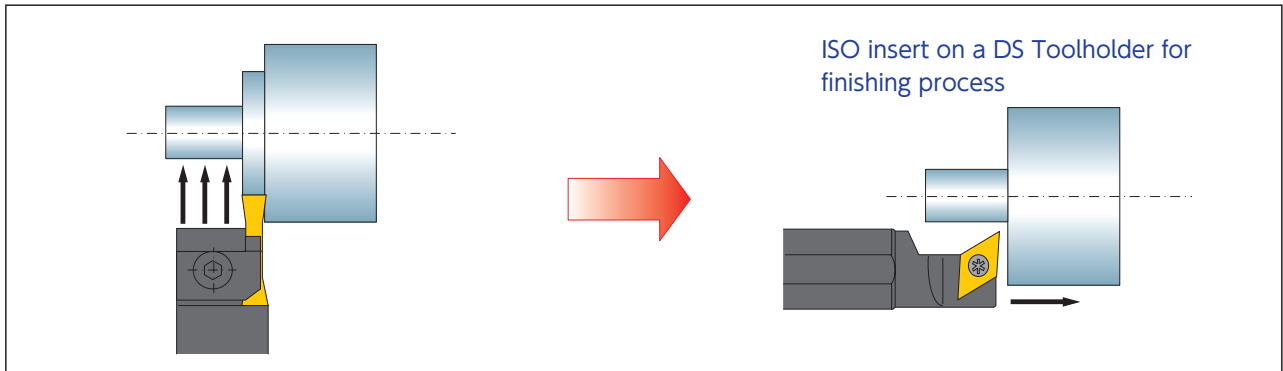
Side Turning



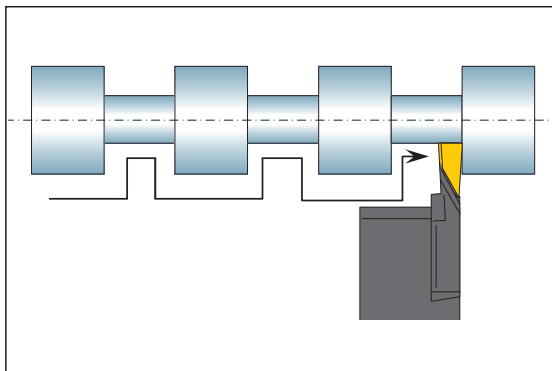
Full Radius



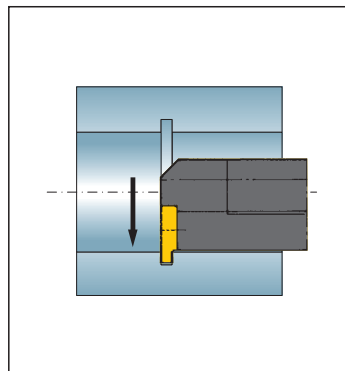
Rough Plunging for OD Turning



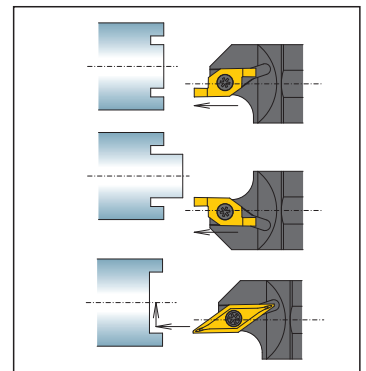
Spool Grooving



ID Grooving



Face Grooving



CSV Series

Best for up to .200" diameter material

CSV-NC

For Gang-style machine

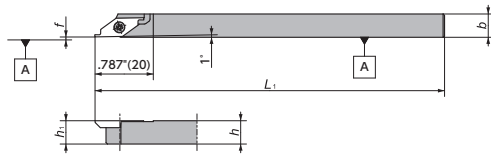


Figure-1

Right-Hand style shown

CSV

For Cam-style machine

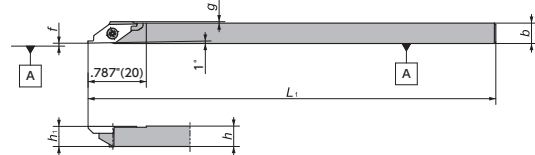


Figure-2

Right-Hand style shown

DS-CSVL

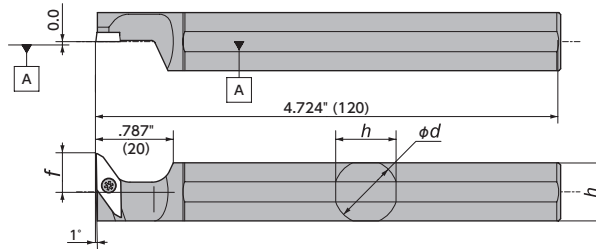



Figure-3


Left-Hand style shown
Takes Right-hand insert

CSV Series - Toolholders

CSV^R/_L / CSV^R/_L-NC

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV ^R / _L 06-IN-NC	1	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08-IN-NC	1	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12NC	1	●	●	.472	12	.472	12	.472	12	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08	2	●	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10	2	●	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV ^R / _L 12	2	●	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	3	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

CSV Series - Inserts

■ CSVG - Grooving **Mirror finish**

Shape	Item Number	Chip-breaker	Groove Width <i>W</i>		Max Depth of Cut		<i>L</i>		<i>r_ε</i>		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	
											R	L
<p>Thickness: .094"(2.38)</p> <p>1/4" (6.35)</p> <p>W +.001" (0.03)</p> <p>0.0</p> <p>L</p> <p>Right-Hand style shown</p>	CSVG11F ^{R/L} V025 M	No	.010	0.25	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^{R/L} V030 M	No	.012	0.30	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^{R/L} V035 M	No	.014	0.35	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^{R/L} V040 M	No	.016	0.40	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^{R/L} V045 M	No	.018	0.45	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^{R/L} V050 M	No	.020	0.50	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^{R/L} V055 M	No	.022	0.55	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^{R/L} V060 M	No	.024	0.60	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^{R/L} V065 M	No	.026	0.65	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^{R/L} V070 M	No	.028	0.70	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^{R/L} V075 M	No	.030	0.75	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F ^{R/L} V080 M	No	.031	0.80	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^{R/L} V085 M	No	.033	0.85	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^{R/L} V090 M	No	.035	0.90	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^{R/L} V095 M	No	.037	0.95	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F ^{R/L} V100 M	No	.039	1.00	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^{R/L} V110 M	No	.043	1.10	.102	2.60	.102	2.60	0.0	0.0	●	
	CSVG11F ^{R/L} V120 M	No	.047	1.20	.102	2.60	.102	2.60	0.0	0.0	●	○
CSVG11F ^{R/L} V130 M	No	.051	1.30	.102	2.60	.102	2.60	0.0	0.0	●		
CSVG11F ^{R/L} V140 M	No	.055	1.40	.102	2.60	.102	2.60	0.0	0.0	●		
CSVG11F ^{R/L} V150 M	No	.059	1.50	.102	2.60	.102	2.60	0.0	0.0	●		

Grooving / Side-Turning

CSV series **→O51**

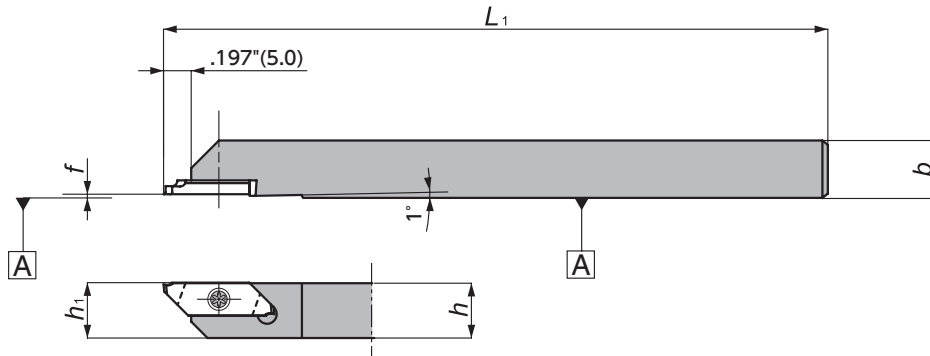
Cutting condition **→T4**

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R/L) : 1-2 week delivery (Right / Left-hand only)
 (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

CTPS Series

CTPS


For Cam-style machine



Right-Hand style shown

CTPS - Toolholders

CTPS

Gage Insert	Item Number	Figure	Stock		Groove Width Range w		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 GTPS	CTPS $\frac{1}{8}$ 06-IN	1	●		.030-.079	0.75-2.00	3/8		3/8		3/8		4.724	120	0	0.0	LRIS-2.5 x 7	CLR-15S
	CTPS $\frac{1}{8}$ 08-IN	1	●		.030-.079	0.75-2.00	1/2		1/2		1/2		4.724	120	0	0.0	LRIS-2.5 x 7	CLR-15S
	CTPS $\frac{1}{2}$ 10	1	○		.030-.079	0.75-2.00	.394	10	.394	10	.394	10	4.724	120	0	0.0	LRIS-2.5 x 7	CLR-15S
	CTPS $\frac{1}{2}$ 12	1	○		.030-.079	0.75-2.00	.472	12	.472	12	.472	12	4.724	120	0	0.0	LRIS-2.5 x 7	CLR-15S

CTPS Series - Inserts

GTPS - Grooving

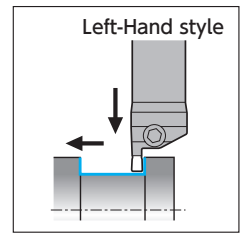
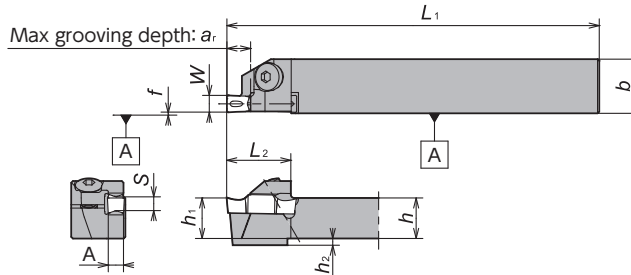
Shape	Item Number	Groove Width w		Max Depth of Cut		r_ϵ		L		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	ZM3
<p>Right-Hand style shown</p>	GTPS075FR	.030	0.75	.039	1.0	0.0	0.0	.059	1.5	○	○
	GTPS095FR	.037	0.95	.059	1.5	0.0	0.0	.079	2.0	○	○
	GTPS100FR	.039	1.00	.059	1.5	0.0	0.0	.079	2.0	○	○
	GTPS120FR	.047	1.20	.098	2.5	0.0	0.0	.118	3.0	○	○
	GTPS150FR	.059	1.50	.098	2.5	0.0	0.0	.118	3.0	○	○
	GTPS200FR	.079	2.00	.098	2.5	0.0	0.0	.118	3.0	○	○

Cutting condition **→T4**

GTW (GROOVE DUO) Series

GTWP

Side Turning Capable
For Swiss Machine



Right-Hand style shown

Figure-1

GTW Series - Toolholders



GWP

Gage Insert	Item Number	Figure	Stock		Groove Width W	a _r	h	b	h ₁	L ₁	h ₂	f	L ₂	A	Seat Size S	Clamp Screw	Wrench
			R	L													
GWP ○ 300	GTWP%08-IN3D07	1	●		.118 3	.275 7	1/2	.630 16	1/2	4.724 120	0 0	.012 0.3	.748 19	.102 2.6	D	A0B-5 × 14	LW-3S
	GTWP%10-IN3D09	1	●		.118 3	.354 9	5/8	.630 16	5/8	4.724 120	0 0	.012 0.3	.866 22	.102 2.6	D	A0B-5 × 16	LW-3S
	GTWP%1016-3D07	1	○		.118 3	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.102 2.6	D	A0B-5 × 14	LW-3S
	GTWP%1216-3D07	1	●		.118 3	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.102 2.6	D	A0B-5 × 16	LW-3S
GWP ○ 400	GTWP%1616-3D09	1	○		.118 3	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.102 2.6	D	A0B-5 × 16	LW-3S
	GTWP%08-IN4E07	1	●		.157 4	.275 7	1/2	.630 16	1/2	4.724 120	0 0	.012 0.3	.748 19	.138 3.5	E	A0B-5 × 14	LW-3S
	GTWP%10-IN4E09	1	●		.157 4	.354 9	5/8	.630 16	5/8	4.724 120	0 0	.012 0.3	.866 22	.138 3.5	E	A0B-5 × 16	LW-3S
	GTWP%1016-4E07	1	○		.157 4	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.138 3.5	E	A0B-5 × 14	LW-3S
GWP ○ 500	GTWP%1216-4E07	1	●		.157 4	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.138 3.5	E	A0B-5 × 16	LW-3S
	GTWP%1616-4E09	1	○		.157 4	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.138 3.5	E	A0B-5 × 16	LW-3S
	GTWP%1016-5F07	1	○		.197 5	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.177 4.5	F	A0B-5 × 14	LW-3S
	GTWP%1216-5F07	1	○		.197 5	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.177 4.5	F	A0B-5 × 16	LW-3S
GWP ○ 600	GTWP%1616-5F09	1	○		.197 5	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.177 4.5	F	A0B-5 × 16	LW-3S
	GTWP%1020-6G07	1	○		.236 6	.275 7	.394 10	.787 20	.394 10	4.724 120	.079 2	.012 0.3	.866 22	.209 5.3	G	A0B-5 × 14	LW-3S
	GTWP%1220-6G07	1	○		.236 6	.275 7	.472 12	.787 20	.472 12	4.724 120	0 0	.012 0.3	.886 22.5	.209 5.3	G	A0B-5 × 16	LW-3S
	GTWP%1620-6G09	1	○		.236 6	.354 9	.630 16	.787 20	.630 16	4.724 120	0 0	.012 0.3	.984 25	.209 5.3	G	A0B-5 × 16	LW-3S

GTW Series - Inserts

Shape	Item Number	w		r _e	M	L	Seat Size S	Coated Carbide DM4		
		Groove Width								
		(Inch)	(mm)							
<p>GWPG: Outside ground GWPM: Full-molded</p> <ul style="list-style-type: none"> ● Excellent chip control ● Best for side turning 	GWPG300N02D-GW	.118	3.0	.001	± 0.025	.008 0.2	.098 2.5	.811 20.6	D	●
	GWPG300N04D-GW	.118	3.0	.001	± 0.025	.016 0.4	.098 2.5	.811 20.6	D	●
	GWPG400N02E-GW	.157	4.0	.001	± 0.025	.008 0.2	.134 3.4	.811 20.6	E	●
	GWPG400N04E-GW	.157	4.0	.001	± 0.025	.016 0.4	.134 3.4	.811 20.6	E	●
	GWPG400N08E-GW	.157	4.0	.001	± 0.025	.031 0.8	.134 3.4	.811 20.6	E	●
	GWPG500N02F-GW	.197	5.0	.001	± 0.025	.008 0.2	.169 4.3	.811 20.6	F	○
	GWPG500N04F-GW	.197	5.0	.001	± 0.025	.016 0.4	.169 4.3	.811 20.6	F	○
	GWPG500N08F-GW	.197	5.0	.001	± 0.025	.031 0.8	.169 4.3	.811 20.6	F	○
	GWPG600N02G-GW	.236	6.0	.001	± 0.025	.008 0.2	.205 5.2	1.008 25.6	G	○
	GWPG600N04G-GW	.236	6.0	.001	± 0.025	.016 0.4	.205 5.2	1.008 25.6	G	○
	GWPG600N08G-GW	.236	6.0	.001	± 0.025	.031 0.8	.205 5.2	1.008 25.6	G	○
	<ul style="list-style-type: none"> ● Less tool pressure design 	GWPM300N04D-GW	.118	3.0	.002	± 0.05	.016 0.4	.098 2.5	.811 20.6	D
GWPM400N04E-GW		.157	4.0	.002	± 0.05	.016 0.4	.134 3.4	.811 20.6	E	○
GWPM500N04F-GW		.197	5.0	.002	± 0.05	.016 0.4	.169 4.3	.811 20.6	F	○
GWPM600N04G-GW		.236	6.0	.002	± 0.05	.016 0.4	.205 5.2	1.008 25.6	G	○
GWPG300N02D-GV		.118	3.0	.001	± 0.025	.008 0.2	.205 2.5	.811 20.6	D	●
GWPG300N04D-GV		.118	3.0	.001	± 0.025	.016 0.4	.205 2.5	.811 20.6	D	●
GWPG400N02E-GV		.157	4.0	.001	± 0.025	.008 0.2	.169 4.3	.811 20.6	E	●
GWPG400N04E-GV		.157	4.0	.001	± 0.025	.016 0.4	.169 4.3	.811 20.6	E	●
GWPG500N02F-GV		.197	5.0	.001	± 0.025	.008 0.2	.169 4.3	.811 20.6	F	○
GWPG500N04F-GV		.197	5.0	.001	± 0.025	.016 0.4	.169 4.3	.811 20.6	F	○
GWPG600N02G-GV		.236	6.0	.001	± 0.025	.008 0.2	.169 4.3	1.008 25.6	G	○
GWPG600N04G-GV		.236	6.0	.001	± 0.025	.016 0.4	.169 4.3	1.008 25.6	G	○

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
□ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Grooving / Side-Turning

GTT Series

GTT

Screw accessible from both sides

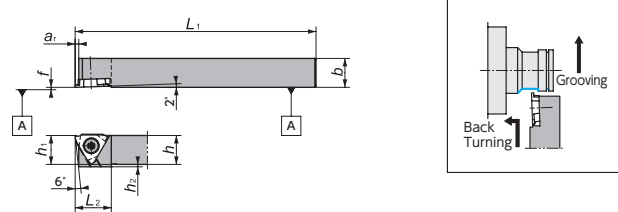
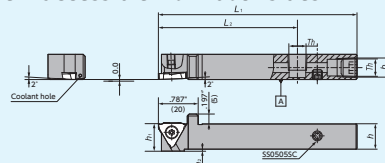


Figure-1

Right-Hand style shown

GTT-OH2 (Coolant through)

Screw accessible from both sides



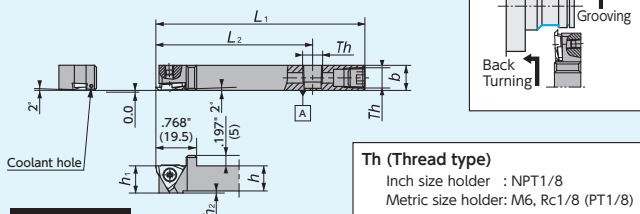
Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Figure-2

Right-Hand style shown

GTT-OH (Coolant through)

Screw accessible from both sides



Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Figure-3

Right-Hand style shown

CH-GTT

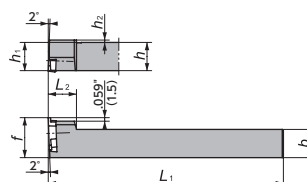


Figure-4

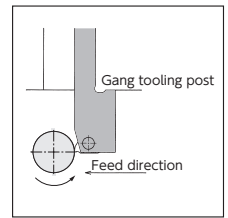
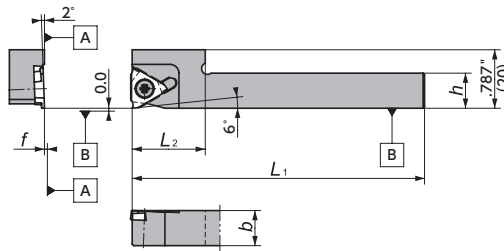
Left-Hand style shown
Takes Right-hand Insert

GTT

Gage Insert	Item Number	Figure	Stock		Groove Width W		h		b		h1		L1		f		L2		a1		h2		Th	Clamp Screw	Wrench	
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)						
	GTT $\frac{1}{8}$ 06A-IN	1	●	●	.012-.125	0.30-3.17	3/8	3/8	3/8	3/8	4.724	120	.000	0	.591	15.0	.071	1.8	.118	3	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{1}{8}$ 06B-IN	1	●	●	.057-.125	1.45-3.17	3/8	3/8	3/8	3/8	4.724	120	.000	0	.591	15.0	.106	2.7	.118	3	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{1}{8}$ 08A-IN	1	●	●	.012-.125	0.30-3.17	1/2	1/2	1/2	1/2	4.724	120	.000	0	.591	15.0	.071	1.8	.039	1	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{1}{8}$ 08B-IN	1	●	●	.057-.125	1.45-3.17	1/2	1/2	1/2	1/2	4.724	120	.000	0	.591	15.0	.106	2.7	.039	1	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{1}{8}$ 10A-IN	1	●	●	.012-.125	0.30-3.17	5/8	5/8	5/8	5/8	4.724	120	.000	0	.591	15.0	.071	1.8	.000	0	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{1}{8}$ 10B-IN	1	●	●	.057-.125	1.45-3.17	5/8	5/8	5/8	5/8	4.724	120	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{1}{8}$ 12A-IN	1	●	●	.012-.125	0.30-3.17	3/4	3/4	3/4	3/4	4.724	120	.000	0	.591	15.0	.071	1.8	.000	0	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{1}{8}$ 12B-IN	1	●	●	.057-.125	1.45-3.17	3/4	3/4	3/4	3/4	4.724	120	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S			
	GTT $\frac{3}{8}$ 08F00	1	○	○	.012-.125	0.30-3.17	.315	8	.315	8	.315	8	3.150	80	.000	0	.591	15.0	.071	1.8	.157	5	-	R:LR-5-4×10PW L:LR-5-4×5.8	CLR-15S	
	GTT $\frac{3}{8}$ 0810F00	1	○	○	.012-.125	0.30-3.17	.315	8	.394	10	.315	8	3.150	80	.000	0	.591	15.0	.071	1.8	.157	5	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 08K00	1	○	○	.012-.125	0.30-3.17	.315	8	.315	8	.315	8	4.724	120	.000	0	.591	15.0	.071	1.8	.157	5	-	R:LR-5-4×10PW L:LR-5-4×5.8	CLR-15S	
	GTT $\frac{3}{8}$ 0810K00	1	○	○	.012-.125	0.30-3.17	.315	8	.394	10	.315	8	4.724	120	.000	0	.591	15.0	.071	1.8	.157	5	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 10F00	1	○	○	.012-.125	0.30-3.17	.394	10	.394	10	.394	10	3.150	80	.000	0	.591	15.0	.071	1.8	.118	3	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 10K00	1	○	○	.012-.125	0.30-3.17	.394	10	.394	10	.394	10	4.724	120	.000	0	.591	15.0	.071	1.8	.118	3	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 12F00	1	○	○	.012-.125	0.30-3.17	.472	12	.472	12	.472	12	3.150	80	.000	0	.591	15.0	.071	1.8	.040	1	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 12K00	1	○	○	.012-.125	0.30-3.17	.472	12	.472	12	.472	12	4.724	120	.000	0	.591	15.0	.071	1.8	.040	1	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 16H00	1	○	○	.012-.125	0.30-3.17	.630	16	.630	16	.630	16	3.937	100	.000	0	.591	15.0	.071	1.8	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 16K00	1	○	○	.012-.125	0.30-3.17	.630	16	.630	16	.630	16	4.724	120	.000	0	.591	15.0	.071	1.8	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 20K00	1	○	○	.012-.125	0.30-3.17	.787	20	.787	20	.787	20	4.921	125	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 25M00	1	○	○	.012-.125	0.30-3.17	.984	25	.984	25	.984	25	5.906	150	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 10F15	1	○	○	.057-.125	1.45-3.17	.394	10	.394	10	.394	10	3.150	80	.000	0	.591	15.0	.106	2.7	.118	3	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 10K15	1	○	○	.057-.125	1.45-3.17	.394	10	.394	10	.394	10	4.724	120	.000	0	.591	15.0	.106	2.7	.118	3	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 12F15	1	○	○	.057-.125	1.45-3.17	.472	12	.472	12	.472	12	3.150	80	.000	0	.591	15.0	.106	2.7	.040	1	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 12K15	1	○	○	.057-.125	1.45-3.17	.472	12	.472	12	.472	12	4.724	120	.000	0	.591	15.0	.106	2.7	.040	1	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 16H15	1	○	○	.057-.125	1.45-3.17	.630	16	.630	16	.630	16	3.937	100	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 16K15	1	○	○	.057-.125	1.45-3.17	.630	16	.630	16	.630	16	4.724	120	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 10F25	1	○	○	.098-.125	2.50-3.17	.394	10	.394	10	.394	10	3.150	80	.000	0	.591	15.0	.106	2.7	.118	3	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 10K25	1	○	○	.098-.125	2.50-3.17	.394	10	.394	10	.394	10	4.724	120	.000	0	.591	15.0	.106	2.7	.118	3	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 12F25	1	○	○	.098-.125	2.50-3.17	.472	12	.472	12	.472	12	3.150	80	.000	0	.591	15.0	.106	2.7	.040	1	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 12K25	1	○	○	.098-.125	2.50-3.17	.472	12	.472	12	.472	12	4.724	120	.000	0	.591	15.0	.106	2.7	.040	1	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 16H25	1	○	○	.098-.125	2.50-3.17	.630	16	.630	16	.630	16	3.937	100	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{3}{8}$ 16K25	1	○	○	.098-.125	2.50-3.17	.630	16	.630	16	.630	16	4.724	120	.000	0	.591	15.0	.106	2.7	.000	0	-	LR-5-4×10PW	CLR-15S	
	GTT $\frac{1}{2}$ 08HA-IN-OH	3	■	■	.012-.125	0.30-3.17	1/2	1/2	1/2	1/2	3.937	100	.000	0	2.953	75	.071	1.8	.039	1	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 08HA-IN-OH2	2	■	■	.012-.125	0.30-3.17	1/2	1/2	1/2	1/2	3.937	100	.000	0	2.756	70	.071	1.8	.039	1	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 08HB-IN-OH	3	■	■	.057-.125	1.45-3.17	1/2	1/2	1/2	1/2	3.937	100	.000	0	2.953	75	.106	2.7	.039	1	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 08HB-IN-OH2	2	■	■	.057-.125	1.45-3.17	1/2	1/2	1/2	1/2	3.937	100	.000	0	2.756	70	.106	2.7	.039	1	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 10HA-IN-OH	3	■	■	.012-.125	0.30-3.17	5/8	5/8	5/8	5/8	3.937	100	.000	0	.768	19.5	.071	1.8	.000	0	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 10XA-IN-OH2	2	■	■	.012-.125	0.30-3.17	5/8	5/8	5/8	5/8	4.724	120	.000	0	.768	19.5	.071	1.8	.000	0	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 10HB-IN-OH	3	■	■	.057-.125	1.45-3.17	5/8	5/8	5/8	5/8	3.937	100	.000	0	.768	19.5	.106	2.7	.000	0	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 10XB-IN-OH2	2	■	■	.057-.125	1.45-3.17	5/8	5/8	5/8	5/8	4.724	120	.000	0	.768	19.5	.106	2.7	.000	0	-	NPT1/8	LR-5-4×10PW	CLR-15S		
	GTT $\frac{1}{2}$ 1012H00-OH	3	○	○	.012-.125	0.30-3.17	.394	10	.472	12	.394	10	3.937	100	.000	0	.768	19.5	.071	1.8	.039	1	-	M6 × 1	LR-5-4×10PW	CLR-15S
	GTT $\frac{1}{2}$ 12H00-OH	3	○	○	.012-.125	0.30-3.17	.472	12	.472	12	.472	12	3.937	100	.000	0	.768	19.5	.071	1.8	.039	1	-	Rc1/8 (PT1/8)	LR-5-4×10PW	CLR-15S
	GTT $\frac{1}{2}$ 12H00-OH2	2	○</																							

Y-GTT

Screw accessible from both sides

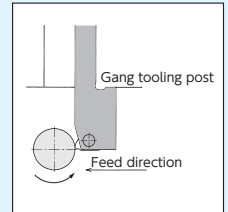
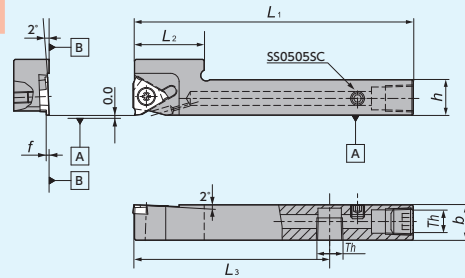


Right-Hand style shown
Takes Right-hand Insert

Figure-5

Y-GTT-OH2 (Coolant through)

Screw accessible from both sides



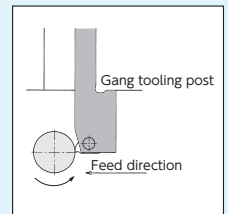
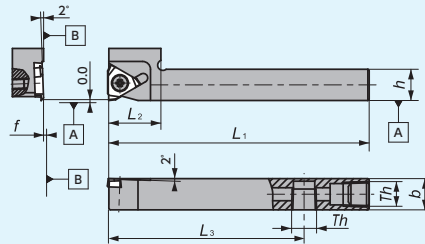
Right-Hand style shown
Takes Right-hand Insert

Figure-6

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Y-GTT-OH (Coolant through)

Screw accessible from both sides



Right-Hand style shown
Takes Right-hand Insert

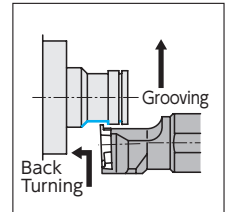
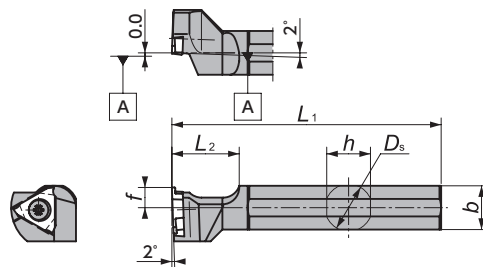
Figure-7

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

GTT

Gage Insert	Item Number	Figure	Stock		Groove Width W		h	b	h ₁	L ₁	f	L ₂		a _r	L ₃	Th	Clamp Screw	Wrench						
			R	L	(Inch)	(mm)						(Inch)	(mm)						(Inch)	(mm)	(Inch)	(mm)		
	Y-GTTR%06-IN	5	●	○	.012-.125	0.30-3.17	3/8	3/8	-	4.724	120	.000	0	.984	25.0	.063	1.6	-	LR-5-4×10PW	CLR-155				
	Y-GTTR%08-IN	5	●	○	.012-.125	0.30-3.17	1/2	1/2	-	4.724	120	.000	0	.984	25.0	.063	1.6	-	LR-5-4×10PW	CLR-155				
	Y-GTTR%10-IN	5	●	○	.012-.125	0.30-3.17	5/8	5/8	-	4.724	120	.000	0	.984	25.0	.063	1.6	-	LR-5-4×10PW	CLR-155				
	Y-GTT%10MS	7	○	○	.012-.125	0.30-3.17	.394	10	.394	10	-	4.724	120	.000	0	.866	22.0	.063	1.6	-	LR-5-4×10PW	CLR-155		
	Y-GTT%110S	5	○	○	.012-.125	0.30-3.17	.394	10	.394	10	-	4.724	120	.000	0	.787	20.0	.063	1.6	-	LR-5-4×10PW	CLR-155		
	Y-GTT%12MS	7	○	○	.012-.125	0.30-3.17	.472	12	.472	12	-	4.724	120	.000	0	.866	22.0	.063	1.6	-	LR-5-4×10PW	CLR-155		
	Y-GTT%12S	5	○	○	.012-.125	0.30-3.17	.472	12	.472	12	-	4.724	120	.000	0	.787	20.0	.063	1.6	-	LR-5-4×10PW	CLR-155		
	Y-GTT%08H-IN-OH	7	■	○	.012-.125	0.30-3.17	1/2	1/2	-	3.937	100	.000	0	.984	25.0	.063	1.6	2.756	70	NPT1/8	LR-5-4×10PW	CLR-155		
	Y-GTT%08H-OH2	6	■	○	.012-.125	0.30-3.17	1/2	1/2	-	3.937	100	.000	0	.984	25.0	.063	1.6	2.953	75	NPT1/8	LR-5-4×10PW	CLR-155		
	Y-GTT%12H00S-OH	7	■	○	.012-.125	0.30-3.17	.472	12	.472	12	-	3.937	100	.000	0	.787	20.0	.063	1.6	2.756	70	Rc1/8(PT1/8)	LR-5-4×10PW	CLR-155
	Y-GTT%12H00S-OH2	6	■	○	.012-.125	0.30-3.17	.472	12	.472	12	-	3.937	100	.000	0	.787	20.0	.063	1.6	2.953	75	Rc1/8(PT1/8)	LR-5-4×10PW	CLR-155
	Y-GTT%16H00-OH	7	○	○	.012-.125	0.30-3.17	.630	16	.472	16	-	3.937	100	.000	0	.984	25.0	.063	1.6	2.953	75	Rc1/8(PT1/8)	LR-5-4×10PW	CLR-155

DS-GTT



Left-Hand style shown
Takes Right-hand Insert

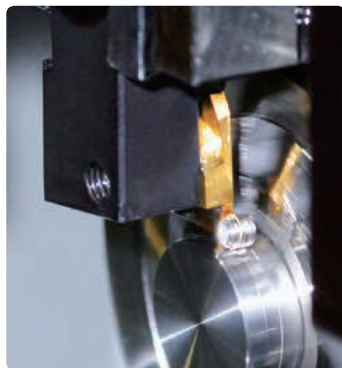
Figure-8

DS-GTT

Gage Insert	Item Number	Figure	Stock		D _s		h	b	L ₁	f	L ₂		Clamp Screw	Wrench				
			R	L	(Inch)	(mm)					(Inch)	(mm)			(Inch)	(mm)		
	DS-GTT%14F	8	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%15H	8	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%16X	8	●	○	.630	16.000	.591	15	.591	15	3.740	95	.236	6	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%19	8	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%20	8	●	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%22	8	●	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%25-MET	8	○	○	.984	25.000	.945	24	.945	24	4.724	120	.394	10	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%25	8	●	○	1	25.400	.945	24	.945	24	5.906	150	.394	10	.787	20	LR-5-4×9	RLR-20S
	DS-GTT%32	8	○	○	.984	25.000	.945	24	.945	24	5.906	150	.394	10	.787	20	LR-5-4×9	RLR-20S

● : Stock
● : Stock (Newly added)
■ : While stocks last
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
Ⓜ : Mirror finish
Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

GTMH-GX Chipbreaker for Grooving / Side Turning



Features

- Can solve the problem of chips remaining in the grooves and bird's nest of chips
- Good surface finishes on groove side faces
- UP to .078" DOC side turning capability

Excellent Chip Control

• Grooving

	Feed rate (IPR)	.0004"	.0011"	.0020"
	DOC	.0004"	.0011"	.0020"
	GX chipbreaker			
	Competitor's chipbreaker			

Material : 304 SS (φ .630"), 260 SFM, .059", DOC

• Side Turning

	Feed rate (IPR)	.0004"	.0011"	.0020"	.0031"
	DOC	.0004"	.0011"	.0020"	.0031"
	.010"				
	.020"				
.030"					

Material : 304 SS (φ .630"), 260 SFM, .030" width insert

Best Solution for Chip Control

Coolant through toolholders now available



GTMH32.. Inserts - Carbide

■ GTMH32-GX

Shape	Item Number	Groove Width W		Max Depth of Cut				L		r _ε		Coated Carbide					
		(Inch)	(mm)	Grooving		Side turning		(Inch)	(mm)	(Inch)	(mm)	ST4		DM4		TM4	
				(Inch)	(mm)	(Inch)	(mm)					R	L	R	L	R	L
<p>Right-Hand style shown</p>	GTMH32033RGX	.013	0.33	.024	0.6	—	—	.010	0.25	.002	0.05	●					
	GTMH32043RGX	.017	0.43	.047	1.2	—	—	.035	0.90	.002	0.05	●					
	GTMH32050RGX	.020	0.50	.047	1.2	—	—	.035	0.90	.002	0.05	●					
	GTMH32053RGX	.021	0.53	.047	1.2	—	—	.035	0.90	.002	0.05	●					
	GTMH32075RGX	.030	0.75	.063	1.6	.030	0.75	.079	2.00	.002	0.05	●	●			○	
	GTMH32095RGX	.037	0.95	.063	1.6	.059	1.50	.079	2.00	.002	0.05	●	●			○	
	GTMH32100RGX	.039	1.00	.063	1.6	.059	1.50	.079	2.00	.002	0.05	●	●			○	
	GTMH32100RGX01	.039	1.00	.063	1.6	.059	1.50	.079	2.00	.004	0.1	●	●			○	
	GTMH32150RGX	.059	1.50	.106	2.7	.079	2.00	.118	3.00	.002	0.05	●	●			○	
	GTMH32150RGX01	.059	1.50	.106	2.7	.079	2.00	.118	3.00	.004	0.1	●	●			○	
	GTMH32150RGX02	.059	1.50	.106	2.7	.079	2.00	.118	3.00	.008	0.2	●	●			○	
	GTMH32200RGX	.079	2.00	.106	2.7	.079	2.00	.118	3.00	.002	0.05	●	●			○	
	GTMH32200RGX01	.079	2.00	.106	2.7	.079	2.00	.118	3.00	.004	0.1	●	●			○	
	GTMH32200RGX02	.079	2.00	.106	2.7	.079	2.00	.118	3.00	.008	0.2	●	●			○	
	GTMH32300RGX	.118	3.00	.106	2.7	.079	2.00	.118	3.00	.002	0.05	●	●			○	
GTMH32300RGX02	.118	3.00	.106	2.7	.079	2.00	.118	3.00	.008	0.2	●	●			○		

GTMX32

Shape	Item Number	Groove Width W		Max Depth of Cut Grooving		L		r _ε		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	DT4		QM3	
										R	L	R	L
	GTMX32030%LT	.012	0.30	.010	0.25	.024	0.6	.002	0.05	○		●	
	GTMX32033%LT	.013	0.33	.010	0.25	.024	0.6	.002	0.05	○		●	
	GTMX32043%LT	.017	0.43	.035	0.9	.047	1.2	.002	0.05	○		●	
	GTMX32050%LT	.020	0.50	.035	0.9	.047	1.2	.002	0.05	○		●	■
	GTMX32053%LT	.021	0.53	.035	0.9	.047	1.2	.002	0.05	○		●	
	GTMX32065%LT	.026	0.65	.035	0.9	.047	1.2	.002	0.05	○		●	
	GTMX32075%LT	.030	0.75	.063	1.6	.079	2.0	.002	0.05	○	○	●	●
	GTMX32080%LT	.031	0.80	.063	1.6	.079	2.0	.002	0.05	○		●	■
	GTMX32095%LT	.037	0.95	.063	1.6	.079	2.0	.002	0.05	○	○	○	○
	GTMX32100%LT	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○		○	
	GTMX32100%LT01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	○		●	
	GTMX32110%LT	.043	1.10	.063	1.6	.079	2.0	.002	0.05	○		○	
	GTMX32120%LT	.047	1.20	.063	1.6	.079	2.0	.002	0.05	○		●	
	GTMX32120%LT01	.047	1.20	.063	1.6	.079	2.0	.004	0.1	○		●	
	GTMX32125%LT	.049	1.25	.063	1.6	.079	2.0	.002	0.05	○		●	
	GTMX32130%LT	.051	1.30	.063	1.6	.079	2.0	.002	0.05	○		○	
	GTMX32140%LT	.055	1.40	.063	1.6	.079	2.0	.002	0.05	○		○	
	GTMX32145%LT	.057	1.45	.106	2.7	.118	3.0	.002	0.05	○		○	
	GTMX32150%LT	.059	1.50	.106	2.7	.118	3.0	.002	0.05	○	○	●	●
	GTMX32150%LT01	.059	1.50	.106	2.7	.118	3.0	.004	0.1	○		●	
	GTMX32150%LT02	.059	1.50	.106	2.7	.118	3.0	.008	0.2	○		○	
	GTMX32160%LT	.063	1.60	.106	2.7	.118	3.0	.002	0.05	○		●	
	GTMX32175%LT	.069	1.75	.106	2.7	.118	3.0	.002	0.05	○		○	●
	GTMX32180%LT	.071	1.80	.106	2.7	.118	3.0	.002	0.05	○		○	□
	GTMX32200%LT	.079	2.00	.106	2.7	.118	3.0	.002	0.05	○	○	●	●
	GTMX32200%LT01	.079	2.00	.106	2.7	.118	3.0	.004	0.1	○	○	○	○
	GTMX32200%LT02	.079	2.00	.106	2.7	.118	3.0	.008	0.2	○		○	
	GTMX32250%LT	.098	2.50	.106	2.7	.118	3.0	.002	0.05	○	○	●	○
GTMX32250%LT01	.098	2.50	.106	2.7	.118	3.0	.004	0.1	○		○		
GTMX32250%LT02	.098	2.50	.106	2.7	.118	3.0	.008	0.2	○		○		
GTMX32300%LT	.118	3.00	.106	2.7	.118	3.0	.002	0.05	○		●		
GTMX32300%LT02	.118	3.00	.106	2.7	.118	3.0	.008	0.2	○		●		

Right-Hand style shown

Grooving / Side-Turning

GTMH32 - VT Mirror finish

Shape	Item Number	Groove Width W		Max Depth of Cut Grooving		L		r _ε		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	
										R	L
	GTMH32033%VT M	.013	0.33	.010	0.25	.024	0.6	0.0	0.0	●	
	GTMH32043%VT M	.017	0.43	.035	0.9	.047	1.2	0.0	0.0	●	
	GTMH32053%VT M	.021	0.53	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32065%VT M	.026	0.65	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32075%VT M	.030	0.75	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32080%VT M	.031	0.80	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32085%VT M	.033	0.85	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32095%VT M	.037	0.95	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32100%VT M	.039	1.00	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32110%VT M	.043	1.10	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32120%VT M	.047	1.20	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32130%VT M	.051	1.30	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32140%VT M	.055	1.40	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32150%VT M	.059	1.50	.106	2.7	.118	3.0	0.0	0.0	●	
GTMH32200%VT M	.079	2.00	.106	2.7	.118	3.0	0.0	0.0	●		

Right-Hand style shown

Side turning instruction for GTMH-GX / GTMX-T / GTMH-VT

- ① To perform side turning with an insert whose groove width is greater than .017" set side turning feed rate to .001 IPR or smaller.
- ② When performing side turning with an insert whose groove width is greater than .017" and the feed rate is over .001 IPR (.004 IPR max), it is likely that chips will damage grooved sides. In this case, please perform grooving in two or more passes to make room for chips before performing side turning.

Holders → T10

Cutting condition → T4

Grooving / Side-Turning

GTMH32 - E

Shape	Item Number	Groove width W		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3	
										R	L
<p>Right-Hand style shown</p>	GTMH32033%LE	.013	0.33	.012	0.3	.024	0.6	.001	0.03	○	○
	GTMH32043%LE	.017	0.43	.035	0.9	.047	1.2	.001	0.03	●	○
	GTMH32053%LE	.021	0.53	.035	0.9	.047	1.2	.002	0.05	○	○
	GTMH32075%LE	.030	0.75	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32077%LE	.030	0.77	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32095%LE	.037	0.95	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32097%LE	.038	0.97	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32100%LE	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32100%LE01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	○	○
	GTMH32120%LE	.047	1.20	.063	1.6	.079	2.0	.002	0.05	●	○
	GTMH32120%LE01	.047	1.20	.063	1.6	.079	2.0	.004	0.1	○	○
	GTMH32125%LE	.049	1.25	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32140%LE	.055	1.40	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32145%LE	.057	1.45	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32150%LE	.059	1.50	.106	2.7	.118	3.0	.002	0.05	○	○
	GTMH32150%LE01	.059	1.50	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32175%LE	.069	1.75	.106	2.7	.118	3.0	.002	0.05	○	○
	GTMH32180%LE	.071	1.80	.106	2.7	.118	3.0	.002	0.05	○	○
GTMH32200%LE	.079	2.00	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32200%LE01	.079	2.00	.106	2.7	.118	3.0	.004	0.1	○	○	
GTMH32225%LE	.089	2.25	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32250%LE	.098	2.50	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32275%LE	.108	2.75	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32300%LE	.118	3.00	.106	2.7	.118	3.0	.002	0.05	○	○	

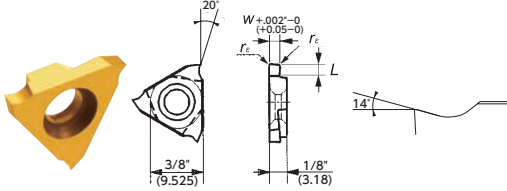
GTMH32 (Full radius style)

Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3		ZM3	
										R	L	R	L
<p>Right-Hand style shown</p>	GTMH32050%LE025	.020	0.50	.035	0.9	.047	1.2	.010	0.25	●	●	○	○
	GTMH32070%LE035	.028	0.70	.063	1.6	.079	2.0	.014	0.35	●	●	○	○
	GTMH32100%LE05	.039	1.00	.063	1.6	.079	2.0	.020	0.50	●	●	○	○
	GTMH32150%LE075	.059	1.50	.106	2.7	.118	3.0	.030	0.75	●	○	○	○
	GTMH32200%LE10	.079	2.00	.106	2.7	.118	3.0	.039	1.00	●	○	○	○
GTMH32300%LE15	.118	3.00	.106	2.7	.118	3.0	.059	1.50	●	○	○	○	

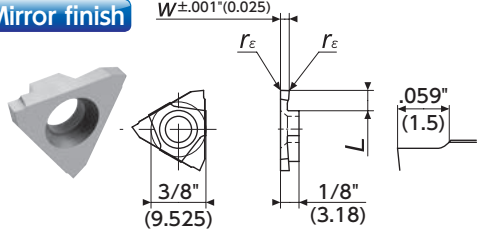
Holders → T10

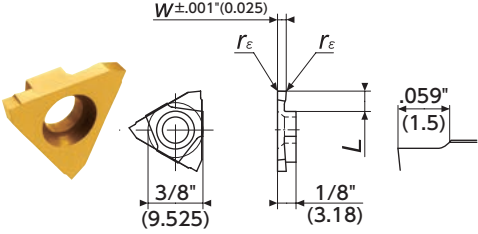
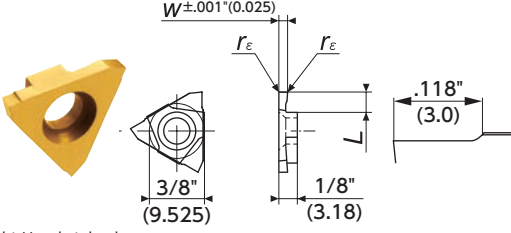
Cutting condition → T4

TMG32-E

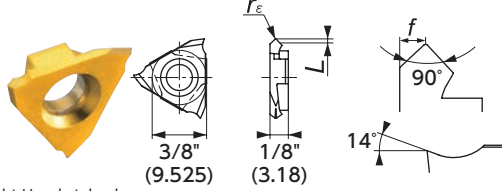
Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3	
										R	L
 <p>Right-Hand style shown</p>	TMG32031% $\frac{1}{4}$ E01	.031	0.79	.063	1.6	.079	2.0	.004	0.1	●	
	TMG32039% $\frac{1}{4}$ E01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	●	●
	TMG32049% $\frac{1}{4}$ E01	.049	1.25	.063	1.6	.079	2.0	.004	0.1	●	
	TMG32062% $\frac{1}{4}$ E02	.062	1.57	.106	2.7	.118	3.0	.008	0.2	●	
	TMG32079% $\frac{1}{4}$ E02	.079	2.00	.106	2.7	.118	3.0	.008	0.2	●	
	TMG32094% $\frac{1}{4}$ E02	.094	2.39	.106	2.7	.118	3.0	.008	0.2	●	
	TMG32125% $\frac{1}{4}$ E02	.125	3.18	.106	2.7	.118	3.0	.008	0.2	●	

GTMH • X32 (Flat top chipbreaker)

Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	KM1	
										R	L
 <p>Mirror finish</p> <p>Right-Hand style shown</p>	GTMH32100% $\frac{1}{4}$ SSH $\text{\textcircled{M}}$	.039	1.00	.063	1.6	.079	2.0	.002	0.05	●	
	GTMH32150% $\frac{1}{4}$ SSH $\text{\textcircled{M}}$	.059	1.50	.106	2.7	.118	3.0	.002	0.05	●	
	GTMH32200% $\frac{1}{4}$ SSH $\text{\textcircled{M}}$	.079	2.00	.106	2.7	.118	3.0	.002	0.05	●	

Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3	
										R	L
 <p>Right-Hand style shown</p>	GTMX32100% $\frac{1}{4}$ SS	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○	
	GTMX32150% $\frac{1}{4}$ SS	.059	1.50	.106	2.7	.118	3.0	.002	0.05	○	
	GTMX32200% $\frac{1}{4}$ SS	.079	2.00	.106	2.7	.118	3.0	.002	0.05	○	
 <p>Right-Hand style shown</p>	GTMX32100% $\frac{1}{4}$ LS	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○	
	GTMX32150% $\frac{1}{4}$ LS	.059	1.50	.106	2.7	.118	3.0	.002	0.05	○	
	GTMX32200% $\frac{1}{4}$ LS	.079	2.00	.106	2.7	.118	3.0	.002	0.05	○	

GTMX32 (90 Degree V-style)

Shape	Item Number	Max Depth of Cut		Edge Geometry	r_ϵ		L		Coated Carbide	
		(Inch)	(mm)		(Inch)	(mm)	(Inch)	(mm)	TM4	
									R	L
 <p>Right-Hand style shown</p>	GTMX32V90% $\frac{1}{4}$ 005	.020	0.5	90°	.002	0.05	.020	0.5	○	
	GTMX32V90% $\frac{1}{4}$ 010	.028	0.7	90°	.004	0.1	.040	1.0	○	

TWG Series

TWG

Side Turning Capable
Up to .059"(1.5mm) doc.

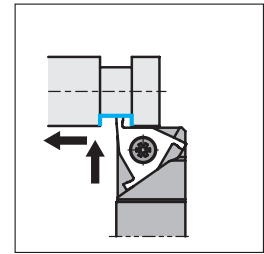
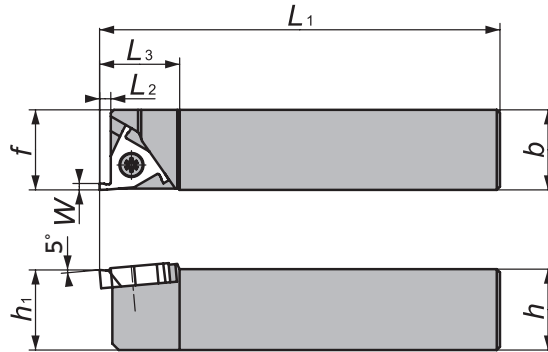



Figure-1

Right-Hand style shown

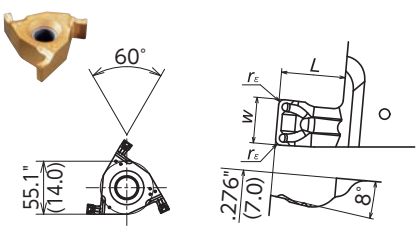
TWG Series - Toolholders

TWG

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		L_2		L_3		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TWG	TWG2012X	1	○		.472	12	.787	20	.472	12	4.724	120	.787	20	.138	3.5	.984	25	FSS25-5.0 × 10	RLR-20S
	TWG2016X	1	○		.630	16	.787	20	.630	16	4.724	120	.787	20	.138	3.5	.984	25	FSS10-5.0 × 14	LLR-20S
	TWG $\frac{1}{2}$ 2020K	1	○	○	.787	20	.787	20	.787	20	4.921	125	.787	20	.138	3.5	.984	25	FSS10-5.0 × 14	RLR-20S
	TWG $\frac{1}{2}$ 2525K	1	○	○	.984	25	.984	25	.984	25	4.921	125	.984	25	.138	3.5	.984	25	FSS10-5.0 × 14	RLR-20S

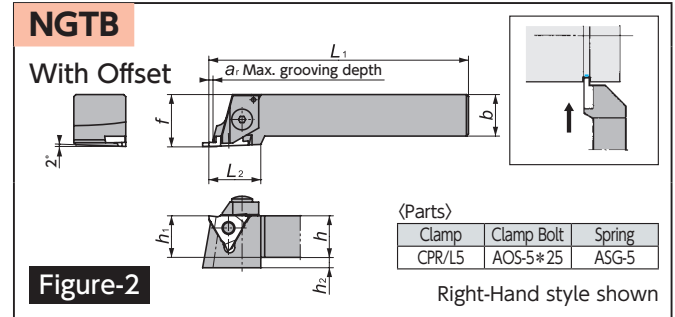
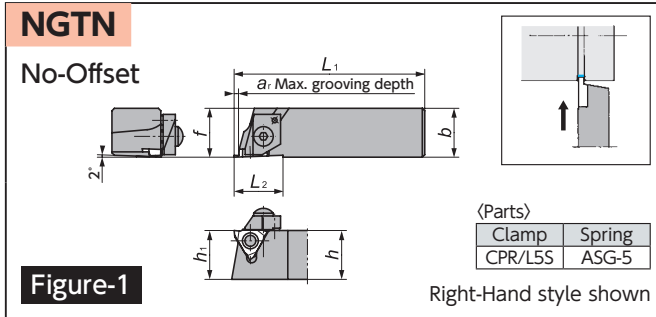
TWG Series - Inserts

TWG

Shape	Item Number	Groove Width w		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM1	
										R	L
 <p>Right-Hand style shown</p>	TWG20 $\frac{1}{2}$ 005	.079	2.0	.118	3.0	.138	3.5	.002	0.05	○	○
	TWG20 $\frac{1}{2}$ 020	.079	2.0	.118	3.0	.138	3.5	.008	0.2	○	○
	TWG25 $\frac{1}{2}$ 010	.098	2.5	.118	3.0	.138	3.5	.004	0.1	○	○
	TWG25 $\frac{1}{2}$ 030	.098	2.5	.118	3.0	.138	3.5	.012	0.3	○	○
	TWG30 $\frac{1}{2}$ 010	.118	3.0	.118	3.0	.138	3.5	.004	0.1	○	○
	TWG30 $\frac{1}{2}$ 030	.118	3.0	.118	3.0	.138	3.5	.012	0.3	○	○

Cutting condition 

GTM.43 Series - Toolholders



GTM.43 Series - Toolholders

NGTN / NTGB

Gage Insert	Item Number	Figure	Stock		Groove Width Range		a_r	h	b	h_1	L_1	f	L_2	h_2	Clamp Screw	Wrench
			R	L	(Inch)	(mm)										
GTM43 GTMA43 GTMT43	NGTN%161643-20	1	○	○	.079-.137	2.00-3.49	.177 4.5	.630 16	.630 16	.630 16	3.071 78	.630 16	.787 20	.354 9	AOS-5 × 20	LW-2.5
	NGTN%161643-35	1	○	○	.138-.217	3.50-5.50	.177 4.5	.630 16	.630 16	.630 16	3.071 78	.630 16	.787 20	.354 9	AOS-5 × 20	LW-2.5
	NGTB%161643-00S	2	○	○	.039-.098	1.00-2.49	.118 3.0	.630 16	.630 16	.630 16	3.150 100	.787 20	.984 25	.354 9	AOS-5 × 25	LW-2.5
	NGTB%161643-20S	2	○	○	.079-.137	2.00-3.49	.177 4.5	.630 16	.630 16	.630 16	3.150 100	.787 20	.984 25	.354 9	AOS-5 × 25	LW-2.5
	NGTB%161643-35S	2	○	○	.138-.217	3.50-5.50	.177 4.5	.630 16	.630 16	.630 16	3.150 100	.787 20	.984 25	.354 9	AOS-5 × 25	LW-2.5

GTMA43.. Inserts - Carbide

GTMT43 / GTMA43

Shape	Item Number	Groove Width w		Max Depth of Cut		L		r_ϵ		s		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	DM4		QM3	
												R	L	R	L
	GTMT43145%	.057	1.45	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43150%	.059	1.50	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43175%	.069	1.75	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43185%	.073	1.85	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43200%	.079	2.00	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43230%	.091	2.30	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43250%	.098	2.50	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43265%	.104	2.65	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43280%	.110	2.80	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43300%	.118	3.00	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43330%	.130	3.30	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43350%	.138	3.50	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43400%	.157	4.00	.169	4.3	.217	5.5	.016	0.4	.187	4.76	○	○	○	○
	GTMT43450%	.177	4.50	.169	4.3	.217	5.5	.016	0.4	.187	4.76	○	○	○	○
	GTMT43500%	.197	5.00	.169	4.3	.217	5.5	.016	0.4	.227	5.76	○	○	○	○
GTMT43550%	.217	5.50	.169	4.3	.217	5.5	.016	0.4	.227	5.76	○	○	○	○	

GTMA43 (Full Radius style)

Shape	Item Number	Groove Width w		Max Depth of Cut		L		r_ϵ		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3			
										R	L		
	GTMA43200%10R	.079	2.00	.118	3.0	.138	3.5	.039	1.0	○			
	GTMA43300%15R	.118	3.00	.177	4.5	.217	5.5	.059	1.5	○			
	GTMA43400%20R	.157	4.00	.177	4.5	.217	5.5	.787	2.0	○			
	GTMA43100%J05R	.039	1.00	.063	1.6	.079	2.0	.020	0.50				
	GTMA43150%J075R	.059	1.50	.118	3.0	.138	3.5	.030	0.75				
	GTMA43200%J10R	.079	2.00	.118	3.0	.138	3.5	.039	1.00				
	GTMA43250%J125R	.098	2.50	.157	4.0	.217	5.5	.049	1.25				
GTMA43300%J15R	.118	3.00	.157	4.0	.217	5.5	.059	1.50					

Cutting condition → T4

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
⊙ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Grooving / Side-Turning

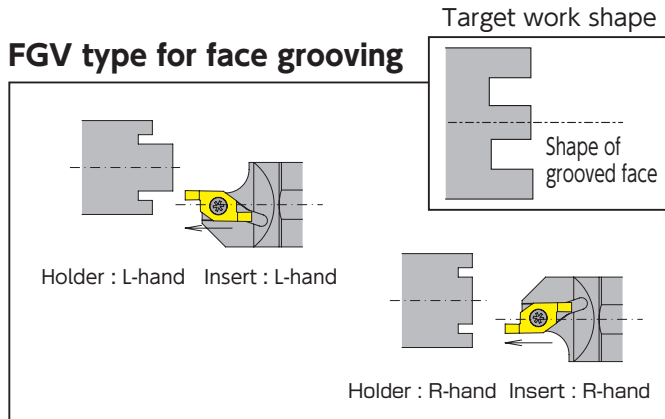
SATURN DUO

Face grooving tool

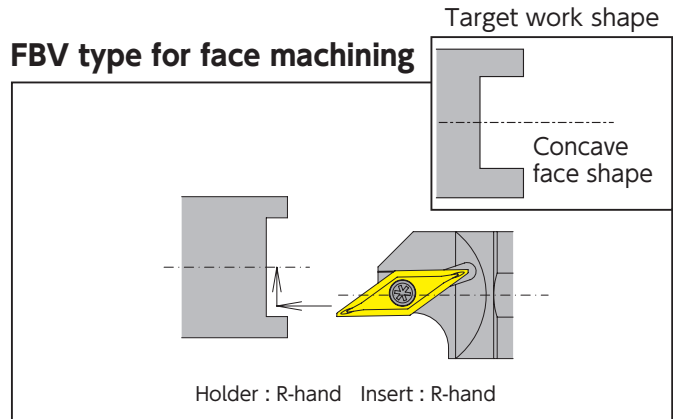
Features

- FGV type for face grooving and FBV type for face machining
- Economical double-corner specification
- Improved tool rigidity by optimizing the overhang and holder shape
- Gang-type, front-gang-type and sleeve holder types available

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- Grooving is possible under a wide range of cutting conditions due to strengthened rigidity of both insert and holder
- Minimum machining diameter of $\phi .236"$, and groove width of $.039"$
- Left-hand types available for machining work with a boss



- Further improved face machining efficiency
- Minimum machining diameter of $\phi .315"$

Recommended Cutting Condition for FGV Style Tooling (for Face Grooving)

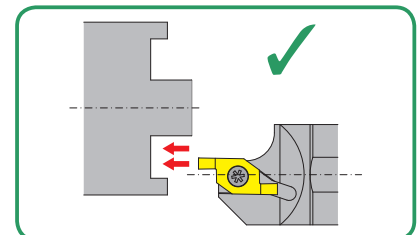
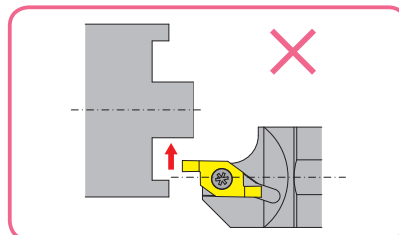
		Steel (Carbon Steel, Alloy Steel)	Stainless Steel (Excluding 303 SS)	Free Cutting Steel (Including 303 SS)	Non-ferrous Metals (Brass, Aluminum, Copper)
Speed (SFM)		160 (100 - 330)	130 (100 - 330)	200 (100 - 330)	260 (160 - 390)
Feed Rate (IPR)	Groove Depth (Inch)	.039	.0008 (.0004-.002)	.002 (.0004-.0025)	.002 (.0004-.0025)
		.059	.0008 (.0004-.002)	.0004 (.0002-.001)	.001 (.0004-.002)
		.079	.0004 (.0002-.001)	.0004 (.0002-.001)	.0008 (.0004-.002)

☆Tips for Successful Face Grooving

- ① Run multiple passes if turning wider grooves.
Make sure to groove from outer diameter to inner diameter to avoid any interference.
- ② If lines appear on the boss section, slow down feed rate when retracting the tool.
- ③ If scratch appears at the end of the boss, slow down the feed rate.
- ④ If groove surface looks torn, either slow down feed rate or increase speed.
- ⑤ If groove bottom looks torn with a speed and feed condition, increase the speed.

☆Note

Side turning cannot be performed with FGV style tooling



Recommended Cutting Conditions for FBV Style Tooling (for Face Grooving)

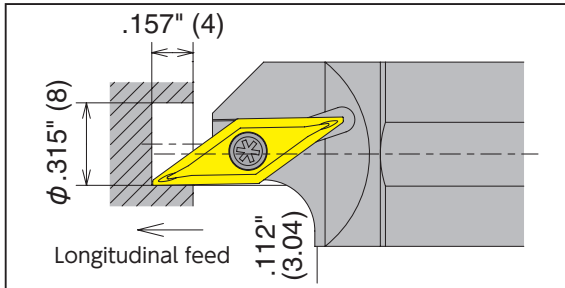
Minimum machining diameter: $\phi .315"$ (8mm) WET

			Steel (Carbon Steel, Alloy Steel)	Stainless Steel (Excluding 303 SS)	Free Cutting Steel (Including 303 SS)	Non-ferrous Metals (Brass, Aluminum, Copper)
Speed (SFM)			160 (100 - 330)	130 (100 - 330)	200 (100 - 330)	260 (160 - 390)
Feed Rate (IPR)	Groove Depth (Inch)	.039	.001 (.0004-.002)	.0008 (.0004-.002)	.002 (.0004-.0025)	.002 (.0004-.0025)
		.059	.0008 (.0004-.002)	.0004 (.0002-.001)	.001 (.0004-.002)	.001 (.0004-.002)
		.079	.0004 (.0002-.001)	.0004 (.0002-.001)	.0008 (.0004-.002)	.0008 (.0004-.002)

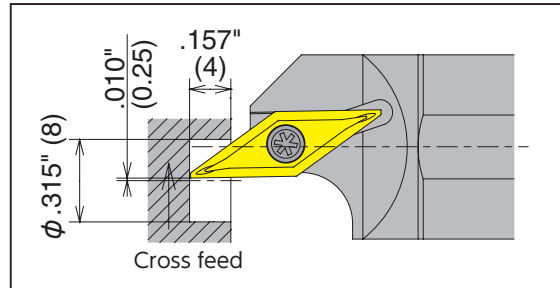
* When machining difficult materials where chip control is problematic (such as 304SS), it is recommended that the machining be carried out in several stages.

☆Machining process

- For materials with good machinability, it is possible to machine up to $.157"$ (4mm) deep at a low feed rate in a single pass for both longitudinal feed and cross feed.



Cutting in Z direction : Longitudinal feed



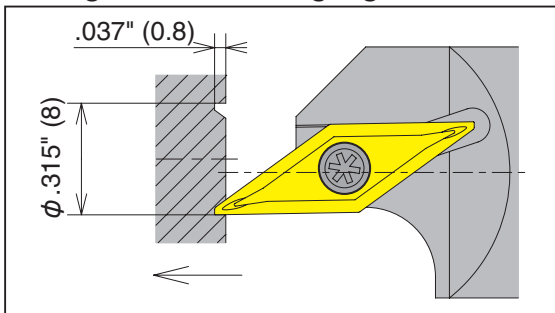
Cutting in X direction : Cross feed

☆Useful tips for machining

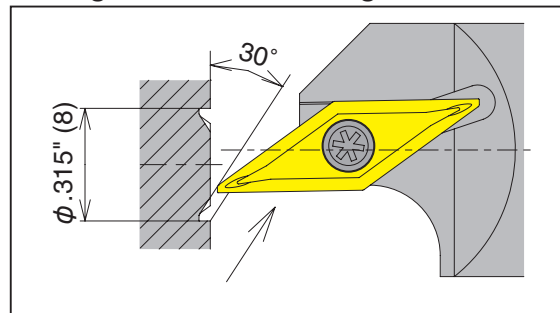
When burrs occur on ID surface, it is recommended to perform the cut in 2 passes, one for roughing and one for finishing as shown in the following procedure:

☆Example of 2-pass machining: Leave $.008"$ (0.2mm) on roughing then run a finish cut

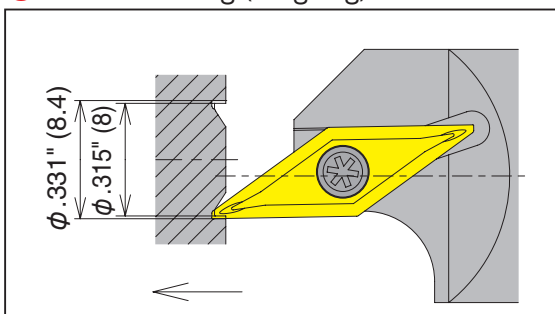
1 Longitudinal feed (roughing)



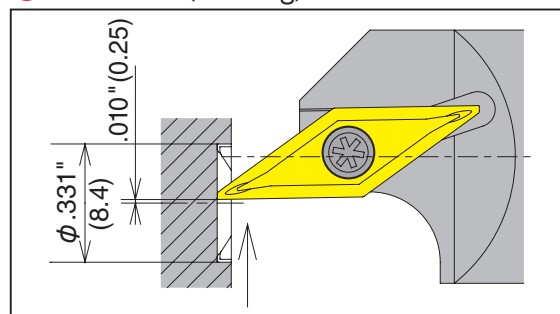
2 Longitudinal feed (finishing)



3 Slant machining (roughing)



4 Cross feed (finishing)



FGV Series

FGV

For Gang-style machine

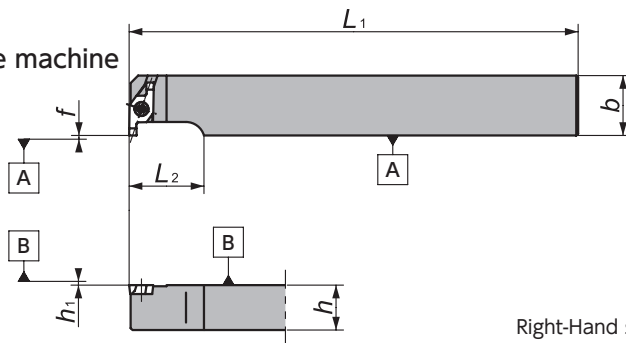
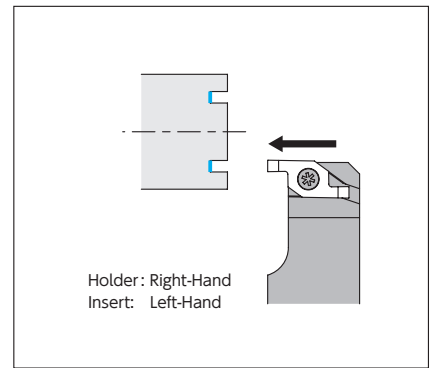


Figure-1

Right-Hand style shown
Takes Left-Hand insert



CH-FGV

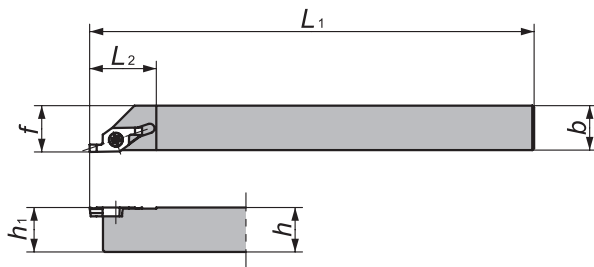
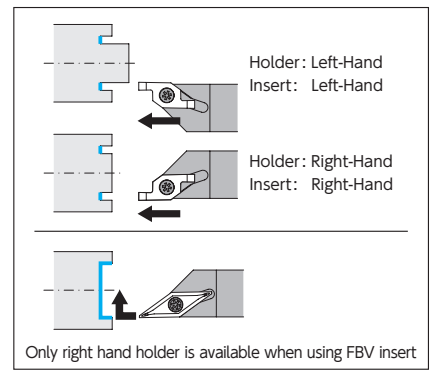


Figure-2

Right-Hand style shown



DS-FGV

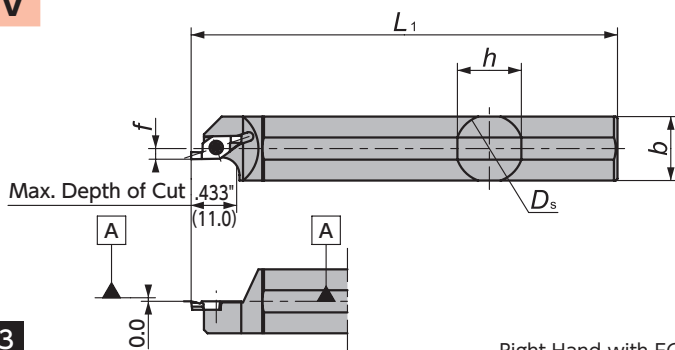
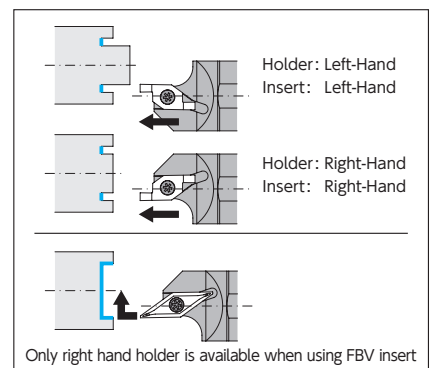


Figure-3

Right-Hand with FGV style shown



FGV - Toolholders

FGV

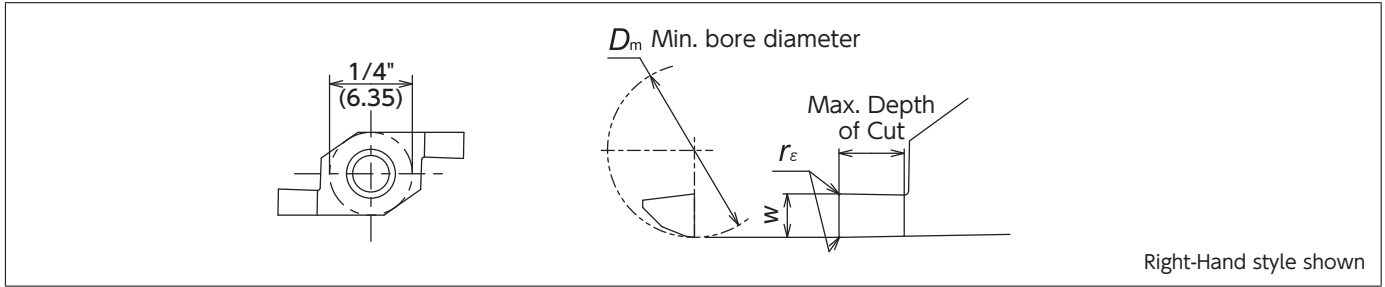
Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		L_2		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
FGV...L	FGV%1016	1	○	○	.413	10	.630	16	0	0.0	4.724	120	0	0.0	.787	20	LRIS-2.5 × 7	CLR-15S
	FGV%1216	1	○	○	.472	12	.630	16	0	0.0	4.724	120	0	0.0	.787	20	LRIS-2.5 × 7	CLR-15S
	FGV%1616	1	○	○	.630	16	.630	16	0	0.0	4.724	120	0	0.0	.787	20	LRIS-2.5 × 7	CLR-15S
FGV FBV	CH-FGV%1010	2	○	○	.413	10	.394	10	.394	10	4.724	120	.413	10.5	.709	18	LRIS-2.5 × 7	CLR-15S
	CH-FGV%1212	2	○	○	.472	12	.472	12	.472	12	4.724	120	.492	12.5	.709	18	LRIS-2.5 × 7	CLR-15S
	CH-FGV%1616	2	○	○	.630	16	.630	16	.630	16	4.724	120	.650	16.5	.709	18	LRIS-2.5 × 7	CLR-15S



DS-FGV

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
FGV FBV	DS-FGV%16-012	3	○	○	.630	16.000	.591	15	.591	15	3.150	80	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%19	3	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%20	3	○	○	.787	20.000	.748	19	.748	19	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%22	3	○	○	.866	22.000	.827	21	.827	21	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%22M	1	○	○	.866	22.000	.827	21	.827	21	5.906	150	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%25-MET	3	○	○	.984	25.000	.945	24	.945	24	5.906	150	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%25	3	○	○	1	25.400	.965	24.5	.965	24.5	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S

FGV - Inserts

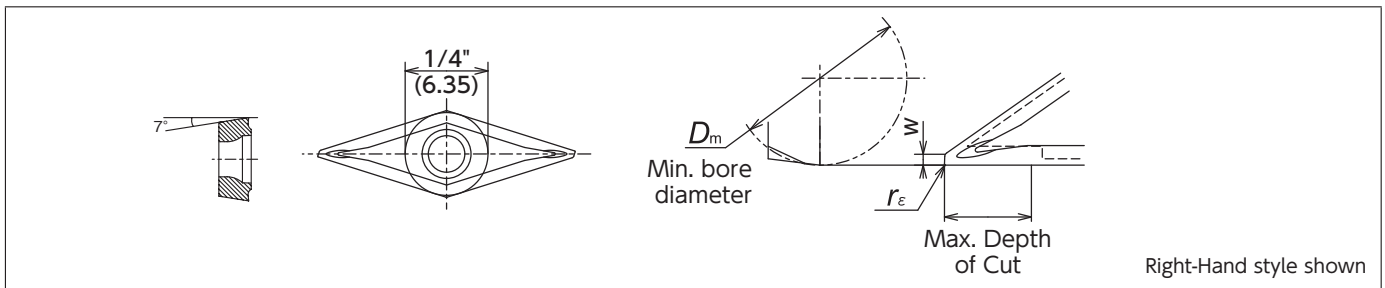
FGV




Shape	Item Number	Groove Width w		Min. Bore Diameter		Max Depth of Cut		Thickness		r_{ϵ}		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM4	
												R	L
 Right-Hand style shown	FGV100RB00D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.000	0.00	○	
	FGV100RB05D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.002	0.05	○	
	FGV150RB00D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.000	0.00	○	
	FGV150RB05D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.002	0.05	○	
	FGV200RB00D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.000	0.00	○	
	FGV200RB05D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.002	0.05	○	
 Left-Hand style shown	FGV100LB00D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.000	0.00		○
	FGV100LB05D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.002	0.05		○
	FGV150LB00D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.000	0.00		○
	FGV150LB05D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.002	0.05		○
	FGV200LB00D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.000	0.00		○
	FGV200LB05D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.002	0.05		○

FBV - Inserts

FBV



Shape	Item Number	Groove Width w		Min. Bore Diameter		Max Depth of Cut		Thickness		r_{ϵ}		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM4	
												R	L
 Right-Hand style shown	FBV40%105D8AM3	.020	0.5	.315	8.0	.157	4.0	.102	2.58	.002	0.05	○	
	FBV40%115D8AM3	.020	0.5	.315	8.0	.157	4.0	.102	2.58	.006	0.15	○	

Note: Only CH-FGVR and DS-FGVR can take FBV Right hand insert.

Cutting condition **T18**

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 M : Mirror finish

○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through

ⓇL : 1-2 week delivery (Right / Left-hand only)
 ⓇL : 1-2 week delivery (Right / Left-hand only, Newly added)

GTPA Series

Best tool for Aluminum Spool Machining

GTPA

Screw Accessible from both sides

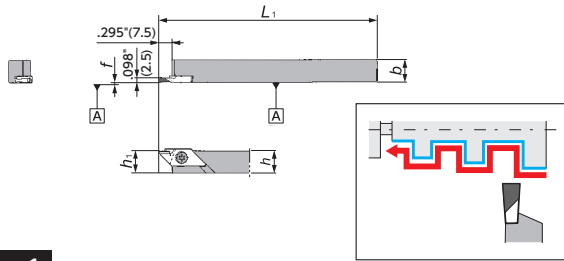


Figure-1

Right-Hand style shown

GTPA-OH (Coolant through)

Screw Accessible from both sides

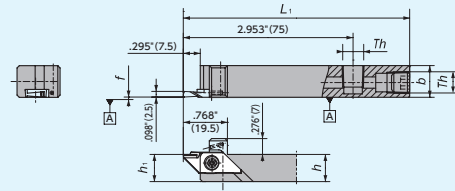


Figure-2

Right-Hand style shown

Th (Thread type)

Metric size holder: Rc1/8 (PT1/8)

Y-GTPA

Screw Accessible from both sides

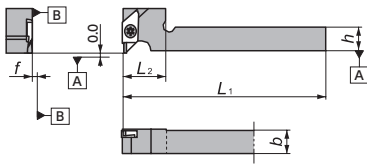


Figure-3

Right-Hand style shown

Y-GTPA-OH (Coolant through)

Screw Accessible from both sides

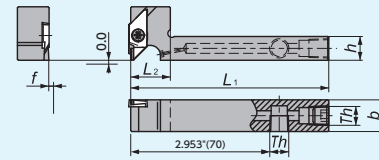


Figure-4

Right-Hand style shown

Th (Thread type)

Metric size holder: Rc1/8 (PT1/8)

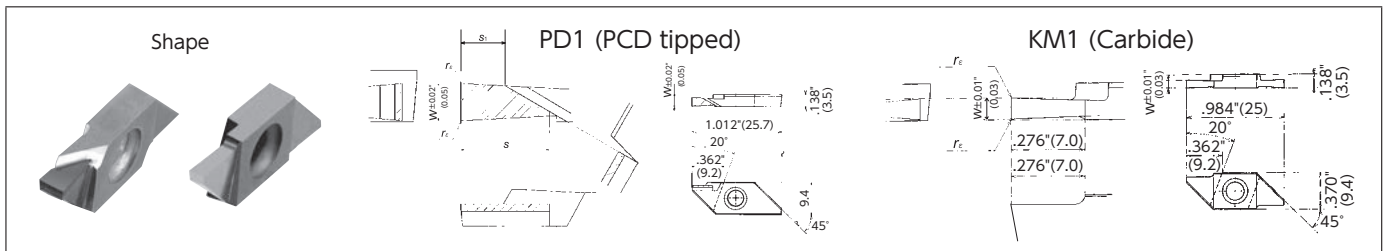
GTPA - Toolholders

GTPA

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
	GTPA%1010	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	—	—	—	LRIS-4 × 10PW	CLR-15S
	GTPA%1212	1	○	○	.472	12	.472	12	.472	12	4.724	120	.004	0.1	—	—	—	LRIS-4 × 10PW	CLR-15S
	GTPA%1616	1	○	○	.630	16	.630	16	.630	16	4.724	120	.004	0.1	—	—	—	LRIS-4 × 12PW	CLR-15S
	GTPA%1214H-OH	2	○	○	.472	12	.551	14	.472	12	3.937	100	.004	0.1	—	—	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S
	Y-GTPA%1216	3	○	○	.472	12	.630	16	—	—	4.724	120	.004	0.1	.787	20	—	LRIS-4 × 12PW	CLR-15S
	Y-GTPA%1014FSS-OH	4	○	○	.394	10	.551	14	—	—	3.150	80	.004	0.1	.591	15	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S
	Y-GTPA%1216HS-OH	4	○	○	.472	12	.630	16	—	—	3.937	100	.004	0.1	.787	20	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S
	Y-GTPA%1216H-OH	4	○	○	.630	16	.630	16	—	—	3.937	100	.004	0.1	.984	25	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S

GTPA Series - Inserts

GTPA



Item Number	Groove Width w		Max Depth of Cut		S		S ₁		f _ε		Carbide	PCD
	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
GTPA20FRN01-082	.079	2.0	.118	3.0	.157	4.0	.079	2.0	-.004	-0.1		○
GTPA20FRN01	.079	2.0	.197	5.0	.236	6.0	.157	4.0	-.004	-0.1		○
GTPA20FRN01	.079	2.0	.236	6.0	—	—	—	—	-.004	-0.1	○	
GTPA25FRN01-081	.098	2.5	.118	3.0	.157	4.0	.024	1.0	-.004	-0.1		○
GTPA25FRN01	.098	2.5	.197	5.0	.236	6.0	.118	3.0	-.004	-0.1		○
GTPA25FRN01	.098	2.5	.236	6.0	—	—	—	—	-.004	-0.1	○	

Cutting condition → T4

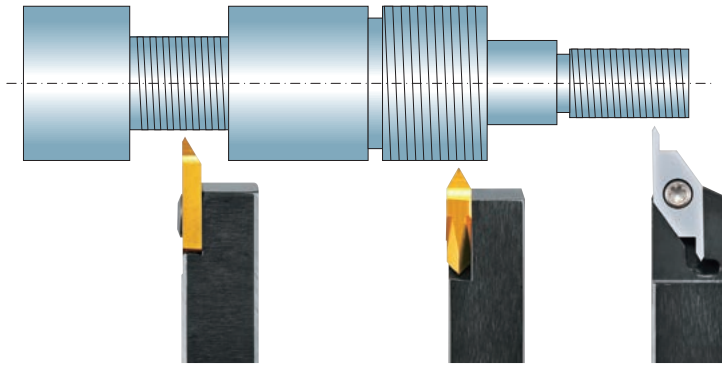
U






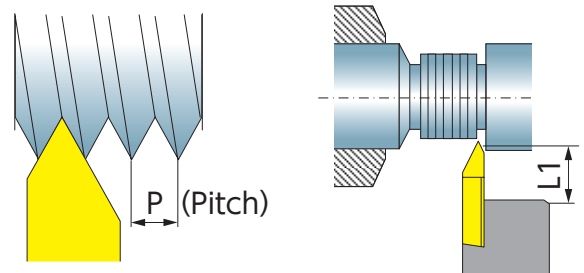
Threading

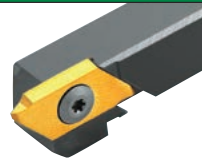





■ Threading Tools	U2
■ Recommended Cutting Conditions.....	U4
■ General Information	U5
■ Tool List	U6
● CSV series.....	U6
● TTPS series	U8
● TTP series	U10
● TTMH series	U14
● Thread Whirling	U16

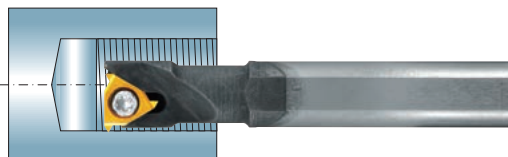
NTK Threading Tools - Product Lines





Insert	CSVT →U6		TTPS →U8
	CSV	DS-CSV	CTPS
Holder	 →U6	 →U6	 →U8
Profile	60°		60°
Pitch	127 - 51 TPI (0.2 - 0.5mm)		127 - 17 TPI (0.2 - 1.5mm)
L1	.118" (3.0mm)		.197" (5.0mm)



Insert	TTP →U11			TTMH32 →U14		
	TTP	DS-TTP	CH-TTP	STTN	DS-STT	NTTB
Holder	 →U10	 →U10	 →U10	 →U14	 →U14	 →U14
Profile	60° / 55°			60°		
Pitch	127 - 13 TPI (0.2 - 2.0mm)			31 - 9 TPI (0.8 - 3.0mm)		
L1	.217" (5.5mm)			.157" (4.0mm)	.118" (3.0mm)	.157" (4.0mm)



Insert	SBT →V20	TMN →V33
	NBH	TGC / HN
Holder	 →V14	 →V33
Profile	60°	60°
Pitch	51 - 15 TPI (0.5 - 1.75mm)	63 - 34 TPI (0.4 - 0.75mm)
L1	.024" - .071" (0.6 - 1.8mm)	.028" - .039" (0.7 - 1.0mm)

Tools and Thread Standards

Thread Type		ISO Metric	American Unified	Whitworth	Parallel Pipe	American Tapered Pipe	Tapered Pipe
		M	UNC UNE	W	G(PF)	NPT	R(PT)
Profile	60°	60°	55°	55°	60°	55°	
Tool	Pitch	mm	TPI	TPI	TPI	TPI	TPI
External Thread	 CSV	0.2 - 0.5	80 - 56	—	—	—	—
	 TTPS	0.2 - 1.5	80 - 18	—	—	(18)	—
	 TTP	0.2 - 2.0	80 - 13	40/24/20/18/16	(28/19)	(18/14)	(28/19)
	 TTMH	0.8 - 3.0	24 - 9	—	—	18/14/11.5	—
Internal Thread	 SBT	0.5 - 1.75	36 - 16	—	—	(18)	—
	 TGC/HN	0.4 - 0.75	56 - 36	—	—	—	—

(Please check Radius [Flat] shape over inserts)

Recommended Cutting Conditions

Threading

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	VM1		VM1 / ZM3		QM3		
	2nd choice	ZM3		QM3		VM1 / ZM3		
Cutting Speed (SFM)		75 125 225	100 200 275	130 230 330	150 300 600	150 300 500		

*Unless your machine is equipped with high speed threading program, please set the feed rate to 80 IPM or lower to prevent making incomplete threads

Recommended Depth of Cut (DOC) for Each Pass

TTP, TTPS, TTMH, TTMA, CSVT

Thread Type		Pitch (mm)	Total DOC (mm)	Number of pass	1	2	3	4	5	6	7	8	9	10	
Metric (60°)	Male thread	0.20	0.20	4	0.08	0.06	0.04	0.02							
		0.25	0.24	4	0.10	0.08	0.04	0.02							
		0.30	0.28	5	0.08	0.07	0.07	0.04	0.02						
		0.35	0.32	5	0.10	0.09	0.07	0.04	0.02						
		0.40	0.35	5	0.12	0.10	0.07	0.04	0.02						
		0.45	0.39	5	0.16	0.10	0.07	0.04	0.02						
		0.50	0.33	5	0.10	0.10	0.07	0.04	0.02						
		0.60	0.40	6	0.10	0.10	0.08	0.06	0.04	0.02					
		0.70	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02					
		0.75	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02				
		0.80	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02				
		1.00	0.71	8	0.15	0.15	0.12	0.10	0.08	0.06	0.03	0.02			
		1.25	0.90	9	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.05	0.02		
1.50	1.09	10	0.22	0.20	0.15	0.12	0.10	0.10	0.08	0.05	0.05	0.02			

Thread Type		Pitch (TPI)	Total DOC (inch)	Number of pass	1	2	3	4	5	6	7	8	9	10	
American Unified	Male thread	80	.008	4	.003	.003	.002	.001							
		72	.009	4	.004	.003	.002	.001							
		64	.011	5	.003	.003	.002	.002	.001						
		56	.012	5	.004	.003	.002	.002	.001						
		48	.015	5	.005	.004	.003	.002	.001						
		44	.016	6	.005	.004	.003	.002	.002	.001					
		40	.018	6	.005	.004	.004	.003	.002	.001					
		36	.020	6	.005	.005	.004	.003	.002	.001					
		32	.022	7	.005	.005	.004	.003	.002	.002	.001				
		28	.025	7	.006	.005	.004	.004	.003	.002	.001				
		24	.030	8	.007	.006	.005	.004	.003	.002	.002	.001			
		20	.033	9	.007	.006	.005	.004	.003	.003	.002	.002	.001		
		18	.038	9	.008	.007	.006	.005	.004	.003	.002	.002	.001		
		16	.036	9	.007	.007	.006	.005	.004	.003	.002	.002	.001		
		14	.043	10	.008	.008	.007	.006	.005	.003	.002	.002	.002	.001	

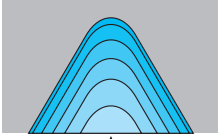
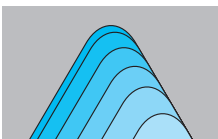
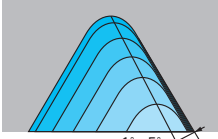
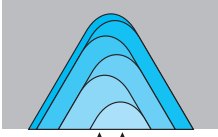
■ Cutting Conditions for STICK DUO

For 600 - 1500 RPM Recommended Depth of Cut (DOC) for Each Pass

Metric Thread		Number of Pass																				
Pitch (mm)	Total DOC (mm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.5	0.3	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—
0.7	0.43	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—
0.75	0.46	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—
0.8	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—
1.0	0.62	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—
1.25	0.76	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—
1.5	0.92	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.04	0.03	0.03	0.02	0.01	—	—	—
1.75	1.09	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—

UNF Thread		Number of Pass																			
Pitch (TPI)	Total DOC (inch)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
36	.017	.002	.002	.002	.002	.002	.002	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—	—
32	.019	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—
28	.022	.003	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—
24	.026	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—
20	.031	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—
18	.034	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.0008	.0004	—	—	—
16	.039	.003	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—

■ Infeed Threading Method

	Features	
	Advantage	Disadvantage
 <p>Radial Infeed</p>	<ul style="list-style-type: none"> ● Most popular and easiest method ● Easy to change parameter ● Uniform wear on both sides of insert 	<ul style="list-style-type: none"> ● Chip evacuation ● Vibration due to higher cutting force ● Ineffective for large pitch threading
 <p>Flank Infeed</p>	<ul style="list-style-type: none"> ● 2nd most popular and easy method ● Effective for larger pitch and gummy material thanks to lower cutting force ● Excellent chip evacuation 	<ul style="list-style-type: none"> ● Larger flank wear on right side of the insert ● Difficult to change cutting depth per cut
 <p>Modified Flank Infeed 1°~5°</p>	<ul style="list-style-type: none"> ● Reduce flank wear on right side ● Effective for larger pitch and gummy material thanks to lower cutting force ● Excellent chip evacuation 	<ul style="list-style-type: none"> ● Difficult to program ● Difficult to change cutting depth per cut
 <p>Incremental Infeed</p>	<ul style="list-style-type: none"> ● Uniform flank wear ● Effective for larger pitch and gummy material thanks to lower cutting force 	<ul style="list-style-type: none"> ● Difficult to program ● Difficult to change cutting depth per cut ● Chip evacuation

CSV Series

Best for up to .200" diameter material

CSV-NC For Gang-style machine

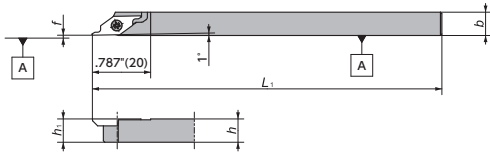


Figure-1

Right-Hand style shown

CSV For Cam-style machine

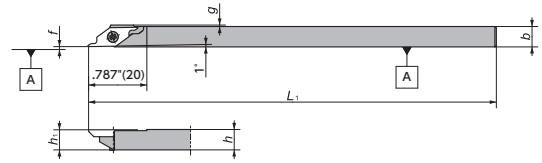


Figure-2

Right-Hand style shown

DS-CSVL

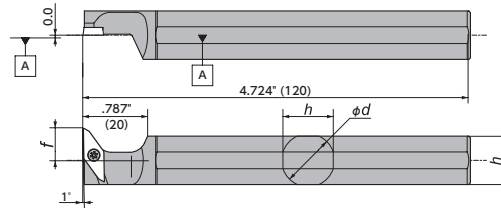




Figure-3

Left-Hand style shown
Takes Right-hand insert

CSV_{R/L} / CSV_{R/L}-NC

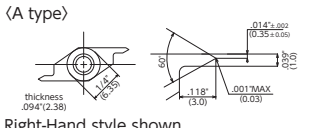
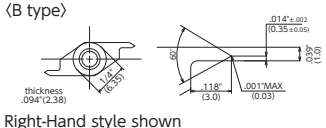
Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		g		Clamp Screw	Wrench		
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)				
 CSV..11..	CSV _{R/L} 06-IN-NC	1	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S		
	CSV _{R/L} 08-IN-NC	1	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S		
	CSV _{R/L} 08NC	1	○	○	.315	8	.315	8	.315	8	.315	8	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08NC-F	1	○	○	.315	8	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10GXNC	1	○	○	.394	10	.394	10	.394	10	.394	10	3.346	85	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10NC	1	○	○	.394	10	.394	10	.394	10	.394	10	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 12NC	1	○	○	.472	12	.472	12	.472	12	.472	12	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 07GX	2	○	○	.275	7	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 07	2	○	●	.275	7	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08GX	2	○	○	.315	8	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08	2	○	●	.315	8	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10	2	○	○	.394	10	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV _{R/L} 12GX	2	○	○	.472	12	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	
CSV _{R/L} 12	2	○	●	.472	12	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSV _{R/L} 15	3	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

CSV_T - Threading

Mirror finish

Shape	Item Number	Chip-breaker	r_e		Pitch		Coated Carbide	
			(TPI)	(mm)	(TPI)	(mm)	VM1	
							R	L
(A type) 	CSV _T 11F _{R/L} P60-035A	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●
(B type) 	CSV _T 11F _{R/L} P60-035B	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●

Note: All angles shown are obtained when insert is set in the holder

CSVT Style



Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch			Applicable Inserts
	#1	#2	(TPI)	(inch)	(mm)	
Coarse		No.1-64 UNC	64	.016	0.3969	CSVT11F $\frac{1}{2}$ P60-035A CSVT11F $\frac{1}{2}$ P60-035B
	No.2-56 UNC		56	.018	0.4536	
Fine	No.0-80 UNF		80	.013	0.3175	
		No.1-72 UNF	72	.014	0.3528	
	No.2-64 UNF		64	.016	0.3969	
		No.3-56 UNF	56	.018	0.4536	

Metric (M) Threads / Fine and Coarse

	Pitch (mm)				
	0.50	0.40	0.35	0.25	0.20
M1				Coarse	Fine
M2		Coarse		Fine	
M3	Coarse		Fine		
M4	Fine				
M5					

Recommended Depth of Cut (DOC) for Each Pass (mm)

TTP, TTPS, TTMH, TTMA, CSVT

Thread Type		Pitch (mm)	Total DOC (mm)	Number of pass	1	2	3	4	5	6	7	8	9	10
Metric (60°)	Male thread	0.20	0.20	4	0.08	0.06	0.04	0.02						
		0.25	0.24	4	0.10	0.08	0.04	0.02						
		0.30	0.28	5	0.08	0.07	0.07	0.04	0.02					
		0.35	0.32	5	0.10	0.09	0.07	0.04	0.02					
		0.40	0.35	5	0.12	0.10	0.07	0.04	0.02					
		0.45	0.39	5	0.16	0.10	0.07	0.04	0.02					
		0.50	0.33	5	0.10	0.10	0.07	0.04	0.02					
		0.60	0.40	6	0.10	0.10	0.08	0.06	0.04	0.02				
		0.70	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02				
		0.75	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02			
		0.80	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02			
		1.00	0.71	8	0.15	0.15	0.12	0.10	0.08	0.06	0.03	0.02		
		1.25	0.90	9	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.05	0.02	
1.50	1.09	10	0.22	0.20	0.15	0.12	0.10	0.10	0.08	0.05	0.05	0.02		

CSV series **→O51**

Cutting condition **→U4**

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

CTPS Series

CTPS

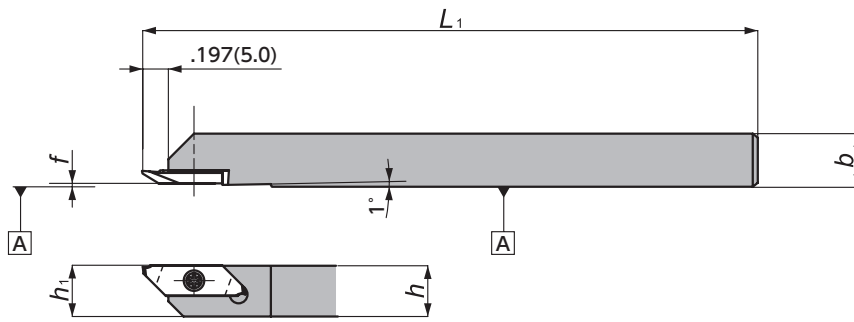



Figure-1

Right-Hand style shown

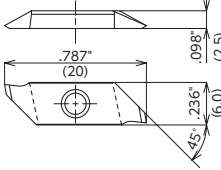
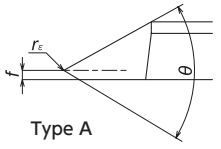
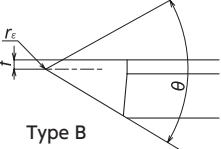
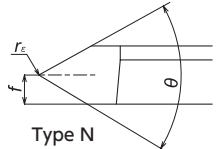

CTPS Series - Toolholders

CTPS (Takes right-hand inserts)

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TTPS	CTPS%06-IN	1	●		3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPS%08-IN	1	●		1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPS%10	1	○		.394	10	.394	10	.394	10	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPS%12	1	○		.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S

CTPS Series - Inserts

TTPS - Threading

Shape	Item Number	Type	θ	f		r_ϵ		Pitch		Coated Carbide	
				(Inch)	(mm)	(Inch)	(mm)	(TPI)	(mm)	VM1	ZM3
 Type A	TTPS60FR4A	A	60°	.016	0.4	.002 MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	○	○
 Type A	TTPS60FR4B	B	60°	.016	0.4	.002 MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	○	○
 Type B	TTPS60FR8A	A	60°	.031	0.8	R.002	(0.05)	63 - 21	0.4 - 1.25	○	○
 Type B	TTPS60FR8B	B	60°	.031	0.8	R.002	(0.05)	63 - 21	0.4 - 1.25	○	○
 Type N	TTPS60FR-N	N	60°	.049	1.25	R.004	(0.1)	25 - 17	1.0 - 1.5	○	○

Right-Hand style shown

Note: All angles shown are obtained when insert is set in the holder

TTPS Style

Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch		Applicable Inserts	
	#1	#2	(TPI)	(mm)		
Coarse		No.1-64 UNC	64	0.397	TTPS60FR4A (B)	
	No.2-56 UNC		56	0.454	TTPS60FR4A (B) TTPS60FR8A (B)	
		No.3-48 UNC	48	0.529		
	No.4-40 UNC		40	0.635		
		No.5-40 UNC		40	0.635	
		No.6-32 UNC		32	0.794	
		No.8-32 UNC		32	0.794	
		No.10-24 UNC		24	1.058	
		No.12-24 UNC		24	1.058	TTPS60FR4A (B) TTPS60FR8A (B) TTPS60FR-N
		1/4-20 UNC		20	1.270	
	5/16-18 UNC		18	1.411	TTPS60FR-N	
Fine	No.0-80 UNF		80	0.318	TTPS60FR4A (B)	
		No.1-72 UNF	72	0.353		
	No.2-64 UNF		64	0.397		
		No.3-56 UNF	56	0.454	TTPS60FR4A (B) TTPS60FR8A (B)	
	No.4-48 UNF		48	0.529		
	No.5-44 UNF		44	0.577		
	No.6-40 UNF		40	0.635		
		No.8-36 UNF		36	0.706	
		No.10-32 UNF		32	0.794	
		No.12-28 UNF		28	0.907	TTPS60FR8A (B)
	1/4-28 UNF		28	0.907		
	5/16-24 UNF		24	1.058	TTPS60FR8A (B) TTPS60FR-N	
	3/8-24 UNF		24	1.058		
	7/16-20 UNF		20	1.270		
		1/2-20 UNF		20	1.270	
		9/16-18 UNF		18	1.411	TTPS60FR-N
	5/8-18 UNF		18	1.411		

Metric (M) Threads / Fine and Coarse

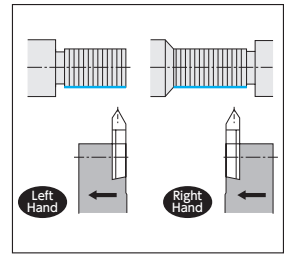
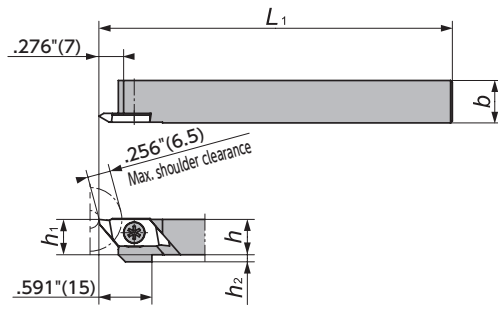
Thread Type			Pitch (mm)										
#1	#2	#3	1.50	1.25	1.00	0.80	0.75	0.70	0.50	0.40	0.35	0.25	0.20
M1												Coarse	Fine
M2										Coarse		Fine	
M3									Coarse		Fine		
M4								Coarse	Fine				
M5						Coarse							
M6	M7				Coarse								
M8				Coarse	Fine								
	M9			Fine									
M10			Coarse										
	M11												
M12	M14												
	M15												
M16													
	M18												
M20													
	M22												
M24													
		M25											
		M26											
	M27												
		M28			Fine								

Inserts	Pitch	
	(TPI)	(mm)
TTPS60FR4A (B)	127 - 34	0.2 - 0.75
TTPS60FR8A (B)	63 - 21	0.4 - 1.25
TTPS60FR-N	25 - 17	1.0 - 1.5

Cutting condition 

TTP Series

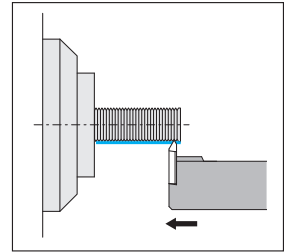
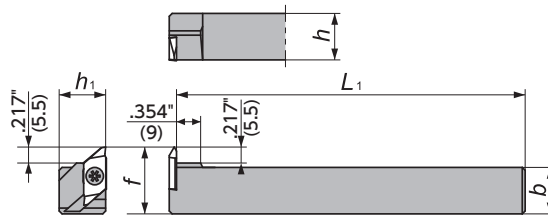
TTP



Right-Hand style shown

Figure-1

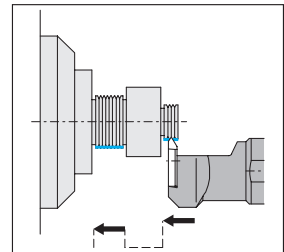
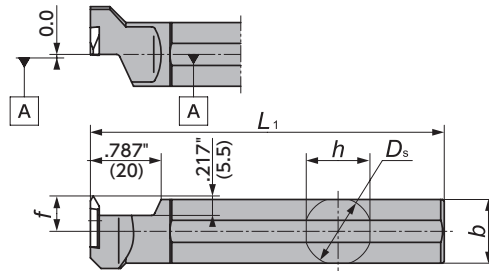
CH-TTP



Left-Hand style shown
Takes Right-hand insert

Figure-2


DS-TTP




Left-Hand style shown
Takes Right-hand insert

Figure-3

TTP_{R/L} / CH-TTPL

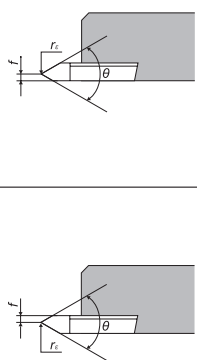




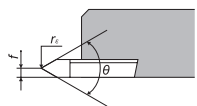

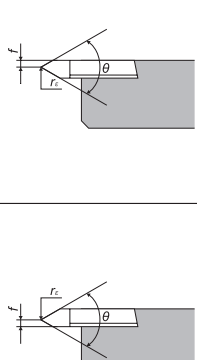




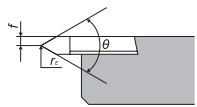

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		h ₂		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TTP.. TTP..FR	TTP _{R/L} 06-IN	1	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	—	—	.079	2	LRIS-4 × 10PW	CLR-15S
	TTP _{R/L} 08-IN	1	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	—	—	0	0	LRIS-4 × 10PW	CLR-15S
	TTP _{R/L} 10-IN	1	●	●	5/8	5/8	5/8	5/8	5/8	5/8	4.724	120	—	—	0	0	LRIS-4 × 12PW	CLR-15S
	TTP _{R/L} 08	1	○	○	.315	8	.394	10	.315	8	4.724	120	—	—	.157	4	LRIS-4 × 12PW	CLR-15S
	TTP _{R/L} 10	1	○	○	.394	10	.394	10	.394	10	4.724	120	—	—	.079	2	LRIS-4 × 12PW	CLR-15S
	TTP _{R/L} 12GX	1	○	○	.472	12	.472	12	.472	12	3.346	85	—	—	0	0	LRIS-4 × 12PW	CLR-15S
	TTP _{R/L} 12	1	●	●	.472	12	.472	12	.472	12	4.724	120	—	—	0	0	LRIS-2.5 × 7	CLR-15S
	TTP _{R/L} 16H	1	○	○	.630	16	.630	16	.630	16	3.937	100	—	—	0	0	LRIS-2.5 × 7	CLR-15S
	TTP _{R/L} 16	1	○	○	.630	16	.630	16	.630	16	4.724	120	—	—	0	0	LRIS-2.5 × 7	CLR-15S
	TTP _{R/L} 20F	1	○	○	.787	20	.787	20	.787	20	3.150	80	—	—	0	0	LRIS-4 × 10	LLR-25S-20 × 65
CH-TTPL16	2	○	○	.630	16	.630	16	.630	16	4.724	120	.906	23	—	—	LRIS-4 × 10	LLR-25S-20 × 65	
CH-TTPL20	2	○	○	.787	20	.787	20	.787	20	4.724	120	1.063	27	—	—	LRIS-4 × 10	LLR-25S-20 × 65	

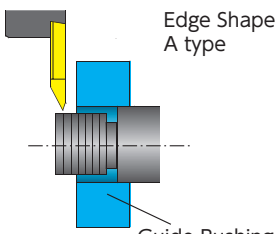
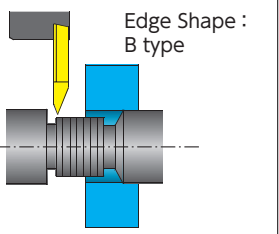
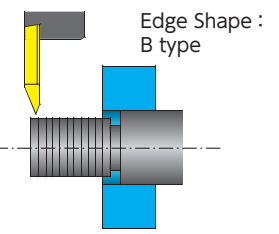
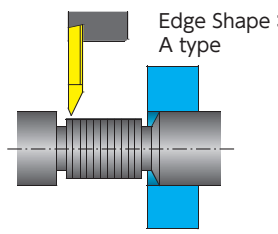
DS-TTP

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TTP..	DS-TTP _{R/L} 16F	3	○	○	.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{R/L} 19	3	●	●	3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{R/L} 20	3	●	●	.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{R/L} 22	3	●	●	.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{R/L} 25-MET	3	○	○	.984	25.000	.945	24	.945	24	5.906	150	.118	3.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{R/L} 25	3	●	●	1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65

TTP Series - Inserts

TTP - Threading

Shape	Item Number	θ	f		r_ϵ		Pitch		Coated Carbide		Carbide			
			(Inch)	(mm)	(Inch)	(mm)	(TPI)	(mm)	QM3		KM1			
			R	L	R	L	R	L	R	L				
Right-Hand 	TTP60FR2A	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 72	0.2 - 0.35			○			
	TTP60FR4A	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	●		●			
	TTP60FR4AS 	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○	
	TTP60FR8A	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25	●		●			
	TTP60FR8AS 	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○	
	TTP55FR8A	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-			●			
	TTP60FR2B	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 72	0.2 - 0.35			○			
	TTP60FR4B	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	●		●			
	TTP60FR4BS 	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○	
	TTP60FR8B	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25	●		●			
	TTP60FR8BS 	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○	
	TTP55FR8B	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-			●			
	N type 	TTP60FR-N	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5	●		●		
		TTP60FR-NS 	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5					○
		TTP60FR-N02	60°	.049	1.25	(R.008)	(R0.2)	16 - 13	1.5 - 2.0	●		○		
Left-Hand 	TTP60FL2A	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 72	0.2 - 0.35			○			
	TTP60FL4A	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75		●	●			
	TTP60FL4AS 	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○	
	TTP60FL8A	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25		●	●			
	TTP60FL8AS 	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○	
	TTP55FL8A	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-			●			
	TTP60FL2B	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 72	0.2 - 0.35			○			
	TTP60FL4B	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75		●	●			
	TTP60FL4BS 	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○	
	TTP60FL8B	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25		○	●			
	TTP60FL8BS 	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○	
	TTP55FL8B	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-			●			
	N type 	TTP60FL-N	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5		●	●		
		TTP60FL-NS 	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5					○
		TTP60FL-N02	60°	.049	1.25	(R.008)	(R0.2)	16 - 13	1.5 - 2.0		●	○		

Right Hand Toolholders				Left Hand Toolholders			
							
Edge Shape : A type		Edge Shape : B type		Edge Shape : B type		Edge Shape : A type	
Toolholder	TTPR	Toolholder	TTPR	Toolholder	TTPL	Toolholder	TTPL
Insert	TTP..FR..A	Insert	TTP..FR..B	Insert	TTP..FL..B	Insert	TTP..FL..A

Cutting condition 

● : Stock
 ● : Stock (Newly added)
 ■ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R)(L) : 1-2 week delivery (Right / Left-hand only)
 (R)(L) : 1-2 week delivery (Right / Left-hand only, Newly added)

TTP Style



Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch		Applicable Inserts
			(TPI)	(mm)	
Coarse (UNC)		No.1-64 UNC	64	0.3969	TTP60F $\frac{3}{4}$ -2A (B) TTP60F $\frac{3}{4}$ -4A, AS (B, BS)
		No.2-56 UNC	56	0.4536	TTP60F $\frac{3}{4}$ -4A, AS (B, BS) TTP60F $\frac{3}{4}$ -8A, AS (B, BS)
		No.3-48 UNC	48	0.5292	
		No.4-40 UNC	40	0.6350	
		No.5-40 UNC	40	0.6350	TTP60F $\frac{3}{4}$ -8A, AS (B, BS)
		No.6-32 UNC	32	0.7938	
		No.8-32 UNC	32	0.7938	TTP60F $\frac{3}{4}$ -8A, AS (B, BS) TTP60F $\frac{3}{4}$ -N(S)
		No.10-24 UNC	24	1.0583	
		No.12-24 UNC	24	1.0583	TTP60F $\frac{3}{4}$ -N(S)
		1/4-20 UNC	20	1.2700	
		5/16-18 UNC	18	1.4111	TTP60F $\frac{3}{4}$ -N02
		3/8-16 UNC	16	1.5875	
		7/16-14 UNC	14	1.8143	TTP60F $\frac{3}{4}$ -N02
		1/2-13 UNC	13	1.9538	
Fine (UNF)		No.0-80 UNF	80	0.3175	TTP60F $\frac{3}{4}$ -2A (B) TTP60F $\frac{3}{4}$ -4A, AS (B, BS)
		No.1-72 UNF	72	0.3528	
		No.2-64 UNF	64	0.3969	
		No.3-56 UNF	56	0.4536	TTP60F $\frac{3}{4}$ -4A, AS (B, BS) TTP60F $\frac{3}{4}$ -8A, AS (B, BS)
		No.4-48 UNF	48	0.5292	
		No.5-44 UNF	44	0.5773	
		No.6-40 UNF	40	0.6350	
		No.8-36 UNF	36	0.7056	TTP60F $\frac{3}{4}$ -8A, AS (B, BS) TTP60F $\frac{3}{4}$ -N(S)
		No.10-32 UNF	32	0.7938	
		No.12-28 UNF	28	0.9071	TTP60F $\frac{3}{4}$ -N(S)
		1/4-28 UNF	28	0.9071	
		5/16-24 UNF	24	1.0583	TTP60F $\frac{3}{4}$ -N02
		3/8-24 UNF	24	1.0583	
		7/16-20 UNF	20	1.2700	TTP60F $\frac{3}{4}$ -N(S)
		1/2-20 UNF	20	1.2700	
		9/16-18 UNF	18	1.4111	TTP60F $\frac{3}{4}$ -N(S)
		5/8-18 UNF	18	1.4111	
	3/4-16 UNF	16	1.5875	TTP60F $\frac{3}{4}$ -N02	
	7/8-14 UNF	14	1.8143		

■ Metric (M) Threads / Fine and Coarse

Thread Type		Pitch (mm)												
		2.00	1.50	1.25	1.00	0.80	0.75	0.70	0.50	0.40	0.35	0.25	0.20	
M1													Coarse	Fine
M2													Coarse	Fine
M3													Coarse	Fine
M4													Coarse	Fine
M5													Coarse	Fine
M6													Coarse	Fine
M7													Coarse	Fine
M8													Coarse	Fine
M9													Coarse	Fine
M10													Coarse	Fine
M11													Coarse	Fine
M12													Coarse	Fine
M14													Coarse	Fine
M15													Coarse	Fine
M16													Coarse	Fine
M17													Coarse	Fine
M18													Coarse	Fine
M20													Coarse	Fine
M22													Coarse	Fine
M24													Coarse	Fine
M25													Coarse	Fine
M26													Coarse	Fine
M27													Coarse	Fine
M28													Coarse	Fine
M30													Coarse	Fine
M32													Coarse	Fine

Covered Thread Pitch Range		
Inserts	Pitch	
	(TPI)	(mm)
TTP60F ^R /L 2A (B)	127 - 63	0.2 - 0.4
TTP60F ^R /L 4A, AS (B, BS)	127 - 34	0.2 - 0.75
TTP60F ^R /L 8A, AS (B, BS)	63 - 21	0.4 - 1.25
TTP60F ^R /L -N (S)	25 - 17	1.0 - 1.5
TTP60F ^R /L -N02	16 - 13	1.5 - 2.0

TTP60F^R/L-N02 can be used up to M150 when the pitch is 2.0 mm

■ Whitworth

Applicable Insert	Thread Type	Pitch	
		(TPI)	(mm)
TTP55F ^R /L 8A (B)	W 1/8	40	0.63
	W 3/16	24	1.06
	W 1/4	20	1.27
	W 5/16	18	1.41
	W 3/8	16	1.54

STTN Series

STTN

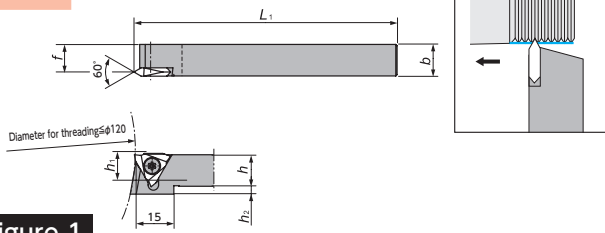


Figure-1

Right-Hand style shown

NTTB

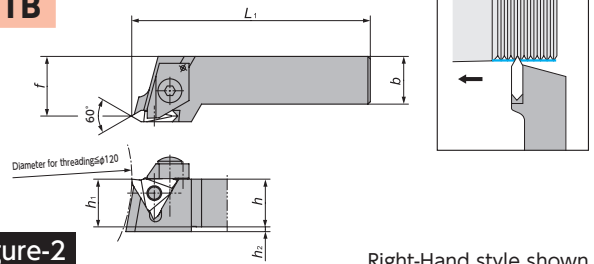


Figure-2

Right-Hand style shown

DS-STT

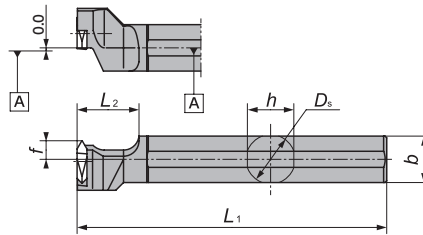


Figure-3

Left-Hand style shown
Takes Right-hand insert

STTN^{R/L} / NTTB^{R/L}

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		h_2		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TTMH3260	STTN ^{R/L} 101032	1	○		.394	10	.394	10	.394	10	3.150	80	.335	8.5	.197	5.0	LR-S-4 × 9	RLR-20S
	STTN ^{R/L} 121232	1	○		.472	12	.472	12	.472	12	3.150	80	.413	10.5	.197	5.0	LR-S-4 × 9	RLR-20S
	STTN ^{R/L} 121232-K	1	○		.472	12	.472	12	.472	12	4.912	125	.413	10.5	.197	5.0	LR-S-4 × 9	RLR-20S
	NTTB ^{R/L} 161632	2	○		.630	16	.630	16	.630	16	4.724	120	.787	20.0	.157	4.0	—	LW-2.5
	NTTB ^{R/L} 202032	2	○		.787	20	.787	20	.787	20	5.512	140	.984	25.0	0.0	0.0	—	LW-2.5

DS-STT^{R/L}

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TTMH3260	DS-STT ^{R/L} 14F	3	○		.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT ^{R/L} 15H	3	○		5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT ^{R/L} 16X*	3	○		.630	16.000	.591	15	.591	15	3.346	85	.236	6.0	LR-S-4 × 9	RLR-20S

STTN Series - Inserts

TTMH

Shape	Item Number	d		s		r_e		Pitch		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3	
										R	L
	TTMH3260R010	3/8	9.525	1/8	3.18	.004	0.10	31 - 9	0.8 - 3.0	○	
	TTMH3260R015	3/8	9.525	1/8	3.18	.006	0.15	25 - 9	1.0 - 3.0	○	
	TTMH3260R020	3/8	9.525	1/8	3.18	.008	0.20	16 - 9	1.5 - 3.0	○	
	TTMH3260R025	3/8	9.525	1/8	3.18	.010	0.25	14 - 9	1.75 - 3.0		

Right-Hand style shown

TTMH Style



Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch		Applicable Inserts
	#1	#2	(TPI)	(mm)	
Coarse (UNC)	No.10-24 UNC		24	1.0583	TTMH3260R010 TTMH3260R015
		No.12-24 UNC	24	1.0583	
	1/4-20 UNC		20	1.2700	
			18	1.4111	TTMH3260R010,R015 TTMH3260R020
	3/8-16 UNC		16	1.5875	
	7/16-14 UNC		14	1.8143	TTMH3260R010,R015 TTMH3260R020,R025
	1/2-13 UNC		13	1.9538	
	9/16-12 UNC		12	2.1167	
	5/8-11 UNC		11	2.3091	
3/4-10 UNC		10	2.5400		
		9	2.8222		
Fine (UNF)		No.12-28 UNF	28	0.9071	TTMH3260R010
	1/4-28 UNF		28	0.9071	TTMH3260R010 TTMH3260R015
	5/16-24 UNF		24	1.0583	
	3/8-24 UNF		24	1.0583	
	7/16-20 UNF		20	1.2700	TTMH3260R010,R015 TTMH3260R020
	1/2-20 UNF		20	1.2700	
	9/16-18 UNF		18	1.4111	TTMH3260R010,R015 TTMH3260R020,R025
	5/8-18 UNF		18	1.4111	
	3/4-16 UNF		16	1.5875	
	7/8-14 UNF		14	1.8143	
	1-12 UNF		12	2.1167	
	1 1/8-12 UNF		12	2.1167	
	1 1/4-12 UNF		12	2.1167	
	1 3/8-12 UNF		12	2.1167	
1 1/2-12 UNF		12	2.1167		

Metric (M) Threads / Fine and Coarse

Thread Type			Pitch (mm)							
#1	#2	#3	3.00	2.50	2.00	1.75	1.50	1.25	1.00	0.80
M5										Coarse
M6									Coarse	
	M7								Fine	
M8		M9						Coarse	Fine	
M10		M11					Coarse	Fine	Fine	
M12		M14			Coarse			Fine	Fine	
		M15			Coarse				Fine	
M16		M17							Fine	
	M18			Coarse	Fine				Fine	
M20		M22							Fine	
		M25							Fine	
M24		M26	Coarse						Fine	
		M27	Coarse						Fine	
		M28							Fine	
M30		M32	Fine						Fine	
		M33	Fine						Fine	
		M35							Fine	
M36		M38	Fine						Fine	
		M39	Fine						Fine	
		M40							Fine	

Covered Thread Pitch Range

Inserts	Pitch	
	(TPI)	(mm)
TTMH3260R010	31 - 9	0.8 - 3.0
TTMH3260R015	25 - 9	1.0 - 3.0
TTMH3260R020	16 - 9	1.5 - 3.0
TTMH3260R025	14 - 9	1.75 - 3.0

Cutting condition → U4

Thread Whirling

Features

WATCH ON
New Double-lead video is on [YouTube](#)



- NTK's unique patented design technology makes precise and correct inserts possible the first time, *without any redesign or remanufacturing even if it is a multiple-lead thread*
- The sharper cutting edges produce a better surface finish and longer tool life than competitor's inserts

Form Double-lead or Multiple-lead with Single Pass

Patented

	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm gear
Work material	Ti-6Al-4V ELI	brass
Work appearance		
Insert appearance		
Major Dia.	$\phi .157$ "(4.0mm)	$\phi .278$ "(7.0mm)
Minor Dia.	$\phi .094$ "(2.4mm)	$\phi .185$ "(4.7mm)
Lead [Pitch×No. of Lead]	.135"(3.42mm) [.067"×2(1.71mm×2)]	.193"(4.9mm) [.064"×3(1.63mm×3)]

- Can reduce cycle time by more than half
- NTK can achieve what other competitors cannot

Double-lead Bone Screw Process Example

- 1 1st thread whirl at taper part
- 2 Rotate the bar 180° and whirl the 2nd thread on same part as **1**
- 3 Thread whirl whole straight part
- 4 Thread whirl at very last part to get two-exits, after back of bar has been backed up a half lead (one pitch) and rotated 180°

Special Item Capability

- Even though almost all bone screw shapes are special, NTK thread whirling inserts can make the correct shape of thread the first time, without any redesign or remanufacturing
- Inserts will be delivered in 5 weeks after the order is received
- Within a 3 week time period, expedite delivery is available with an expedite fee
- Basically NTK thread whirling inserts are ground with topping and coated

Recommended Cutting Conditions

No. of teeth		9	6	4	
Conditions					
Main spindle	RPM	10 - 40	10 - 25	7 - 15	Faster RPM reduces machining time
	F	5400 - 14400	3600 - 9000	2500 - 5400	
Whirling cutter	RPM	1500 - 4000			
Feed Rate		Same as thread-lead			
Bar stock	φ	~φ .400" *		~φ .200"	* For cutter with φ 12mm ID
Work Material		Ti-6Al-4V ELI / 316SS / Titanium			

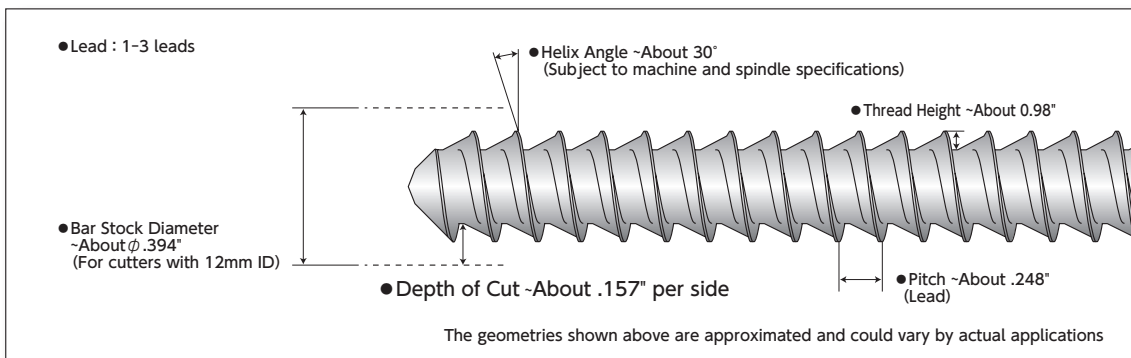
- Formula for calculating thread whirling process time

$$T \text{ (Seconds)} = \frac{60 \times \text{Thread length}}{\text{Main spindle rpm} \times \text{Feed rate (Thread lead)}}$$

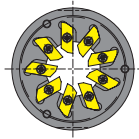
Ex.) Double lead / 2" length / .100" lead (2×.050" pitch) / 30 rpm

$$T \text{ (Seconds)} = \frac{60 \times 2}{30 \times .100"} = 40 \text{ Seconds}$$

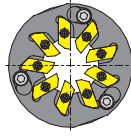
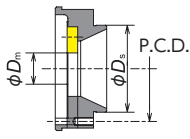
Applicable Thread Geometry (Approximated)



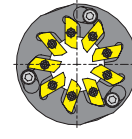
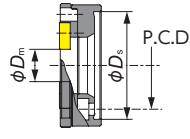
Thread Whirling System



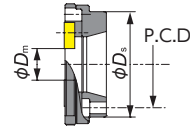
Type 1



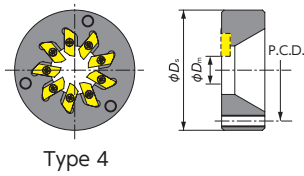
Type 2
Quick-change



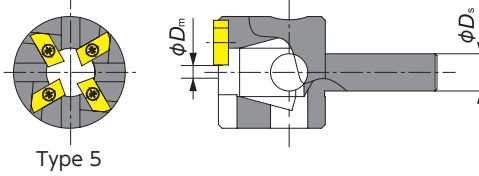
Type 3
Quick-change



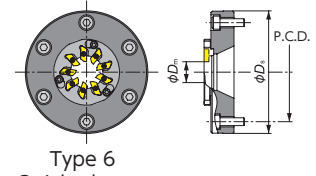
Machine make	Model	Location	Spindle make	Spindle model	Helix angle	NTK Thread whirling system	Stock	No. of tooth	ϕD_m (mm)	Type	ϕD_s	P.C.D.	Mount adapter bolt											
CITIZEN	M ₃₂ -VIII	Gang	CITIZEN	BTW-4000	0° - 15°	TWC9C0746HP1	●	9	$\phi 12$	1	$\phi 46$	$\phi 35$	M3											
	L20/L20E/L20X	Gang		BTW-3000 BTW-3100	0° - 15°																			
	L32/L32X			BTW-3100	0° - 15°																			
	D25	Gang		BTW-6000	$\pm 25^\circ$	TWC9C1040HP1 TWC6C1040HP1 TWC9C1040HP1-D16	●	9	$\phi 12$	1	$\phi 33$	$\phi 40$	M3 (Provided with spindle)											
	L32X																							
	L20X																							
	M16					BTW-5000	$\pm 25^\circ$ 0° - 15°																	
	A20																							
	A32					BTW-2000	$\pm 25^\circ$																	
	L20/L20X																							
	L32/L32X																							
	M20																							
	M32																							
	C32	BTW-1000		$\pm 25^\circ$ +20° - -25° $\pm 25^\circ$																				
	L20																							
	M20																							
	M ₃₂																							
	C12/16	Gang	CITIZEN	LTR0170	$\pm 15^\circ$	TWC9C1037P2	●	9	$\phi 12$	2	$\phi 37$	$\phi 30.5$	CS0310(M3)											
	M12/16	Turret		LTR0128/LTR0168 MSW105																				
	M12/16III			KSW110																				
M20/32III	Gang	LTR0183		$\pm 15^\circ$	TWC9J1040P2	●	9	$\phi 12$	2	$\phi 40$	$\phi 32.5$	H-M4 × 12												
L20																								
M20/32																								
M20/32	Turret	LTR0169																						
K16	Attachment	PCM	GSW-101	$\pm 15^\circ$	TWC6P1620HP1-D9	●	6	$\phi 9$	1	$\phi 32$	$\phi 26$	M4 (Provided with spindle)												
L20	Gang		LSW-101-L20	$\pm 10^\circ$	TWC9P1340P2	●	9	$\phi 12$	2	$\phi 40$	$\phi 32.5$	M4 (Provided with spindle)												
M12/16	Turret		MSW-101																					
M20/M32			KSW-101																					
STAR	SW-12	Attachment	STAR	10159	$\pm 20^\circ$	TWC4S1433HP1	●	4	$\phi 8$	7	$\phi 38$	$\phi 27$	CS0310(M3)											
	ECAS-12/20			54178	$\pm 10^\circ$																			
	SB-20R			0M171	-20° - 0°																			
	SR-20J/20RIII 20RIV/32JII			68172	-20° - 0°																			
	ECAS-20T	59172																						
	ECAS-32T	Turret		58171	$\pm 20^\circ$	TWC9S1640P2	●	9	$\phi 12$	3	$\phi 40$	$\phi 33$	CS04148S(M4)											
	SR-38			10172	$\pm 10^\circ$																			
	ST-38			43156	$\pm 20^\circ$																			
	SV-12			45172	$\pm 10^\circ$																			
	SV-20/SV-20R			42173	$\pm 10^\circ$																			
	SV-32			43172	$\pm 10^\circ$																			
	SV-38R			43156	$\pm 20^\circ$																			
	TSUGAMI			BH20/BH38	Turret									TSUGAMI	3263-Y481	$\pm 10^\circ$	TWC9TS2252P2	●	9	$\phi 12$	3	$\phi 52$	$\phi 42$	CS0515(M5)
				BS20	Attachment										3214-Y1371	$\pm 10^\circ$	TWC9TS20550P2	●	9	$\phi 16$	3	$\phi 50$	$\phi 40$	CS0515(M5)
SS20/SS26/SS32 B0265/B0266-II B0325/B0326-II			Attachment	3268-Y450 3268-Y451	0° - 10°										TWC9TS2244HP1	●	9	$\phi 12$	4	$\phi 52$	$\phi 44$	CS0520(M5)		
S205/S206		3281-Y450 3281-Y451		0° - 20°	TWC9TS1944HP1	●	9	$\phi 12$	4	$\phi 52$	$\phi 44$	CS0520(M5)												
B0123/B0124/B0125/ B0126-II/III B0203/B0204/B0205/ B0205/B0206-II/III		3220-Y6540 3220-Y6541		0° - 25°	TWC9TS1644HP1	●	9	$\phi 12$	4	$\phi 52$	$\phi 44$	CS0515(M5)												
SS20/SS26/SS32		3268-Y271		0° - 10° 0° - 20°	TWC9TS1952P2BK TWC9TS1652P2BK	●	9	$\phi 12$	4	$\phi 52$	$\phi 38$	$\phi 38$	CS0515(M5) CS0515(M5)											
SS207/SS267/SS327		-		Using B-axis	0° - 15°	TWC4TS3010HP1	●	4	$\phi 7$	5	$\phi 10$	For single-corner inserts only												



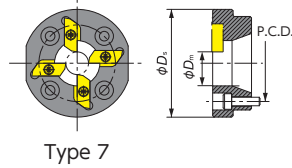
Type 4



Type 5



Type 6
Quick-change



Type 7

Machine make	Model	Location	Spindle make	Spindle model	Helix angle	NTK Thread whirling system	Stock	No. of tooth	ϕD_m (mm)	Type	ϕD_s	P.C.D.	Mount adapter bolt
TORNOS	DECO 10/10a	Attachment	TORNOS	224-1900	$\pm 15^\circ$	TWC6TO11542HP1	●	6	$\phi 12$	4	$\phi 42$	$\phi 32$	CS0410(M4)
	Evo DECO 10/10			242-1900									
	DECO 13a/13e			226-1900	$\pm 15^\circ$	TWC9TO10540P2	●	9	$\phi 12$	3	$\phi 40$	$\phi 31$	CS0410(M4)
	Evo DECO 16/10			243-1900									
	Swiss ST26			246-1900									
	DECO 20a			223-1900									
	DECO 26a			225-1900	$\pm 25^\circ$	TWC9TO12050P2-D18	●	9	$\phi 18$	3	$\phi 50$	$\phi 40$	CS0410(M4)
	Sigma 20			234-2750									
Sigma 32	236-2750												
HASEGAWA	JS-1W	—	HASEGAWA	—	$0^\circ - 20^\circ$	TWC9HA22594P2	●	9	$\phi 16$	6	$\phi 94$	$\phi 76$	CS0620(M6)

■ Spare Insert Holder (Cartridge)

Item number	No. of tooth	ϕD_m (mm)	Compatible cutters
TWC6HP2	6	12	For Type 2 and Type 3*
TWC9HP2	9	12	For Type 2 and Type 3*
TWC9HP2-D16	9	12	For Type 6

Note: Insert holder comes with insert screws and wrench
Insert holder mounting screw is not included

*Cannot be used for TWC9TS20550P2, TWC9TO12050P2-D18 and TWC9HA22594P2

■ Spare Parts

Description		Item number
Insert Screw	For 4mm thick inserts	FSI17-2.2×6.0
	For 6.5mm thick inserts	FSI24-2.2×7.9
Wrench		T-07
Insert Holder Mounting Bolt		CS0309-TW

NTK's Unique Attachment System

NTK's whirling insert holder can be attached and detached without removing mounting screws



● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

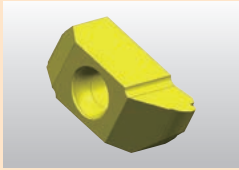
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

Basic Insert Grade

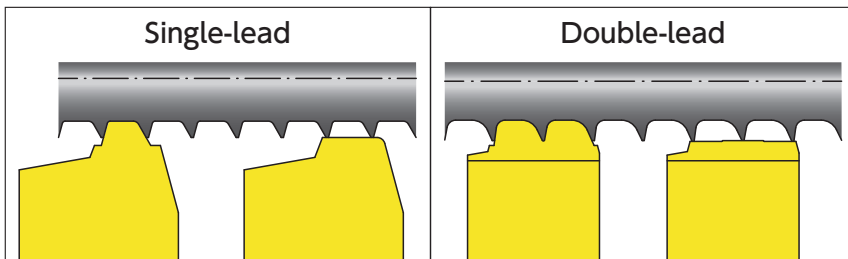
ZM3



- ZM3 is our basic grade for NTK thread whirling
- ZM3 offers excellent surface finish
- NTK can make inserts with other coatings to meet customers demands

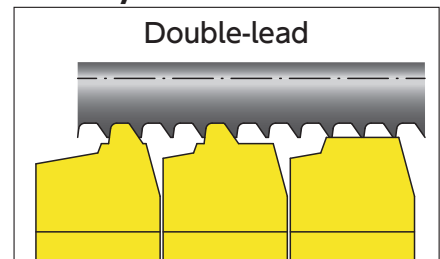
NTK Experiences and Solutions Example

For absolute flat on OD



- Two insert combination brings absolute flat on OD to meet the drawing

For tiny thread

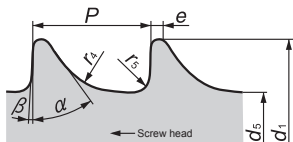


- NTK's Thread Whirling system can machine small diameter multi-lead screws to spec, with lower tool pressure, by using several types of specially designed and accurately ground inserts on the cutter.

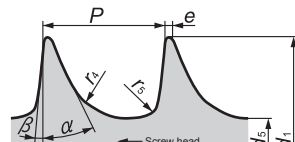
Standard Thread Whirling Inserts (two-sided) for Medical ISO Style Threads

4mm thickness insert

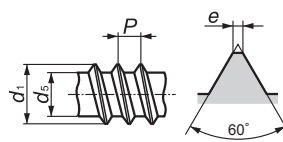
(Note: Must use Thread whirling cutters with 12mm ϕ Dm dimension. See page U18-19 to find ϕ Dm for each cutter.)



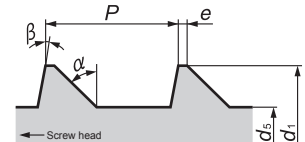
ISO5835 HA



ISO5835 HB




ISO9268 HC





ISO9268 HD


Item number	ISO Standard	d_1	d_5	P	e	r_4	r_5	α	β	Metric dimensions			
										Supposition material Dia.	Coated Carbide ZM3		
TW5835-HA1.5-D12	ISO5835	HA1.5	1.5 ⁰ _{0.15}	1.1 ⁰ _{0.1}	0.5	0.1	0.3	0.1	35°	3°	ϕ 8	○	
TW5835-HA2.0-D12		HA2.0	2.0 ⁰ _{0.15}	1.3 ⁰ _{0.1}	0.6	0.1	0.4	0.1	35°	3°		○	
TW5835-HA2.7-D12		HA2.7	2.7 ⁰ _{0.15}	1.9 ⁰ _{0.15}	1	0.1	0.6	0.2	35°	3°		○	
TW5835-HA3.5-D12		HA3.5	3.5 ⁰ _{0.15}	2.4 ⁰ _{0.15}	1.25	0.1	0.8	0.2	35°	3°		○	
TW5835-HA4.0-D12		HA4.0	4.0 ⁰ _{0.15}	2.9 ⁰ _{0.15}	1.5	0.1	0.8	0.2	35°	3°		○	
TW5835-HA4.5-D12		HA4.5	4.5 ⁰ _{0.15}	3.0 ⁰ _{0.15}	1.75	0.1	1	0.3	35°	3°		○	
TW5835-HA5.0-D12		HA5.0	5.0 ⁰ _{0.15}	3.5 ⁰ _{0.15}	1.75	0.1	1	0.3	35°	3°		ϕ 10	○
TW5835-HB4.0-D12		HB4.0	4.0 ⁰ _{0.15}	1.9 ⁰ _{0.15}	1.75	0.1	0.8	0.3	25°	5°		ϕ 8	○
TW5835-HB6.5-D12	HB6.5	6.5 ⁰ _{0.15}	3.0 ⁰ _{0.15}	2.75	0.2	1.2	0.8	25°	5°	ϕ 10	○		
TW9268-HC2.9-D12	ISO9268	HC2.9	2.79 to 2.9	2.03 to 2.18	1.06	0.1max	—	—	—	—	ϕ 8	○	
TW9268-HC3.5-D12		HC3.5	3.43 to 3.53	2.51 to 2.64	1.27	0.1max	—	—	—	—		○	
TW9268-HC3.9-D12		HC3.9	3.78 to 3.91	2.77 to 2.92	1.27	0.1max	—	—	—	—		○	
TW9268-HC4.2-D12		HC4.2	4.09 to 4.22	2.95 to 3.25	1.27	0.1max	—	—	—	—		○	
TW9268-HD4.0-D12		HD4.0	4.0±0.03	2.92±0.03	1.59	0.1	—	—	45°	10°		○	
TW9268-HD4.5-D12		HD4.5	4.5±0.03	2.92±0.03	2.18	0.1	—	—	45°	10°		○	

Application Examples

Double-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.375	Number of start	2
Major Dia.	φ.157	Helix Angle	28.5°
Minor Dia.	φ.098	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	15	Speed of whirling cutter (rpm)	3,500
Lead = Feed (IPR)	.217	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling		<i>Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.</i>	
NTK thread whirling succeeded in double lead screw machining when one of the major thread whirling suppliers has failed many times.			

Double-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.350	Number of start	2
Major Dia.	φ.180	Helix Angle	23.0°
Minor Dia.	φ.120	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	12	Speed of whirling cutter (rpm)	2,500
Lead = Feed (IPR)	.200	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling		<i>Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.</i>	
The customer could not get perfect double lead thread form in single pass from other manufacturers. NTK got perfect thread form with a single pass on first trial saving cycle time.			

Double-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.250	Number of start	2
Major Dia.	φ.118	Helix Angle	15.4°
Minor Dia.	φ.083	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	11	Speed of whirling cutter (rpm)	2,200
Lead = Feed (IPR)	.087	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling		<i>Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.</i>	
Customer was concerned with stock rigidity and long cycle time. NTK applied three geometry inserts to achieve single pass machining, in dramatically short time. The up-sharp cutting edges and low cutting pressure produced "excellent" surface finish.			

Single-lead Bone Screw			
Work Material : 316SS			
Bar Stock Dia.	φ.315	Number of start	1
Major Dia.	φ.138	Helix Angle	7.5°
Minor Dia.	φ.098	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	23	Speed of whirling cutter (rpm)	2,000
Pitch = Feed (IPR)	.049	Result	OK
NTK Thread Whirling	2600 pcs		
Competitor's Thread Whirling		1000 pcs	
Some thread whirling manufacturers offer 6-teeth or 12-teeth systems, too many teeth cause chip packing issues and more tool pressure. Fewer teeth means greater cycle time. NTK concluded that 9-teeth is the best configuration. Our customers can run 1.5 times faster and get longer tool life.			

Single-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.197	Number of start	1
Major Dia.	φ.091	Helix Angle	5.3°
Minor Dia.	φ.067	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	30	Speed of whirling cutter (rpm)	3,100
Pitch = Feed (IPR)	.023	Result	OK
NTK Thread Whirling	2200 pcs		
This thread is up to 1.26" length with a small pitch. Cycle time could be increased with a single-point threading tool. NTK's inserts, designed for lower tool pressure, ran 2,200 pcs/corner at 30 rpm of bar stock (F10,800). It only took 110 seconds to finish a 1.26" length thread.			

Triple-lead Worm Gear			
Work Material : Brass			
Bar Stock Dia.	φ.315	Number of start	3
Major Dia.	φ.276	Helix Angle	14.6°
Minor Dia.	φ.185	Hand of thread	Left
Cutting condition			
Main Spindle Speed (rpm)	20	Speed of whirling cutter (rpm)	3,500
Lead = Feed (IPR)	.189	Result	OK
Multi-lead threads, common in the Worm Gear industry are made by a forming or cutting process. The large helix angle is difficult to machine with single-point threading. NTK now makes thread whirling inserts for multi-lead threads. Cycle time is reduced with a one pass process and thread form dimensions are stable with the low tool pressure.			

MEMO

V

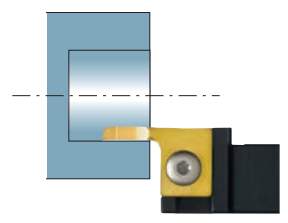


ID Tooling

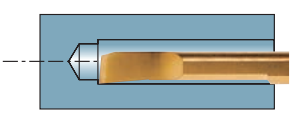
■ ID Tooling Tools	V2
■ Recommended Cutting Conditions.....	V4
■ Tools list	V6
● LBM Series	V6
● STICK DUO SPLASH	V8
● STICK DUO HYPER	V10
● STICK DUO	V12
● ID Back Turning Tools	V17
● ID Grooving Tools	V18
● GTG Series	V19
● ID Threading Tools	V20
● Mogul Bar Series	V22
■ Chipbreakers for Mogul Bar.....	V35

NTK ID Tooling - Product Lines

ID Boring

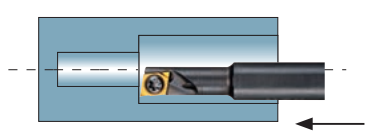


Insert	LBM →V7		
	LBMA	DS-LBMB	CH-LBM
Holder	 →V6	 →V6	 →V6
Min. Bore Dia.	$\phi .039" (1.0\text{mm})$		

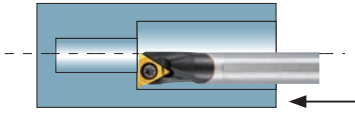


Insert	SHFS • SHFB • SBFS • SBFB →V12 • V16		
	HY-NBH-OH	HY-NBH	NBH
Holder	 →V9 STICK DUO HYPER with Coolant through	 →V11 STICK DUO HYPER	 →V14
Min. Bore Dia.	$\phi .079" (2.0\text{mm})$		

	Holder	Insert		
		HY-NBH-OH STICK DUO HYPER with Coolant through	HY-NBH STICK DUO HYPER	NBH STICK DUO
"S" chip breaker Sharp cutting edge	SHFS-S High Precision Insert	Best fit	Best fit	2nd OPT.
	SBFS-S	2nd OPT.	2nd OPT.	Best fit
"F" chip breaker Evacuates chips BACKWARD	SHFB-F High Precision Insert	Best fit	Best fit	2nd OPT.
	SBFB-F	2nd OPT.	2nd OPT.	Best fit
"H" Flat type Mirror finish edge	SHFS-H High Precision Insert	Best fit	Best fit	2nd OPT.
	SBFS-H	2nd OPT.	2nd OPT.	Best fit
Back turning	SBB	2nd OPT.	2nd OPT.	Best fit
Grooving	SBG	2nd OPT.	2nd OPT.	Best fit
Threading	SBT	2nd OPT.	2nd OPT.	Best fit

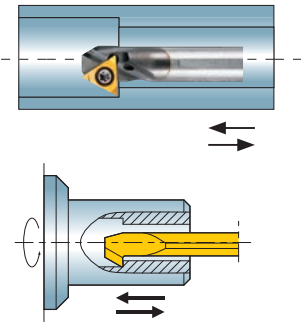


Insert	MBL →V22		ERGP →V23	
	C-MBR (Carbide shank)	S-MBR (Steel shank)	C-SEXR (Carbide shank)	S-SEXR (Steel shank)
Holder	 →V22 Coolant through	 →V22 Coolant through	 →V23 Coolant through	 →V23 Coolant through
Min. Bore Dia.	$\phi .197" (5.0\text{mm})$		$\phi .236" (6.0\text{mm})$	



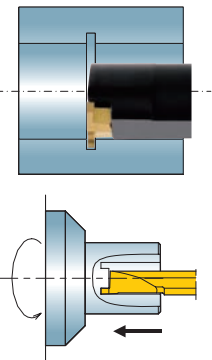
Insert	CC/CP →V24 · V30		TC/TP →V25 · V26 · V28	
	C-SCLC/P (Carbide shank)	S-SCLC/P (Steel shank)	C-STUC/P (Carbide shank)	S-STUC/P (Steel shank)
Holder				
	Coolant through →V24 · V30	Coolant through →V24 · V30	Coolant through →V25 · V26 · V28	Coolant through →V25 · V26 · V28
Min. Bore Dia.	φ .276" (7.0mm)		φ .315" (8.0mm)	

■ ID Back Turning



Insert	SBB →V17		TC/TP →V25 · V26 · V28
	HY-NBH-OH		NBH
Holder			
	Coolant through →V9		→V14
Min. Bore Dia.	φ .118" (3.0mm)		φ .394" (10mm)

■ ID Grooving



Insert	SBG →V18		SFG →V18	GTG →V19
	HY-NBH-OH		NBH	NBH
Holder				
	Coolant through →V9		→V14	→V14
Min. Bore Dia.	φ .118" (3.0mm)		φ .118" (3.0mm)	φ .394" (10mm)

■ ID Threading



Insert	SBT →V20		TMN →V34
	HY-NBH-OH		TGC/HN
Holder			
	Coolant through →V9		→V33
Min. Bore Dia.	φ .118" (3.0mm)		φ .315" (8.0mm)

Recommended Cutting Conditions

■ ID Boring

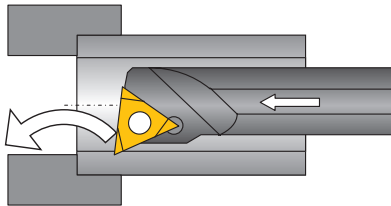
diameter ≤ .240" (LBM / STICK DUO)

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
				Hard to cut	Free cutting		
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4				VM1 / TM4	
	2nd choice	VM1 / ZM3				ZM3	
Cutting Speed (SFM)		60 160 230			100 200 300		
Feed Rate (IPR)		.0004 .0012 .0020					
Depth Of Cut (DOC)		.0020 .0031 .0039					

diameter > .240"

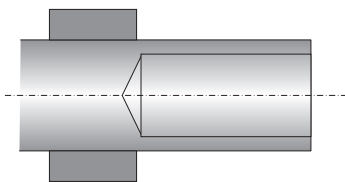
Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels			Alloy Steels	Carbon Steels
				Hard to cut	Free cutting			
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304	316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4 / DT4		ST4 DM4	DM4 DT4	TM4	QM3	
	2nd choice	TM4		QM3 / TM4		QM3	TM4 / DT4	
Cutting Speed (SFM)		150 230 330		130 230 330	150 300 600	150 300 500		
Feed Rate (IPR)		.0008 .0024 .0047						
Depth Of Cut (DOC)		.0039 .0197 .0787						

■ Through hole

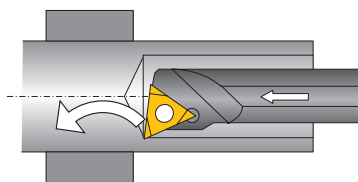


For chip control : chips can be evacuated forward

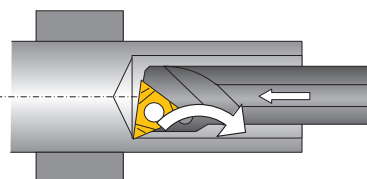
■ Blind hole



Blind hole due to bar stock



Typical inserts direct flow chips forward. Then packed chips damage and break cutting edge



F05, F1, and FG chipbreakers will direct chips backwards and eliminate chipping on inserts

*Note: Use right-hand inserts with F05, F1 and FG chipbreaker for right-hand boring bars

ID Grooving

GTG / SBG

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	DT4			DM4 / DT4	TM4	QM3		
	2nd choice	TM4 / QM3			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)		
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	Carbide C7Z(X)	150 300 500 400 500 800	
Feed Rate (IPR) A. Grooving B. Side turning*	Width .010-.020	A. .0002 - .0012							
		B. .0001 - .0002							
	.020-.040	A. .0008 - .0024						A. .0008 - .0028	
		B. .0002 - .0004						B. .0002 - .0004	
	.040-.080	A. .0012 - .0028						A. .0012 - .0031	
B. .0008 - .0020						B. .0012 - .0024			
> .080	A. .0012 - .0079								
	B. .0012 - .0024								

*When side turning, Max. DOC is under .0079". Under .016" width side turning impossible

ID Threading

● Threading

For 600 - 1500 RPM Recommended Depth of Cut (DOC) for Each Pass

UNF Thread		Number of Pass																		
Pitch (TPI)	Total DOC (inch)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
36	0.43	.002	.002	.002	.002	.002	.002	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—
32	0.49	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—
28	0.56	.003	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—
24	0.66	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—
20	0.78	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—
18	0.87	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.0008	.0004	—	—
16	0.98	.003	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004

Metric Thread		Number of Pass																				
Pitch (mm)	Total DOC (mm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.5	0.3	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—
0.7	0.43	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—
0.75	0.46	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—
0.8	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—
1.0	0.62	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—
1.25	0.76	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—
1.5	0.92	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—
1.75	1.09	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—

LBM Series

Minimum bore diameter $\phi .039"$ (1.0mm) - $\phi .118"$ (3.0mm)

LBMA / LBMA-S

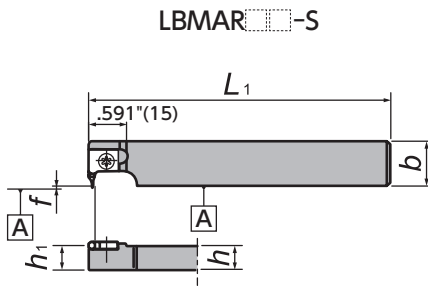


Figure-1

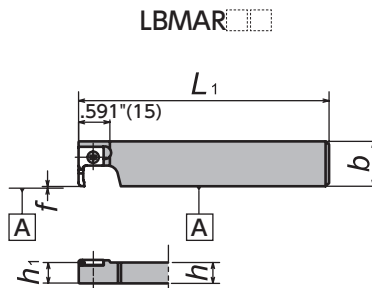


Figure-2

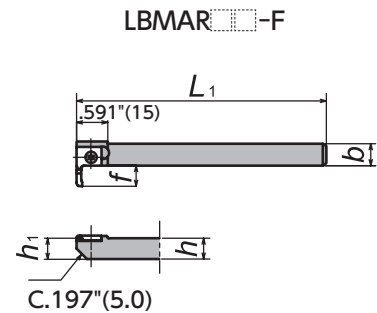


Figure-3

Right-Hand style shown

DS-LBMB

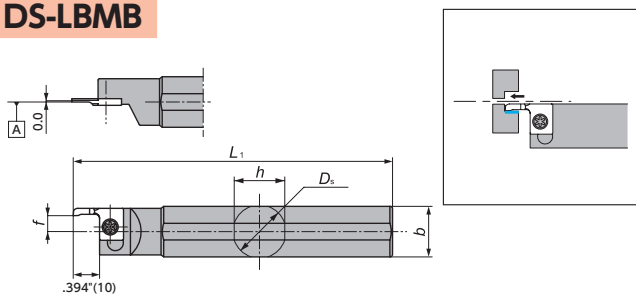


Figure-4

Left-Hand style shown

CH-LBM

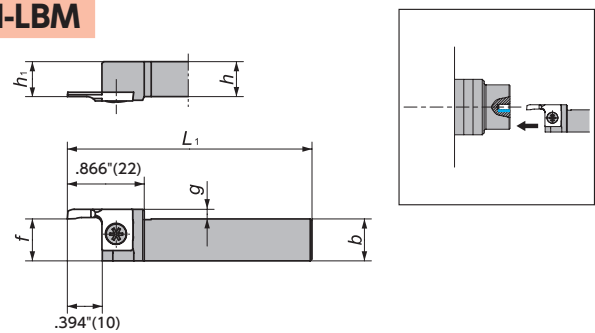


Figure-5

Left-Hand style shown

LBMAR / CH-TTPL

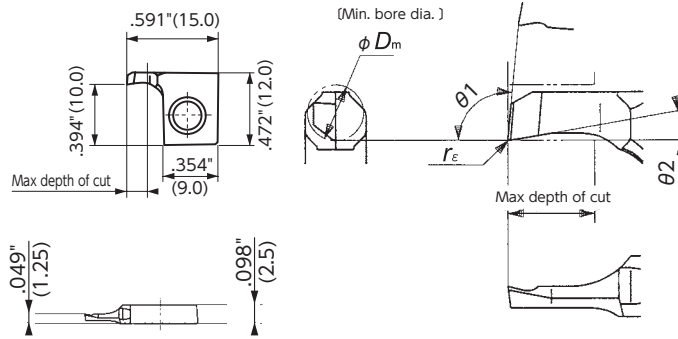
Gage Insert	Item Number	Figure	Stock	D_s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	h_1 (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
Short type	LBMAR10SGX	1	○	— —	.394 10	.709 18	.394 10	3.346 85	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR10S	1	○	— —	.394 10	.709 18	.394 10	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR12S	1	○	— —	.472 12	.709 18	.472 12	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
Long type	LBMAR06-IN	2	●	— —	3/8	3/8	3/8	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR08-IN	2	●	— —	1/2	1/2	1/2	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
	LBMAR10-IN	2	●	— —	5/8	5/8	5/8	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
	LBMAR08	2	○	— —	.315 8	.846 21.5	.315 8	4.724 120	0 0.0	LRIS-4 × 10	LLR-25S
	LBMAR10	2	○	— —	.394 10	.846 21.5	.394 10	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR12	2	○	— —	.472 12	.846 21.5	.472 12	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR16	2	○	— —	.630 16	.846 21.5	.630 16	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
Long type	LBMAR10-F	3	○	— —	.394 10	.394 10.0	.394 10	4.724 120	.394 10.0	LRIS-4 × 12PW	CLR-15S
Long type	DS-LBMBL14F	4	○	.551 14.000	.512 13	.512 13	— —	3.150 80 *1	*3 *3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL15H	4	○	5/8 15.875	.591 15	.591 15	— —	3.937 100 *1	*3 *3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL16X	4	●	.630 16.000	.591 15	.591 15	— —	3.740 95 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL19	4	●	3/4 19.050	.709 18	.709 18	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL20	4	●	.787 20.000	.748 19	.748 19	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL22	4	●	.866 22.000	.827 21	.827 21	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25-MET	4	○	.984 25.000	.945 24	.945 24	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25	4	○	1 25.400	.945 24	.945 24	— —	5.906 150 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
Short type	CH-LBML1012H	5	○	— —	.394 10	.472 12	.394 10	3.937 100	*3 *3	LRIS-4 × 10PW	CLR-15S
	CH-LBML1212H	5	○	— —	.472 12	.472 12	.472 12	3.937 100	*3 *3	LRIS-4 × 10PW	CLR-15S

LBM Series - Toolholders

LBMD-S

Short type

Mirror finish

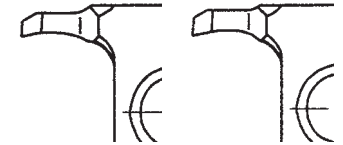


LBMD2335FLPB05S shown

LBMD1020FLPB05S LBMD1430FLPB05S



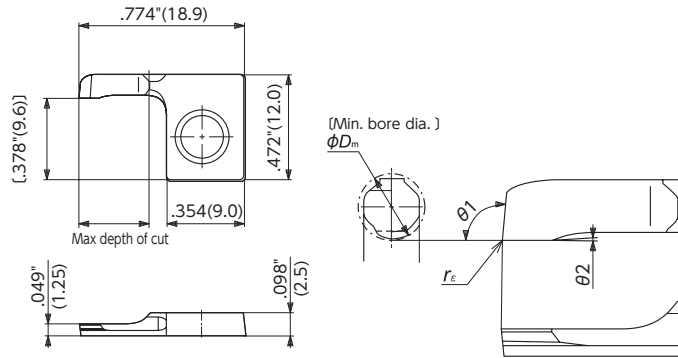
LBMD1730FLPB05S LBMD2035FLPB05S



DS-LBMB

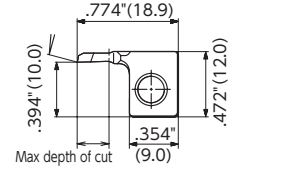
Long type

Mirror finish

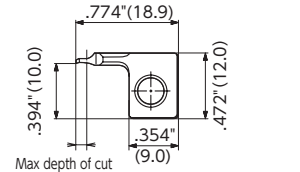


Min. bore diameter $\phi .118"$ (3.0) shown

<Min. bore diameter $\phi .079"$ (2.0)>



<Min. bore diameter $\phi .039"$ (1.0)>



LBM Mirror finish

Insert type	Item Number	Chip-breaker	Min. Bore Dia.		Max. Depth		$\theta 1$	$\theta 2$	r_ϵ		Coated Carbide	
			ϕD_m (Inch)	(mm)	(Inch)	(mm)			(Inch)	(mm)	VM1	ZM3
Short type	LBMD1020FLVBS	Yes	.039	1.0	.079	2.0	95°	10°	.000	0.00	○	
	LBMD1020FLPB05S	Yes	.039	1.0	.079	2.0	95°	10°	.002	0.05	○	
	LBMD1430FLVBS	Yes	.055	1.4	.118	3.0	95°	10°	.000	0.00	○	
	LBMD1430FLPB05S	Yes	.055	1.4	.118	3.0	95°	10°	.002	0.05	●	
	LBMD1730FLVBS	Yes	.067	1.7	.118	3.0	95°	10°	.000	0.00	○	
	LBMD1730FLPB05S	Yes	.067	1.7	.118	3.0	95°	10°	.002	0.05	○	
	LBMD2035FLVBS	Yes	.079	2.0	.138	3.5	95°	10°	.000	0.00	○	
	LBMD2035FLPB05S	Yes	.079	2.0	.138	3.5	95°	10°	.002	0.05	○	
	LBMD2335FLVBS	Yes	.091	2.3	.138	3.5	95°	10°	.000	0.00	○	
LBMD2335FLPB05S	Yes	.091	2.3	.138	3.5	95°	10°	.002	0.05	●		
Long type	LBMD1020FLVB	Yes	.039	1.0	.079	2.0	95°	10°	.000	0.00	●	
	LBMD1020FLPB05	Yes	.039	1.0	.079	2.0	95°	10°	.002	0.05	●	
	LBMD2060FLVB	Yes	.079	2.0	.236	6.0	95°	10°	.000	0.00	●	
	LBMD2060FLPB05	Yes	.079	2.0	.236	6.0	95°	10°	.002	0.05	●	
	LBME2060FLV	No	.079	2.0	.236	6.0	105°	2°	.000	0.00	○	
	LBME2060FLP05	No	.079	2.0	.236	6.0	105°	2°	.002	0.05	○	
	LBME2060FLVB	Yes	.079	2.0	.236	6.0	105°	2°	.000	0.00	○	
	LBME2060FLPB05	Yes	.079	2.0	.236	6.0	105°	2°	.002	0.05	○	
	LBMC3080FLV	No	.118	3.0	.315	8.0	95°	2°	.000	0.00	○	○
	LBMC3080FLP05	No	.118	3.0	.315	8.0	95°	2°	.002	0.05	○	○
	LBMC3080FLVB	Yes	.118	3.0	.315	8.0	90°	2°	.000	0.00	●	
	LBMC3080FLPB05	Yes	.118	3.0	.315	8.0	90°	2°	.002	0.05	●	
	LBMC3080FLVB	Yes	.118	3.0	.315	8.0	95°	2°	.000	0.00	○	○
	LBMC3080FLPB05	Yes	.118	3.0	.315	8.0	95°	2°	.002	0.05	○	○

Cutting condition **→V4**

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

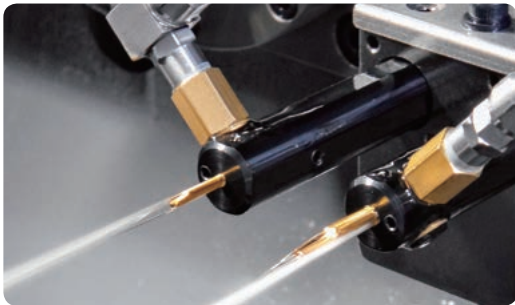
○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

ⓇL : 1-2 week delivery (Right / Left-hand only)
ⓇL : 1-2 week delivery (Right / Left-hand only, Newly added)

ID Tooling

STICK DUO SPLASH

- Coolant through sleeves for ID Boring with Adjustable Overhang Mechanism -



■ No chip problems

STICK DUO SPLASH	External coolant
No chip inside hole	Chip packed
Material : 4140 Insert bar : SHFS040R005S Hole depth : .590" (15mm) Pilot hole : $\phi .201" \times 1.102" L (\phi 5.1 \times 28.0 \text{mm} L)$ Coolant Pressure : 725psi (5MPa)	

■ Choose from 2 coolant directions

I) For Blind hole	II) For Through hole
Just rotated 180 degrees	

■ 3 coolant connection options

② Rear Connection (Rc1/8)

③ Sealed end for closed unit

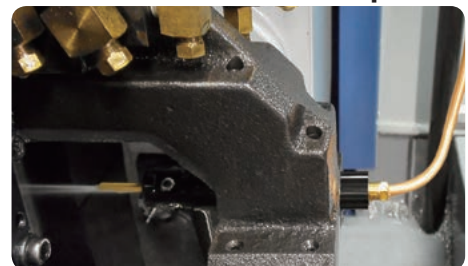
Adjustable overhang length (Hyper system)

① Front Connection (M6 x 1.0)

① Front Connection example



② Rear Connection example



STICK DUO SPLASH - Stick Duo Hyper with Coolant through -

HY-NBH-OH (Coolant through)

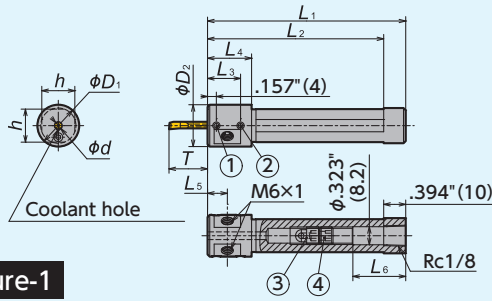


Figure-1

HY-NBH-OH (Coolant through)

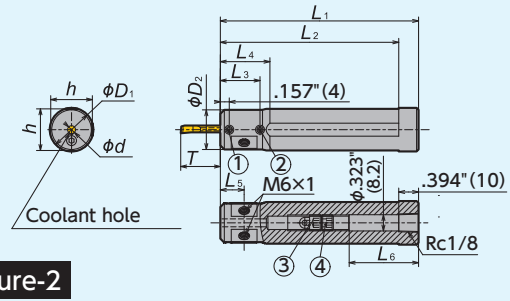


Figure-2

Item Number	Stock	Figure	ϕd		ϕD_1		ϕD_2	h	L_1	L_2	L_3	L_4	L_5	L_6	Overhang Length of Bar T			
			(Inch)	(mm)	(Inch)	(mm)									(mm)	(mm)	(Inch)	(mm)	(Inch)	(mm)
HY-NBH02016G-OH	●	1	.079	2.0	.630	16.0	19	15	90	80	15	19	9.5	29	.197	5.0	.709	18.0
HY-NBH02516G-OH	●	1	.098	2.5	.630	16.0	19	15	90	80	15	19	9.5	30	.248	6.3	.768	19.5
HY-NBH03016G-OH	●	1	.118	3.0	.630	16.0	19	15	90	80	15	19	9.5	31	.295	7.5	.827	21.0
HY-NBH03516G-OH	●	1	.138	3.5	.630	16.0	19	15	90	80	15	19	9.5	23	.346	8.8	.965	24.5
HY-NBH04016G-OH	●	1	.157	4.0	.630	16.0	19	15	90	80	20	24	12	23	.394	10.0	1.102	28.0
HY-NBH05016G-OH	●	1	.197	5.0	.630	16.0	19	15	90	80	20	24	12	16	.492	12.5	1.378	35.0
HY-NBH02019J-OH	●	2	.079	2.0	3/4	19.05	19.05	18	110	100	15	—	9.5	49	.197	5.0	.709	18.0
HY-NBH02519J-OH	●	2	.098	2.5	3/4	19.05	19.05	18	110	100	15	—	9.5	50	.248	6.3	.768	19.5
HY-NBH03019J-OH	●	2	.118	3.0	3/4	19.05	19.05	18	110	100	15	—	9.5	51	.295	7.5	.827	21.0
HY-NBH03519J-OH	●	2	.138	3.5	3/4	19.05	19.05	18	110	100	15	—	9.5	43	.346	8.8	.965	24.5
HY-NBH04019J-OH	●	2	.157	4.0	3/4	19.05	19.05	18	110	100	20	—	12	43	.394	10.0	1.102	28.0
HY-NBH05019J-OH	●	2	.197	5.0	3/4	19.05	19.05	18	110	100	20	—	12	36	.492	12.5	1.378	35.0
HY-NBH06019J-OH	●	2	.236	6.0	3/4	19.05	19.05	18	110	100	20	—	12	28.5	.591	15.0	1.654	42.0
HY-NBH02020J-OH	●	2	.079	2.0	.787	20.0	20	19	110	100	15	—	9.5	49	.197	5.0	.709	18.0
HY-NBH02520J-OH	●	2	.098	2.5	.787	20.0	20	19	110	100	15	—	9.5	50	.248	6.3	.768	19.5
HY-NBH03020J-OH	●	2	.118	3.0	.787	20.0	20	19	110	100	15	—	9.5	51	.295	7.5	.827	21.0
HY-NBH03520J-OH	●	2	.138	3.5	.787	20.0	20	19	110	100	15	—	9.5	43	.346	8.8	.965	24.5
HY-NBH04020J-OH	●	2	.157	4.0	.787	20.0	20	19	110	100	20	—	12	43	.394	10.0	1.102	28.0
HY-NBH05020J-OH	●	2	.197	5.0	.787	20.0	20	19	110	100	20	—	12	36	.492	12.5	1.378	35.0
HY-NBH06020J-OH	●	2	.236	6.0	.787	20.0	20	19	110	100	20	—	12	28.5	.591	15.0	1.654	42.0
HY-NBH02022X-OH	●	2	.079	2.0	.866	22.0	20	21	120	110	15	25	9.5	59	.197	5.0	.709	18.0
HY-NBH02522X-OH	●	2	.098	2.5	.866	22.0	20	21	120	110	15	25	9.5	60	.248	6.3	.768	19.5
HY-NBH03022X-OH	●	2	.118	3.0	.866	22.0	20	21	120	110	15	25	9.5	61	.295	7.5	.827	21.0
HY-NBH03522X-OH	●	2	.138	3.5	.866	22.0	20	21	120	110	15	25	9.5	53	.346	8.8	.965	24.5
HY-NBH04022X-OH	●	2	.157	4.0	.866	22.0	20	21	120	110	20	25	12	53	.394	10.0	1.102	28.0
HY-NBH05022X-OH	●	2	.197	5.0	.866	22.0	20	21	120	110	20	25	12	46	.492	12.5	1.378	35.0
HY-NBH06022X-OH	●	2	.236	6.0	.866	22.0	20	21	120	110	20	25	12	28.5	.591	15.0	1.654	42.0
HY-NBH02025.0K-OH	●	2	.079	2.0	.984	25.0	20	24	125	115	15	25	9.5	64	.197	5.0	.709	18.0
HY-NBH02525.0K-OH	●	2	.098	2.5	.984	25.0	20	24	125	115	15	25	9.5	65	.248	6.3	.768	19.5
HY-NBH03025.0K-OH	●	2	.118	3.0	.984	25.0	20	24	125	115	15	25	9.5	66	.295	7.5	.827	21.0
HY-NBH03525.0K-OH	●	2	.138	3.5	.984	25.0	20	24	125	115	15	25	9.5	58	.346	8.8	.965	24.5
HY-NBH04025.0K-OH	●	2	.157	4.0	.984	25.0	20	24	125	115	20	25	12	58	.394	10.0	1.102	28.0
HY-NBH05025.0K-OH	●	2	.197	5.0	.984	25.0	20	24	125	115	20	25	12	51	.492	12.5	1.378	35.0
HY-NBH06025.0K-OH	●	2	.236	6.0	.984	25.0	20	24	125	115	20	25	12	28.5	.591	15.0	1.654	42.0
HY-NBH02025.4K-OH	●	2	.079	2.0	1.000	25.4	20	24	125	115	15	25	9.5	64	.197	5.0	.709	18.0
HY-NBH02525.4K-OH	●	2	.098	2.5	1.000	25.4	20	24	125	115	15	25	9.5	65	.248	6.3	.768	19.5
HY-NBH03025.4K-OH	●	2	.118	3.0	1.000	25.4	20	24	125	115	15	25	9.5	66	.295	7.5	.827	21.0
HY-NBH03525.4K-OH	●	2	.138	3.5	1.000	25.4	20	24	125	115	15	25	9.5	58	.346	8.8	.965	24.5
HY-NBH04025.4K-OH	●	2	.157	4.0	1.000	25.4	20	24	125	115	20	25	12	58	.394	10.0	1.102	28.0
HY-NBH05025.4K-OH	●	2	.197	5.0	1.000	25.4	20	24	125	115	20	25	12	51	.492	12.5	1.378	35.0
HY-NBH06025.4K-OH	●	2	.236	6.0	1.000	25.4	20	24	125	115	20	25	12	28.5	.591	15.0	1.654	42.0

Parts for STICK DUO SPLASH

Item Number	Clamp Screw		Overhang Adjustment		
	①	②	③	④	⑤
HY-NBH ... -OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F
	M6 Screw		Wrench		
	⑥		for ①②	for ③④⑤	for ⑥
	SS0605SC		LW-2	LW-4×104	LW-3

Insert bars → V12

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ○ (R/L) : 1-2 week delivery (Right / Left-hand only)
 ○ (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)
 ● : Coolant through

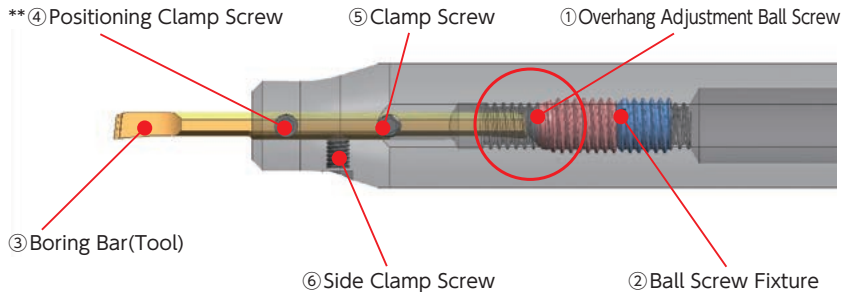
ID Tooling

STICK DUO HYPER

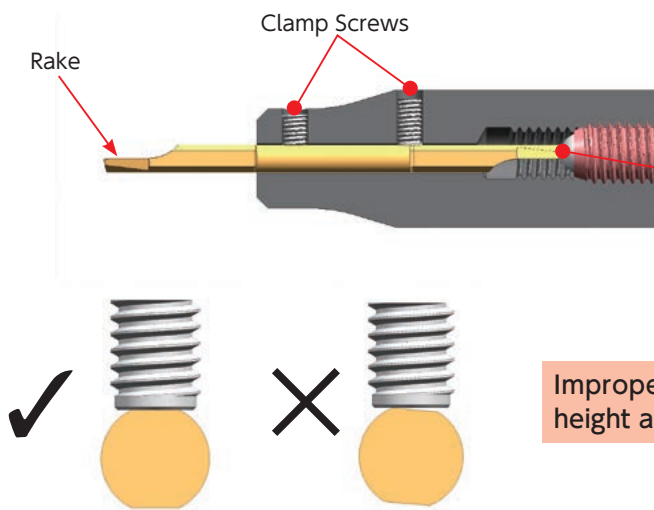
- Sleeves for ID Boring with Adjustable Overhang Mechanism -



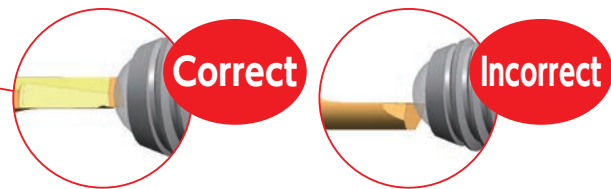
■ Can Index boring bars like inserts



■ Installation Procedure for STICK DUO Hyper



Caution: Improper installation dramatically increases the chance of chipping cutting edge



Improper clamping of boring bar causes unstable centerline height and offset

① Position the overhang adjustment ball screw to determine overhang amount

② Slide the ball screw fixture to secure the ball screw location

③ Insert a boring bar (tool)

Note: Make sure to insert the boring bar correctly so that the rake face is toward the side where the clamp screws are located

④ Secure the boring bar by tightening the positioning clamp screw ▶ Recommended Clamping Torque: 17.7 lb in

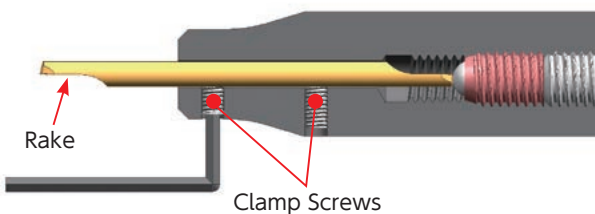
** Make sure to clamp the boring bar so that the flat surface of the bar makes proper contact with clamp screws

⑤ Secure the boring bar by tightening the remaining clamp screws ▶ Recommended Clamping Torque: 17.7 lb in

⑥ Even if 4 and 5 cannot be performed due to tool clearance and layout, the tool can be used by only securing the side clamp screw

Once the initial setup is complete, repeat the above procedures 3 thru 5 for each index

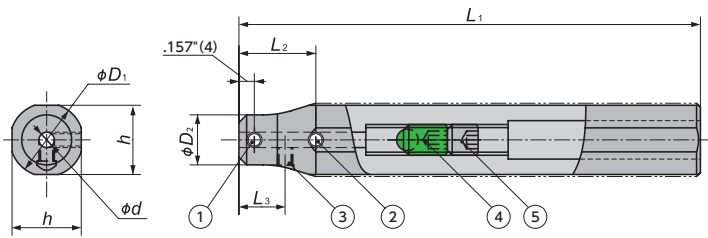
■ When the tool is installed upside down



Toolholder must be installed so that clamp screws and rake of the tool face toward the same side

STICK DUO HYPER

HY-NBH



Please refer to ϕd to find correct-size inserts (bars)

Item Number	Stock	ϕd		ϕD_1		ϕD_2	h	L_1	L_2	L_3	Clamp Screws		
		(Inch)	(mm)	(Inch)	(mm)						①	②	③
HY-NBH02016H	○	.079	2.0	.630	16.0	11	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02516H	○	.098	2.5	.630	16.0	11.5	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03016H	○	.118	3.0	.630	16.0	12	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03516H	○	.138	3.5	.630	16.0	12.5	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH04016H	○	.157	4.0	.630	16.0	13	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH05016H	○	.197	5.0	.630	16.0	14	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH02019K	●	.079	2.0	3/4	19.05	11	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02519K	●	.098	2.5	3/4	19.05	11.5	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03019K	●	.118	3.0	3/4	19.05	12	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03519K	●	.138	3.5	3/4	19.05	12.5	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04019K	●	.157	4.0	3/4	19.05	13	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05019K	●	.197	5.0	3/4	19.05	14	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02020K	○	.079	2.0	.787	20.0	11	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02520K	○	.098	2.5	.787	20.0	11.5	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03020K	○	.118	3.0	.787	20.0	12	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03520K	○	.138	3.5	.787	20.0	12.5	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04020K	○	.157	4.0	.787	20.0	13	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05020K	○	.197	5.0	.787	20.0	14	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02022K	●	.079	2.0	.866	22.0	11	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02522K	●	.098	2.5	.866	22.0	11.5	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03022K	●	.118	3.0	.866	22.0	12	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03522K	●	.138	3.5	.866	22.0	12.5	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04022K	●	.157	4.0	.866	22.0	13	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05022K	●	.197	5.0	.866	22.0	14	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K-MET	○	.079	2.0	.984	25.0	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K-MET	○	.098	2.5	.984	25.0	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K-MET	○	.118	3.0	.984	25.0	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K-MET	○	.138	3.5	.984	25.0	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K-MET	○	.157	4.0	.984	25.0	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K-MET	○	.197	5.0	.984	25.0	14	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K	●	.079	2.0	1.000	25.4	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K	●	.098	2.5	1.000	25.4	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K	●	.118	3.0	1.000	25.4	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K	●	.138	3.5	1.000	25.4	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K	●	.157	4.0	1.000	25.4	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K	●	.197	5.0	1.000	25.4	14	24	125	20	12	SS04045FS	SS0406F	SS0404F

■ Spare Parts

Item Number	Overhang Adjustment		Wrench	
	④	⑤	for ①②③	for ④⑤
HY-NBH ... K	SS0812R	SS0808F	LW-2	LW-4×104

Insert bars → V12

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

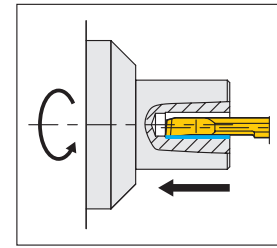
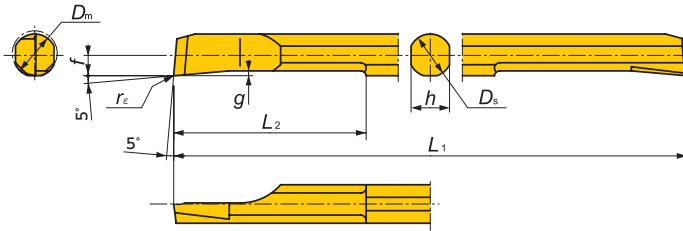
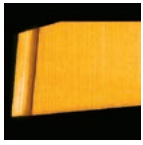
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

ⓇL : 1-2 week delivery (Right / Left-hand only)
ⓇL : 1-2 week delivery (Right / Left-hand only, Newly added)

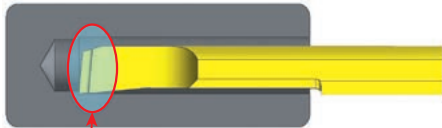
Bars for STICK DUO SPLASH/STICK DUO HYPER

SHFS-S type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



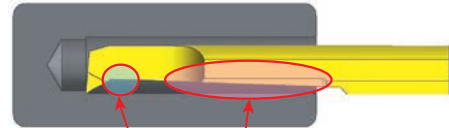
Item Number	D_s		Min Bore Dia. D_m		L_1	L_2	f	h	g	r_ϵ		Chipbreaker	Coated Carbide TM4
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		
SHFS020R005S	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	Type S	●
SHFS025R005S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	Type S	●
SHFS025R015S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	Type S	●
SHFS030R005S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	Type S	●
SHFS030R015S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	Type S	●
SHFS035R005S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	Type S	●
SHFS035R015S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	Type S	●
SHFS040R005S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	Type S	●
SHFS040R015S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	Type S	●
SHFS050R005S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	Type S	●
SHFS050R015S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	Type S	●

S.FS-S type



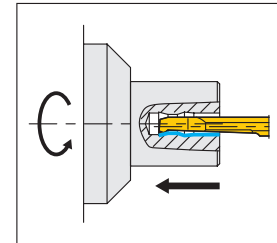
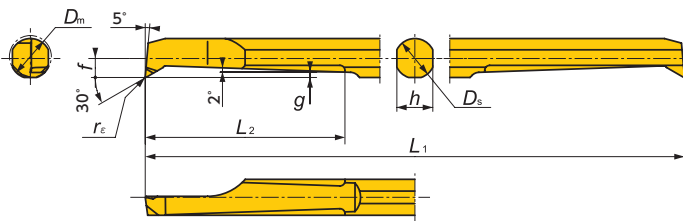
Chipbreaker for sharp cutting

S.FB-F type



Back taper
Wide area of chip pocket

SHFB-F type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)

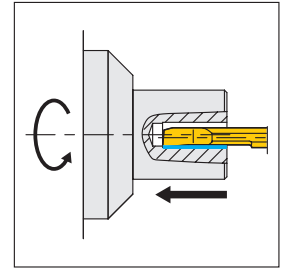
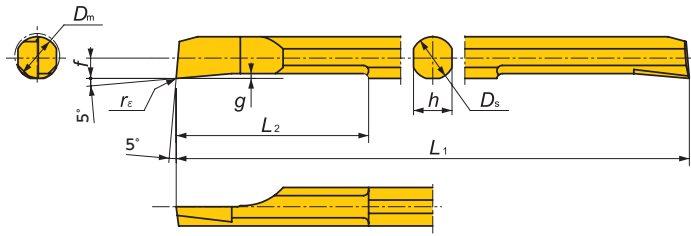


Evacuate chips backward

Item Number	D_s		Min Bore Dia. D_m		L_1	L_2	f	h	g	r_ϵ		Chipbreaker	Coated Carbide TM4
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		
SHFB020R005F	.087	2	.087	2.2	50	8	0.95	1.8	0.25	.002	0.05	Type F	●
SHFB025R005F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.002	0.05	Type F	●
SHFB025R015F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.006	0.15	Type F	●
SHFB030R005F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.002	0.05	Type F	●
SHFB030R015F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.006	0.15	Type F	●
SHFB035R005F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.002	0.05	Type F	●
SHFB035R015F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.006	0.15	Type F	●
SHFB040R005F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.002	0.05	Type F	●
SHFB040R015F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.006	0.15	Type F	●
SHFB050R005F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.002	0.05	Type F	●
SHFB050R015F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.006	0.15	Type F	●

SHFS-H type (for ID Boring)

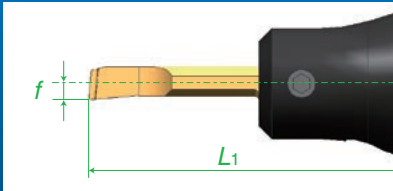
Minimum Bore Diameter .087" (2.2mm)



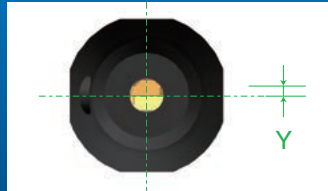
Mirror finish

Item Number	D_s		Min Bore Dia. D_m		L_1	L_2	f	h	g	r_{ϵ}		Chipbreaker	Coated Carbide
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		TM4
SHFS020R005H	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	None	●
SHFS025R005H	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	None	●
SHFS025R015H	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	None	●
SHFS030R005H	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	None	●
SHFS030R015H	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	None	●
SHFS035R005H	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	None	●
SHFS035R015H	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	None	●
SHFS040R005H	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	None	●
SHFS040R015H	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	None	●
SHFS050R005H	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	None	●
SHFS050R015H	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	None	●

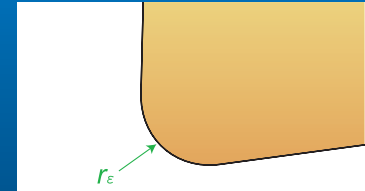
Tolerance of SHFS-S/SHFB-F/SHFS-H bars



Offset f : $\pm .0006$ "
Tool Length L_1 : $\pm .0008$ "

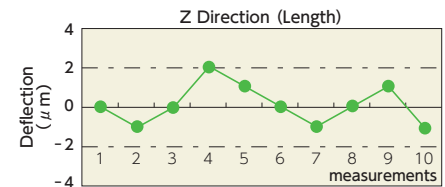
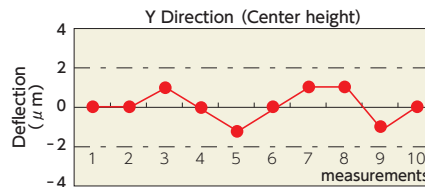
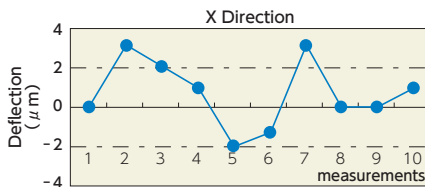


Centerline Y : $+ .002$ " / $- .000$ "



Corner r_{ϵ} : $\pm .0006$ "

Repeatability of (STICK DUO SPLASH / STICK DUO Hyper) with (SHFS / SHFB) bars



Sleeves

Cutting condition

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓡ L : 1-2 week delivery (Right / Left-hand only)
Ⓡ L : 1-2 week delivery (Right / Left-hand only, Newly added)

STICK DUO - Sleeves for ID machining -

NBH

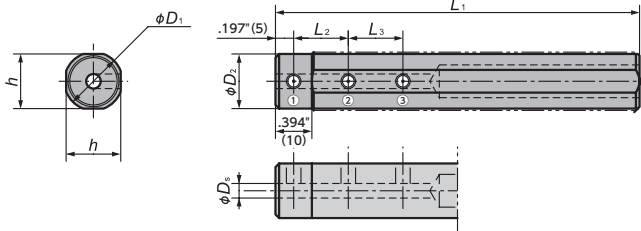


Figure-1

NBH

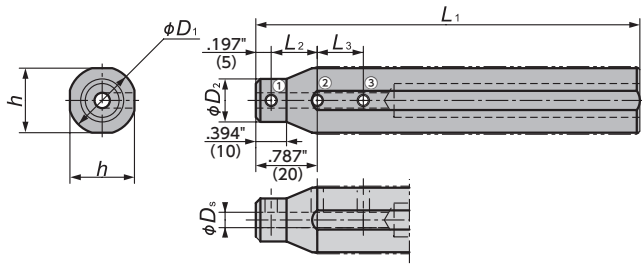


Figure-2

Item number	Figure	Stock	ϕD_s		ϕD_1		ϕD_2	h	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)	(Inch)	(mm)						①	②	③	
NBH02015H	1	○	.079	2.0	5/8	15.875	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02515H	1	○	.098	2.5	5/8	15.875	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03015H	1	○	.118	3.0	5/8	15.875	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03515H	1	○	.138	3.5	5/8	15.875	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04015H	1	○	.157	4.0	5/8	15.875	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04515H	1	○	.177	4.5	5/8	15.875	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05015H	1	○	.197	5.0	5/8	15.875	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06015H	1	○	.236	6.0	5/8	15.875	15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08015H	1	○	.315	8.0	5/8	15.875	15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02016H	1	○	.079	2.0	.630	16.0	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02516H	1	○	.098	2.5	.630	16.0	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03016H	1	○	.118	3.0	.630	16.0	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03516H	1	○	.138	3.5	.630	16.0	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04016H	1	○	.157	4.0	.630	16.0	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04516H	1	○	.177	4.5	.630	16.0	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05016H	1	○	.197	5.0	.630	16.0	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06016H	1	●	.236	6.0	.630	16.0	15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH07016H	1	○	.276	7.0	.630	16.0	15	15	100	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH08016H	1	●	.315	8.0	.630	16.0	15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02019K	1	○	.079	2.0	3/4	19.05	18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH02519K	1	○	.098	2.5	3/4	19.05	18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH03019K	1	○	.118	3.0	3/4	19.05	18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH03519K	1	○	.138	3.5	3/4	19.05	18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH04019K	1	○	.157	4.0	3/4	19.05	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH04519K	1	○	.177	4.5	3/4	19.05	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH05019K	1	○	.197	5.0	3/4	19.05	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH06019K	1	●	.236	6.0	3/4	19.05	18	18	125	20	20	SS0406F	SS0406F	SS0406F	LW-2
NBH07019K	1	○	.276	7.0	3/4	19.05	18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08019K	1	●	.315	8.0	3/4	19.05	18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10019K	1	○	.394	10.0	3/4	19.05	18	18	125	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH02020K	2	○	.079	2.0	.787	20.0	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH02520K	2	○	.098	2.5	.787	20.0	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH03020K	2	○	.118	3.0	.787	20.0	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH03520K	2	○	.138	3.5	.787	20.0	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH04020K	2	○	.157	4.0	.787	20.0	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04520K	2	○	.177	4.5	.787	20.0	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05020K	2	○	.197	5.0	.787	20.0	14	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06020K	2	●	.236	6.0	.787	20.0	15	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07020K	2	○	.276	7.0	.787	20.0	16	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08020K	2	●	.315	8.0	.787	20.0	17	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10020K	2	○	.394	10.0	.787	20.0	19	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2

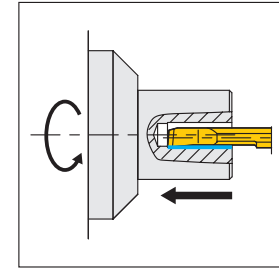
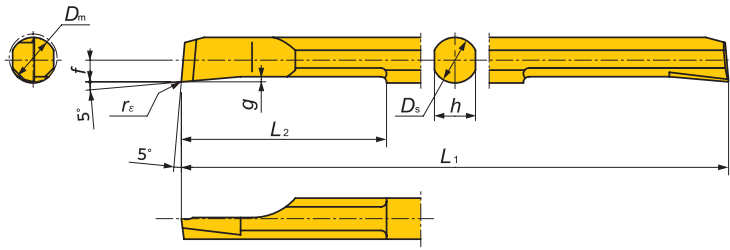
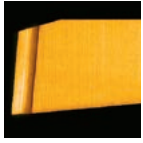
Item number	Figure	Stock	ϕD_s		ϕD_1		ϕD_2	h_1	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)	(Inch)	(mm)						①	②	③	
NBH02022K	2	○	.079	2.0	.866	22.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02522K	2	○	.098	2.5	.866	22.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03022K	2	○	.118	3.0	.866	22.0	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03522K	2	○	.138	3.5	.866	22.0	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04022K	2	○	.157	4.0	.866	22.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04522K	2	○	.177	4.5	.866	22.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05022K	2	○	.197	5.0	.866	22.0	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06022K	2	●	.236	6.0	.866	22.0	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07022K	2	○	.276	7.0	.866	22.0	16	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08022K	2	●	.315	8.0	.866	22.0	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10022K	2	○	.394	10.0	.866	22.0	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12022K	2	○	.472	12.0	.866	22.0	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02023K	2	○	.079	2.0	.906	23.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02523K	2	○	.098	2.5	.906	23.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03023K	2	○	.118	3.0	.906	23.0	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03523K	2	○	.138	3.5	.906	23.0	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04023K	2	○	.157	4.0	.906	23.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04523K	2	○	.177	4.5	.906	23.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05023K	2	○	.197	5.0	.906	23.0	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06023K	2	○	.236	6.0	.906	23.0	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08023K	2	○	.315	8.0	.906	23.0	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10023K	2	○	.394	10.0	.906	23.0	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12023K	2	○	.472	12.0	.906	23.0	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K-MET	2	○	.079	2.0	.984	25.0	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K-MET	2	○	.098	2.5	.984	25.0	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K-MET	2	○	.118	3.0	.984	25.0	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K-MET	2	○	.138	3.5	.984	25.0	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K-MET	2	○	.157	4.0	.984	25.0	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K-MET	2	○	.177	4.5	.984	25.0	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K-MET	2	○	.197	5.0	.984	25.0	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K-MET	2	●	.236	6.0	.984	25.0	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K-MET	2	○	.276	7.0	.984	25.0	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K-MET	2	●	.315	8.0	.984	25.0	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K-MET	2	○	.394	10.0	.984	25.0	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K-MET	2	○	.472	12.0	.984	25.0	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K	2	○	.079	2.0	1.000	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K	2	○	.098	2.5	1.000	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K	2	○	.118	3.0	1.000	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K	2	○	.138	3.5	1.000	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K	2	○	.157	4.0	1.000	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K	2	○	.177	4.5	1.000	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K	2	○	.197	5.0	1.000	25.4	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K	2	●	.236	6.0	1.000	25.4	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K	2	○	.276	7.0	1.000	25.4	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K	2	●	.315	8.0	1.000	25.4	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K	2	○	.394	10.0	1.000	25.4	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K	2	○	.472	12.0	1.000	25.4	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH04532K	2	○	.177	4.5	1.260	32.0	13	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05032K	2	○	.197	5.0	1.260	32.0	14	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06032K	2	○	.236	6.0	1.260	32.0	15	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07032K	2	○	.276	7.0	1.260	32.0	16	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08032K	2	○	.315	8.0	1.260	32.0	17	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH10032K	2	○	.394	10.0	1.260	32.0	19	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH12032K	2	○	.472	12.0	1.260	32.0	21	30	125	25	25	SS0404F	SS0406F	SS0406F	LW-2
NBH14032K	2	○	.551	14.0	1.260	32.0	23	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5
NBH16032K	2	○	.630	16.0	1.260	32.0	25	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5

ID Tooling

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ⦿ : Mirror finish
 ⦿ : 1-2 week delivery (Right / Left-hand only)
 ⦿ : 1-2 week delivery (Newly added)
 ⦿ : 1-2 week delivery (Right / Left-hand only, Newly added)
 ⦿ : Coolant through

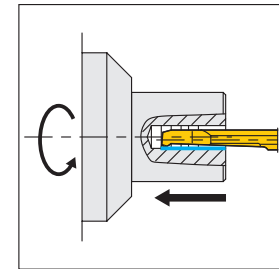
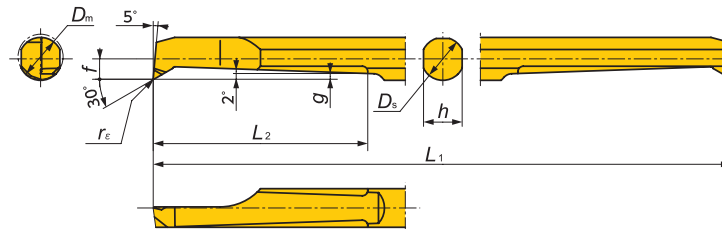
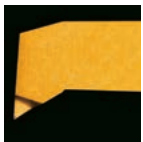
Insert bars V16

SBFS-S type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



Item Number	Ds		Min Bore Dia. Dm		L1	L2	f	h	g	rε		Chipbreaker	Coated Carbide	
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		DT4	ZM3
SBFS020R005S	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	Type S	○	○
SBFS025R005S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	Type S	○	○
SBFS025R015S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	Type S	○	○
SBFS030R005S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	Type S	○	○
SBFS030R015S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	Type S	○	○
SBFS035R005S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	Type S	○	○
SBFS035R015S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	Type S	○	○
SBFS040R005S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	Type S	○	○
SBFS040R015S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	Type S	○	○
SBFS050R005S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	Type S	○	○
SBFS050R015S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	Type S	○	○
SBFS060R005S	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.002	0.05	Type S	○	○
SBFS060R015S	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.006	0.15	Type S	○	○

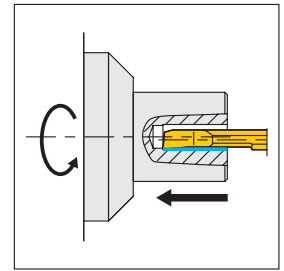
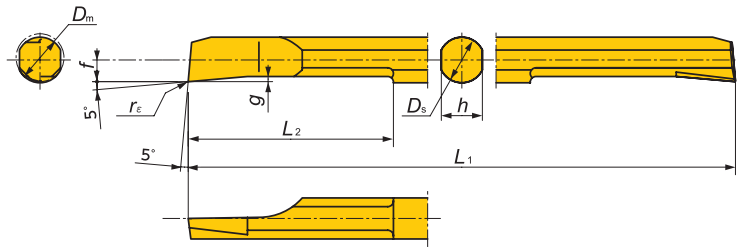
SBFB-F type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



Evacuate chips backward

Item Number	Ds		Min Bore Dia. Dm		L1	L2	f	h	g	rε		Chipbreaker	Coated Carbide	
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		DT4	ZM3
SBFB020R005F	.087	2	.087	2.2	50	8	0.95	1.8	0.25	.002	0.05	Type F	○	○
SBFB025R005F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.002	0.05	Type F	○	○
SBFB025R015F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.006	0.15	Type F	○	○
SBFB030R005F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.002	0.05	Type F	○	○
SBFB030R015F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.006	0.15	Type F	○	○
SBFB035R005F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.002	0.05	Type F	○	○
SBFB035R015F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.006	0.15	Type F	○	○
SBFB040R005F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.002	0.05	Type F	○	○
SBFB040R015F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.006	0.15	Type F	○	○
SBFB050R005F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.002	0.05	Type F	○	○
SBFB050R015F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.006	0.15	Type F	○	○
SBFB060R005F	.236	6	.244	6.2	80	30	2.9	5.4	0.90	.002	0.05	Type F	○	○
SBFB060R015F	.236	6	.244	6.2	80	30	2.9	5.4	0.90	.006	0.15	Type F	○	○

SBFS-H type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



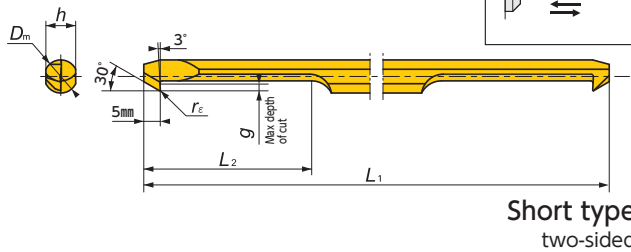
Mirror finish

Item Number	D _s		Min Bore Dia. D _m		L ₁	L ₂	f	h	g	r _e		Chipbreaker	Coated Carbide	
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		DT4	ZM3
SBFS020R005H	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	None		○
SBFS025R005H	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	None		○
SBFS025R015H	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	None		○
SBFS030R005H	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	None		○
SBFS030R015H	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	None		○
SBFS035R005H	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	None		○
SBFS035R015H	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	None		○
SBFS040R005H	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	None		○
SBFS040R015H	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	None		○
SBFS050R005H	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	None		○
SBFS050R015H	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	None		○
SBFS060R005H	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.002	0.05	None		○
SBFS060R015H	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.006	0.15	None		○
SBFS080R005H	.315	8	.323	8.2	80	30	3.9	7.3	0.80	.002	0.05	None		○
SBFS080R015H	.315	8	.323	8.2	80	30	3.9	7.3	0.80	.006	0.15	None		○

SBB Series ID Back turning

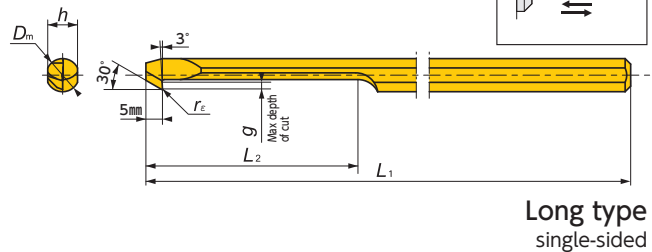
SBB-S type (for ID Back turning)

Minimum Bore Diameter .118" (3.0mm)



SBB type (for ID Back turning)

Minimum Bore Diameter .118" (3.0mm)



	Item Number	D _s		Min Bore Dia. D _m		L ₁	L ₂	f	h	g	r _e		Chipbreaker	No. of edge	Coated Carbide
		(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)			ZM3
Short Type	SBB030RB005-S	.118	3	.118	3	50	15	1.3	2.7	0.5	.002	0.05	Yes	2	○
	SBB030RB010-S	.118	3	.118	3	50	15	1.3	2.7	0.5	.004	0.1	Yes	2	○
	SBB040RB005-S	.157	4	.157	4	60	18	1.8	3.6	0.8	.002	0.05	Yes	2	○
	SBB040RB015-S	.157	4	.157	4	60	18	1.8	3.6	0.8	.006	0.15	Yes	2	○
Long Type	SBB030RB005	.118	3	.118	3	50	19	1.3	2.7	0.5	.002	0.05	Yes	1	○
	SBB030RB010	.118	3	.118	3	50	19	1.3	2.7	0.5	.004	0.1	Yes	1	○
	SBB040RB005	.157	4	.157	4	60	24	1.8	3.6	0.8	.002	0.05	Yes	1	○
	SBB040RB015	.157	4	.157	4	60	24	1.8	3.6	0.8	.006	0.15	Yes	1	○

Sleeves → V9 · 11 · 14

Cutting condition → V4

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
M : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

Ⓡ Ⓛ : 1-2 week delivery (Right / Left-hand only)
Ⓡ Ⓛ : 1-2 week delivery (Right / Left-hand only, Newly added)

SBG / SFG Series

ID Grooving

SBG (for ID Grooving)

Minimum Bore Diameter .118" (3.0mm)

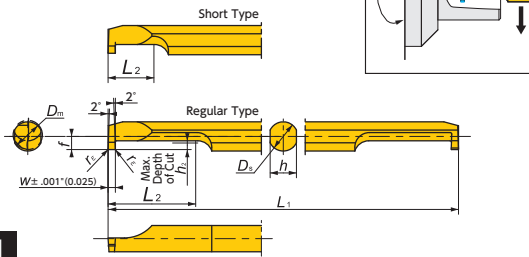


Figure-1

SFG (for ID Face Grooving)

Minimum Bore Diameter .236" (6.0mm)

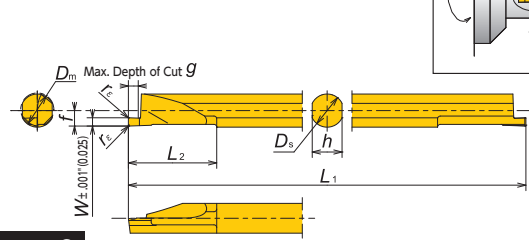


Figure-2

SBG

Item Number	Groove width W		Min Bore Dia. D _m		D _s		L ₁	L ₂	f	h	h ₂	r _ε		Chip-breaker	Coated Carbide	
	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		ZM3	
Regular type	SBG030050RB	.020	0.50	.118	3	.118	3	50	9	1.3	2.7	0.8	.002	0.05	Yes	●
	SBG030075RB	.030	0.75	.118	3	.118	3	50	9	1.3	2.7	0.8	.002	0.05	Yes	●
	SBG030100RB	.039	1.00	.118	3	.118	3	50	9	1.3	2.7	0.8	.002	0.05	Yes	●
	SBG040050RB	.020	0.50	.157	4	.157	4	60	12	1.8	3.6	1.0	.002	0.05	Yes	●
	SBG040075RB	.030	0.75	.157	4	.157	4	60	12	1.8	3.6	1.0	.002	0.05	Yes	●
	SBG040100RB	.039	1.00	.157	4	.157	4	60	12	1.8	3.6	1.0	.002	0.05	Yes	●
	SBG050050RB	.020	0.50	.197	5	.197	5	70	20	2.3	4.5	1.2	.002	0.05	Yes	●
	SBG050100RB	.039	1.00	.197	5	.197	5	70	20	2.3	4.5	1.2	.002	0.05	Yes	●
	SBG050150RB	.059	1.50	.197	5	.197	5	70	20	2.3	4.5	1.2	.002	0.05	Yes	●
	SBG060100RB	.039	1.00	.236	6	.236	6	80	20	2.8	5.4	1.8	.002	0.05	Yes	●
	SBG060150RB	.059	1.50	.236	6	.236	6	80	20	2.8	5.4	1.8	.002	0.05	Yes	●
	SBG060200RB	.079	2.00	.236	6	.236	6	80	20	2.8	5.4	1.8	.002	0.05	Yes	●
Short type	SBG080100RB	.039	1.00	.315	8	.315	8	80	20	3.8	7.3	2.2	.002	0.05	Yes	●
	SBG080150RB	.059	1.50	.315	8	.315	8	80	20	3.8	7.3	2.2	.002	0.05	Yes	●
	SBG080200RB	.079	2.00	.315	8	.315	8	80	20	3.8	7.3	2.2	.002	0.05	Yes	●
	SBG030050RB-S	.020	0.50	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
	SBG030075RB-S	.030	0.75	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
	SBG030100RB-S	.039	1.00	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
	SBG030150RB-S	.059	1.50	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
	SBG040050RB-S	.020	0.50	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
	SBG040075RB-S	.030	0.75	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
	SBG040100RB-S	.039	1.00	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
	SBG040150RB-S	.059	1.50	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
	SBG050050RB-S	.020	0.50	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
	SBG050100RB-S	.039	1.00	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
	SBG050150RB-S	.059	1.50	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
	SBG050200RB-S	.079	2.00	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
	SBG060100RB-S	.039	1.00	.236	6	.236	6	80	7.5	2.8	5.4	1.8	.002	0.05	Yes	○
SBG060150RB-S	.059	1.50	.236	6	.236	6	80	7.5	2.8	5.4	1.8	.002	0.05	Yes	○	
SBG060200RB-S	.079	2.00	.236	6	.236	6	80	7.5	2.8	5.4	1.8	.002	0.05	Yes	○	
SBG080100RB-S	.039	1.00	.315	8	.315	8	80	8.5	3.8	7.3	2.2	.002	0.05	Yes	○	
SBG080150RB-S	.059	1.50	.315	8	.315	8	80	8.5	3.8	7.3	2.2	.002	0.05	Yes	○	
SBG080200RB-S	.079	2.00	.315	8	.315	8	80	8.5	3.8	7.3	2.2	.002	0.05	Yes	○	

SFG

Item Number	Groove width W		Min Bore Dia. D _m		D _s		L ₁	L ₂	f	h	g	r _ε		Chip-breaker	Coated Carbide
	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		TM4
SFG060R100B	.039	1.00	.236	6	.236	6	80	16.0	2.8	5.4	1.5	.002	0.05	Yes	○
SFG060R150B	.059	1.50	.236	6	.236	6	80	16.0	2.8	5.4	2.5	.002	0.05	Yes	○
SFG060R200B	.079	2.00	.236	6	.236	6	80	16.0	2.8	5.4	3.0	.002	0.05	Yes	○
SFG080R100B	.039	1.00	.315	8	.315	8	80	16.0	3.8	7.3	1.5	.002	0.05	Yes	○
SFG080R150B	.059	1.50	.315	8	.315	8	80	16.0	3.8	7.3	2.5	.002	0.05	Yes	○
SFG080R200B	.079	2.00	.315	8	.315	8	80	16.0	3.8	7.3	3.0	.002	0.05	Yes	○
SFG080R300B	.118	3.00	.315	8	.315	8	80	16.0	3.8	7.3	3.0	.002	0.05	Yes	○

BG Series - Toolholders

S-BG (Takes Left-Hand Insert)

Minimum Bore Diameter .394"(10.0mm)

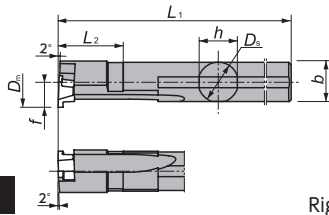


Figure-1

Right-Hand style shown

BG (Takes Left-Hand Insert)

Minimum Bore Diameter .394"(10.0mm)

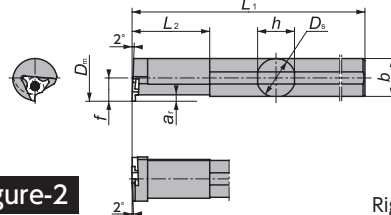


Figure-2

Right-Hand style shown

S08H-BG / S10K-BG / BG

Gage Insert	Item Number	Figure	Stock		Min. Bore Dia. D _m	Max. Depth Of Cut. a _r	D _s	h	b	L ₁	f	L ₂	Groove width covered w		Clamp Screw	Wrench
			R	L									(Inch)	(mm)		
GTG10	S08H-BG%10D10	1	○	○	.394 10	.039 1.0	.315 8	.303 7.7	.309 7.85	4.724 120	.197 5.0	.787 20	.020-079	0.50-2.00	LR-S-25 × 6.8	CLR-15S
	S10K-BG%10D12	1	○	○	.472 12	.039 1.0	.394 10	.378 9.6	.386 9.8	4.724 120	.236 6.0	.984 25	.020-079	0.50-2.00	LR-S-25 × 6.8	CLR-15S
GTG10	BG%08-00S	2	○	○	.394 10	.039 1.0	.315 8	.276 7.0	.295 7.5	4.921 125	.197 5.0	.787 20	.020-079	0.50-2.00	LR-S-25 × 6.8	CLR-15S
	BG%08-10S	2	○	○	.394 10	.039 1.0	.315 8	.276 7.0	.295 7.5	4.921 125	.197 5.0	.787 20	.059-079	1.50-2.00	LR-S-25 × 6.8	CLR-15S
	BG%10-00S	2	○	○	.472 12	.079 2.0	.394 10	.354 9.0	.374 9.5	5.906 150	.236 6.0	.984 25	.020-079	0.50-2.00	LR-S-25 × 6.8	CLR-15S
	BG%10-10S	2	○	○	.472 12	.079 2.0	.394 10	.354 9.0	.374 9.5	5.906 150	.236 6.0	.984 25	.059-079	1.50-2.00	LR-S-25 × 6.8	CLR-15S
GTG14	BG%12-00S	2	○	○	.551 14	.079 2.0	.472 12	.433 11.0	.453 11.5	7.087 180	.276 7.0	1.181 30	.039-079	1.00-2.00	LR-S-3 × 7.8	RLR-20S
	BG%12-12S	2	○	○	.551 14	.079 2.0	.472 12	.433 11.0	.453 11.5	7.087 180	.276 7.0	1.181 30	.069-079	1.75-2.00	LR-S-3 × 7.8	RLR-20S
	BG%14-00S	2	○	○	.630 16	.118 3.0	.551 14	.512 13.0	.531 13.5	7.087 180	.315 8.0	1.378 35	.039-079	1.00-2.00	LR-S-3 × 7.8	RLR-20S
	BG%14-12S	2	○	○	.630 16	.118 3.0	.551 14	.512 13.0	.531 13.5	7.087 180	.315 8.0	1.378 35	.069-079	1.75-2.00	LR-S-3 × 7.8	RLR-20S
GTG20	BG%16	2	○	○	.787 20	.118 3.0	.630 16	.591 15.0	.610 15.5	7.874 200	.394 10.0	1.575 40	.059-079	1.50-2.00	LR-S-3 × 7.8	RLR-20S
	BG%20	2	○	○	.984 25	.118 3.0	.787 20	.748 19.0	.768 19.5	7.874 200	.472 12.0	1.575 40	.059-079	1.50-2.00	LR-S-3 × 7.8	RLR-20S

BG Series - Inserts

GTG

Shape	Item Number	Groove width w		Max. Depth Of Cut. a _r		L		r _ε		d		Coated Carbide		
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3	TM4	ZM3
<p>Left-Hand style shown</p>	GTG10050FL005	0.020	0.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○	
	GTG10075FL005	0.030	0.75	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○	
	GTG10100FL005	0.039	1.00	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○	
	GTG10150FL005	0.059	1.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○	
	GTG10200FL005	0.079	2.00	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○	
	GTG10050FL00	0.020	0.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○
	GTG10065FL00	0.026	0.65	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○
	GTG10075FL00	0.030	0.75	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○
	GTG10100FL00	0.039	1.00	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○
	GTG10125L	0.049	1.25	.039	1.0	.047	1.2	.008	0.2	.219	5.56			
	GTG10150FL00	0.059	1.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○
	GTG10200FL01	0.079	2.00	.039	1.0	.047	1.2	.004	0.1	.219	5.56			○
	GTG14100FL00	0.039	1.00	.079	2.0	.087	2.2	.002	0.05	.313	7.94			○
	GTG14145L	0.057	1.45	.079	2.0	.087	2.2	.008	0.2	.313	7.94			
	GTG14150FL00	0.059	1.50	.079	2.0	.087	2.2	.002	0.05	.313	7.94			○
	GTG14175L	0.069	1.75	.079	2.0	.087	2.2	.008	0.2	.313	7.94			
	GTG14200FL01	0.079	2.00	.079	2.0	.087	2.2	.004	0.1	.313	7.94			○
	GTG20150FL	0.059	1.50	.118	3.0	.126	3.2	.008	0.2	.375	9.525		○	
	GTG20175L	0.069	1.75	.118	3.0	.126	3.2	.008	0.2	.375	9.525			
	GTG20200L	0.079	2.00	.118	3.0	.126	3.2	.008	0.2	.375	9.525			
GTG20200FL	0.079	2.00	.118	3.0	.126	3.2	.008	0.2	.375	9.525		○		

Cutting condition → V5

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ⦿ : Mirror finish
 ⦿ : 1-2 week delivery (Right / Left-hand only)
 ⦿ : 1-2 week delivery (Newly added)
 ⦿ : 1-2 week delivery (Right / Left-hand only, Newly added)

SBT Series

ID Threading

SBT Minimum Bore Diameter .098" (2.5mm) ~

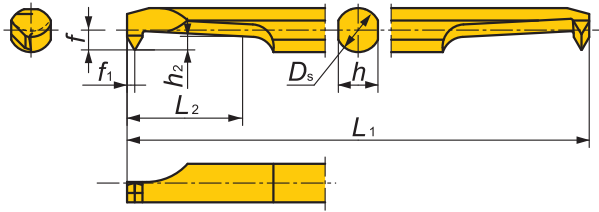


Figure-1

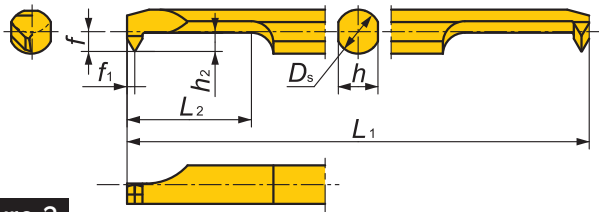


Figure-2

Right-Hand style shown

SBT Insert dimension

Item Number	Figure	Chip-breaker	Min. Bore Dia. D_m		D_s		L_2		h_2		L_1		f		f_1		h		r_e		Coated Carbide
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3
SBT025M3R	1	No	.098	2.5	.098	2.5	.213	5.4	.024	0.6	1.969	50	.043	1.10	.016	0.40	.091	2.3	.002	0.05	●
SBT030M4R	1	No	.118	3.0	.118	3.0	.295	7.5	.031	0.8	1.969	50	.051	1.30	.020	0.50	.028	2.7	.002	0.05	●
SBT030M4RB	1	Yes	.118	3.0	.118	3.0	.295	7.5	.031	0.8	1.969	50	.051	1.30	.020	0.50	.028	2.7	.002	0.05	●
SBT035M5RB	1	Yes	.138	3.5	.138	3.5	.335	8.5	.039	1.0	2.362	60	.061	1.55	.022	0.55	.013	3.2	.002	0.05	●
SBT040M6RB	1	Yes	.157	4.0	.157	4.0	.413	10.5	.047	1.2	2.362	60	.071	1.80	.028	0.70	.142	3.6	R.002	R0.05	●
SBT050M8RB	2	Yes	.197	5.0	.197	5.0	.622	15.8	.059	1.5	2.756	70	.091	2.30	.031	0.80	.117	4.5	R.002	R0.05	●
SBT060M10RB	2	Yes	.236	6.0	.236	6.0	.724	18.4	.071	1.8	3.150	80	.110	2.80	.037	0.95	.213	5.4	R.002	R0.05	●

SBT Applicable Thread

Item Number	Figure	Chip-breaker	Min. Bore Dia. D_m		Thread Type				Recommended Thread Type	
			(Inch)	(mm)	Metric Thread		UNF Thread		Metric Thread	UNF Thread
SBT025M3R	1	No	.098	2.5	M3	0.5	—	—	M3 × 0.5	—
SBT030M4R	1	No	.118	3.0	M4-	0.5-0.8	No.8-32UNC-	36-32	M4 × 0.7	No.8-32UNC
SBT030M4RB	1	Yes	.118	3.0	M4-	0.5-0.8	No.8-32UNC-	36-32	M4 × 0.7	No.8-32UNC
SBT035M5RB	1	Yes	.138	3.5	M4.5-	0.5-1.0	No.10-24UNC-	32-24	M5 × 0.8	No.10-24UNC No.12-24UNC
SBT040M6RB	1	Yes	.157	4.0	M5.5-	0.75-1.25	No.12-24UNC-	28-20	M6 × 1.0	1/4-20UNC
SBT050M8RB	2	Yes	.197	5.0	M7-	0.75-1.5	1/4-28UNF-	28-18	M8 × 1.25	5/16-18UNC
SBT060M10RB	2	Yes	.236	6.0	M8-	0.75-1.75	5/16-24UNF-	28-16	M10 × 1.5	3/8-16UNC

Sleeves → V9 · 11 · 14

Unified Standard

	Thread Type		Pilot hole(mm)	Pitch		Applicable Inserts
	#1	#2		TPI	(mm)	
Coarse	No.8-32UNC	—	φ3.42	32	0.7938	SBT030M4R(B)
	No.10-24UNC	—	φ3.83	24	1.0583	SBT035M5RB
	—	No.12-24UNC	φ4.47	24	1.0583	
	1/4-20UNC	—	φ5.12	20	1.2700	SBT040M6RB
	5/16-18UNC	—	φ6.57	18	1.4111	SBT050M8RB
Fine	3/8-16UNC	—	φ7.98	16	1.5875	SBT060M10RB
	No.8-36UNF	—	φ3.51	36	0.7056	SBT030M4RB
	No.10-32UNF	—	φ4.07	32	0.7938	SBT035M5RB
	—	No.12-28UNF	φ4.61	28	0.9071	SBT040M6RB
	1/4-28UNF	—	φ5.47	28	0.9071	
	5/16-24UNF	—	φ6.91	24	1.0583	SBT050M8RB
	3/8-24UNF	—	φ8.51	24	1.0583	SBT060M10RB
	7/16-20UNF	—	φ9.88	20	1.2700	
	1/2-20UNF	—	φ11.47	20	1.2700	
	9/16-18UNF	—	φ12.9	18	1.4111	
5/8-18UNF	—	φ14.5	18	1.4111		
3/4-16UNF	—	φ17.5	16	1.5875		

ISO Metric

Thread Type			Pitch (mm)								
#1	#2	#3	2.0	1.75	1.5	1.25	1.0	0.8	0.75	0.7	0.5
M3											Coarse
M4										Coarse	Fine
	M4.5								Coarse		
M5								Coarse			
		M5.5									
M6							Coarse				
	M7										
M8						Coarse					
		M9									
M10					Coarse	Fine					
		M11									
M12				Coarse							
	M14		Coarse								
		M15									

Cutting Conditions

Threading

For 600 - 1500 RPM Recommended Depth of Cut (DOC) for Each Pass

Metric Thread		Number of Pass																				
Pitch (mm)	Total DOC (mm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.5	0.3	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—
0.7	0.43	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—
0.75	0.46	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—
0.8	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—
1.0	0.62	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—
1.25	0.76	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—
1.5	0.92	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—
1.75	1.09	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01

UNF Thread		Number of Pass																			
Pitch (TPI)	Total DOC (inch)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
36	.017	.002	.002	.002	.002	.002	.002	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—	—
32	.019	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—
28	.022	.003	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—
24	.026	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—
20	.031	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—
18	.034	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.0008	.0004	—	—	—
16	.039	.003	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.0008	.0004

Mogul Bar for 75° Diamond (MBL style)

Minimum Bore Diameter .197"(5.0mm)

S-MBR (Coolant through) Steel shank (tapered type)

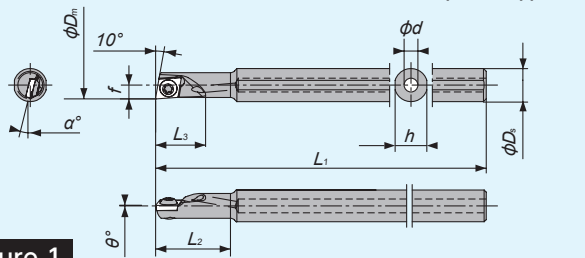
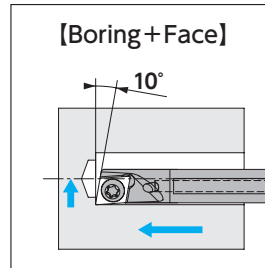


Figure-1

Right-Hand style shown



F1 chipbreakers evacuate chips BACKWARD (S-STUC style shown)

C-MBR (Coolant through) Carbide shank (straight type)

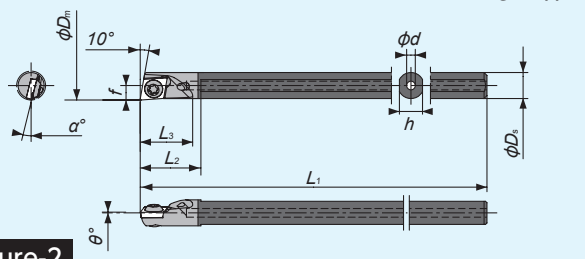


Figure-2

Right-Hand style shown

C-MBR (Coolant through) Carbide shank (tapered type)

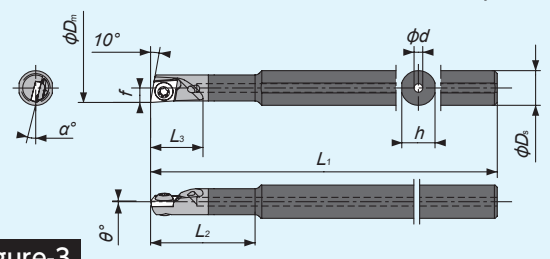


Figure-3

Right-Hand style shown

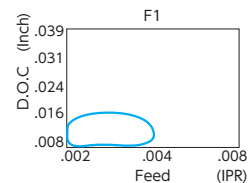
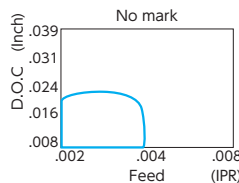
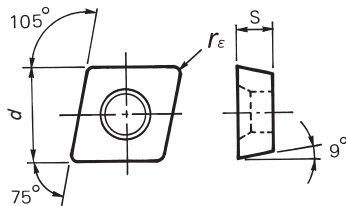
MBL style - Toolholders

Gage Insert	Item number*	Figure	Stock		ϕD_s		Min. bore Dia. ϕD_m		h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius r_ϵ		Clamp screw	Wrench
			R	L	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(inch)	(mm)					
MBL	S06F-MBRD05-OH	1	●	●	.236	6.0	.197	5.0	5.7	80	2.5	13.5	9	-	2.5	0°	-13°	.0059	0.15	LR-S-2 × 3.5	CLR-13S
	C045F-MBRD05-OH	2	●	●	.177	4.5	.197	5.0	4.0	80	2.5	10.5	9	-	1.5	0°	-13°	.0059	0.15	LR-S-2 × 3.5	CLR-13S
	C06F-MBRD05-OH	3	●	●	.236	6.0	.197	5.0	5.7	80	2.5	18	9	-	1.5	0°	-13°	.0059	0.15	LR-S-2 × 3.5	CLR-13S

* "S" denotes steel shank, "C" denotes carbide shank

MBL style - Insert

MBL



MBL

	Item Number	d		s		r_ϵ		Coated Carbide								
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ST4		QM3		TM4		ZM3		
								R	L	R	L	R	L	R	L	
L-hand shown	MBL 005 FL	.142	3.6	.039	1.0	.002	0.05				(L)			L		(L)
	MBL 015 FL	.142	3.6	.039	1.0	.006	0.15				(L)			L		(L)
R-hand shown	MBL 005 FR F1	.142	3.6	.039	1.0	.002	0.05	R		(R)			R			
	MBL 015 FR F1	.142	3.6	.039	1.0	.006	0.15	R		(R)			R			

*For F1 chipbreaker, right-hand inserts fit to right-hand toolholder
Note: F1 chipbreaker evacuates chips BACKWARD

Mogul Bar for 75° Diamond (ERGP style)

Minimum Bore Diameter .236"(6.0mm)

S-SEXR (Coolant through) Steel shank (tapered type)

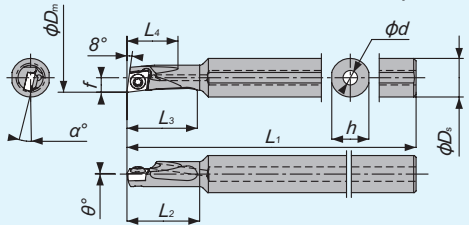
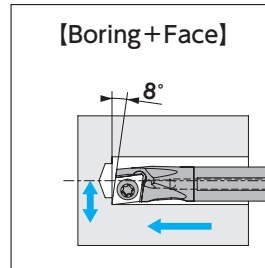


Figure-1 Right-Hand style shown



F1 chipbreakers evacuates chips BACKWARD (S-STUC style shown)

C-SEXR (Coolant through) Carbide shank (straight type)

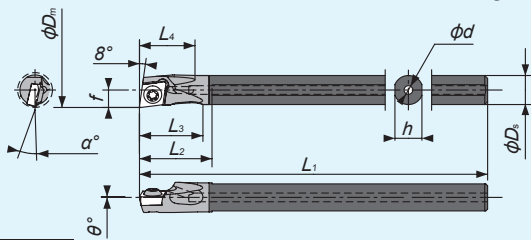


Figure-2 Right-Hand style shown

C-SEXR (Coolant through) Carbide shank (tapered type)

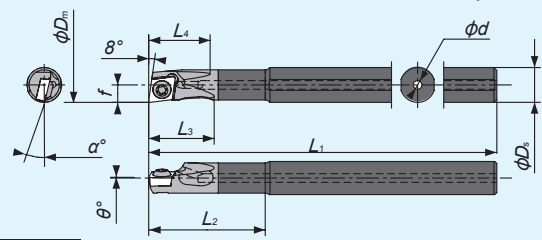


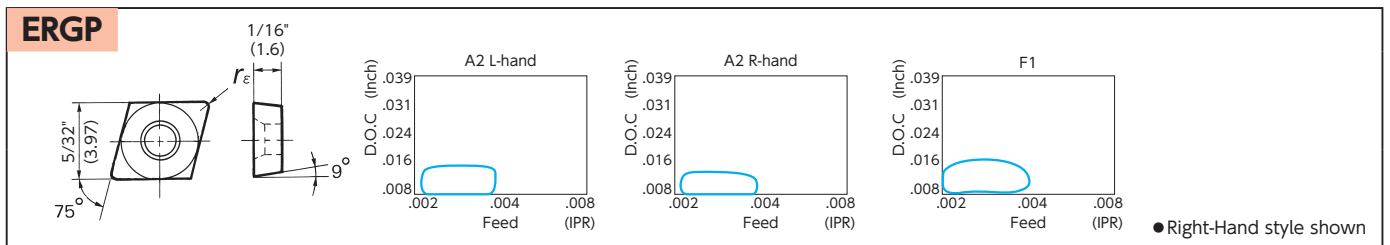
Figure-3 Right-Hand style shown

ERGP style - Toolholders

Gage Insert	Item number*	Figure	Stock		ϕD_s		Min. bore Dia. ϕD_m		h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius r_e		Clamp screw	Wrench
			R	L	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(inch)	(mm)					
	S08G-SEXR 5/8 T3D06-OH	1	●		.315	8.0	.236	6.0	7.7	90	3.0	15	15	10	3.0	0°	-13°	.008	0.2	LR-S-2 × 3.7	CLR-13S
	C05G-SEXR 5/8 T3D06-OH	2	●	○	.197	5.0	.236	6.0	4.0	90	3.0	12.5	11	10	1.5	0°	-13°	.008	0.2	LR-S-2 × 3.7	CLR-13S
	C06G-SEXR 5/8 T3D06-OH	3	●	○	.236	6.0	.236	6.0	5.7	90	3.0	20	11	10	1.5	0°	-13°	.008	0.2	LR-S-2 × 3.7	CLR-13S

*"S" denotes steel shank, "C" denotes carbide shank

ERGP style - Insert



● Right-Hand style shown

ERGP

	Item Number	ISO Item Number	IC		Thickness		r_e		Coated Carbide									
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ST4		QM3		TM4		ZM3			
			R	L	R	L	R	L	R	L	R	L	R	L	R	L		
	ERGP 52Y- F5/8 A2	ERGHT 30102 FR A2	5/32	3.97	1/16	1.6	.008	0.2							R	Ⓛ	Ⓡ	Ⓛ
	ERGP 521- F5/8 A2	ERGHT 30104 FR A2	5/32	3.97	1/16	1.6	.016	0.4							R	Ⓛ		Ⓛ
	ERGP 5204 FR- F1	ERGHT 30101 FR F1	5/32	3.97	1/16	1.6	.004	0.1	Ⓡ		Ⓡ			R				
	ERGP 52Y- FR- F1	ERGHT 30102 FR F1	5/32	3.97	1/16	1.6	.008	0.2	Ⓡ		Ⓡ			R				
	ERGP 521- FR- F1	ERGHT 30104 FR F1	5/32	3.97	1/16	1.6	.016	0.4	Ⓡ		Ⓡ			R				

*For F1 chipbreaker, right-hand inserts fit to right-hand toolholder

Note: F1 chipbreaker evacuates chips BACKWARD

Cutting condition → V4

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
ⓇⓁ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
● : Coolant through

ⓇⓁ : 1-2 week delivery (Right / Left-hand only)
ⓇⓁ : 1-2 week delivery (Right / Left-hand only, Newly added)

Mogul Bar for 80° Diamond (CP style)

S-SCLP (Coolant through)

Steel shank

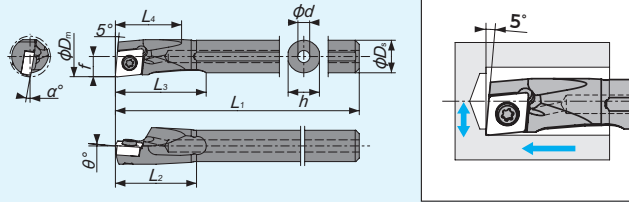


Figure-1

Right-Hand style shown

Minimum Bore Diameter .276" (7.0mm)

C-SCLP (Coolant through)

Carbide shank

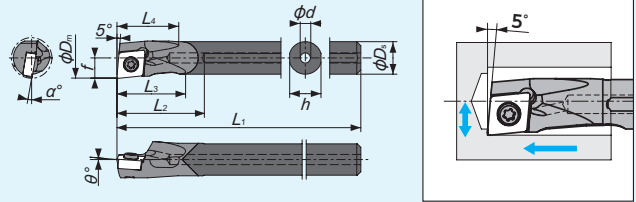


Figure-2

Right-Hand style shown

CP style - Toolholders



Gage Insert	Item number*	Figure	Stock		φ D _s		Min. bore Dia. φ D _m		h	L ₁	f	L ₂	L ₃	L ₄	φ d	θ	α	Std. corner radius r _c		Clamp screw	Wrench
			R	L	(inch)	(mm)	(inch)	(mm)										(inch)	(mm)		
CP..62..	S06F-SCLP 3/4 04D07-OH	1	●		.236	6.0	.276	7.0	5.75	80	3.5	14	17.0	12.0	2.5	+5° -9°		.008	0.2	LR-S-2 × 3.7	CLR-135
	S07G-SCLP 3/4 04D08-OH	1	●		.276	7.0	.315	8.0	6.75	90	4.0	16	19.5	13.5	3.0	+5° -7°		.008	0.2	LR-S-2 × 3.7	CLR-135
CP..21.5..	S08H-SCLP 3/4 06D10-OH	1	●		.315	8.0	.394	10.0	7.7	100	5.0	20	22.0	16.0	3.0	+5° -10°		.016	0.4	LR-S-2.5 × 6	CLR-155
CP..62..	C06H-SCLP 3/4 04D07-OH	2	●	○	.236	6.0	.276	7.0	5.75	100	3.5	15.5	11.5	12.0	2.0	+5° -9°		.008	0.2	LR-S-2 × 3.7	CLR-135
	C07J-SCLP 3/4 04D08-OH	2	●	○	.276	7.0	.315	8.0	6.75	110	4.0	17.5	13.0	13.5	2.0	+5° -7°		.008	0.2	LR-S-2 × 3.7	CLR-135
CP..21.5..	C08K-SCLP 3/4 06D10-OH	2	●	○	.315	8.0	.394	10.0	7.7	125	5.0	21.5	16.5	15.0	2.5	+5° -10°		.016	0.4	LR-S-2.5 × 6	CLR-155

* "S" denotes steel shank, "C" denotes carbide shank

CP style - Insert - Carbide

	(inch)	IC	T
CP..21.5	1/4	3/32	
CP..2.51.5	5/16	3/32	
CP..32.5	3/8	5/32	
CP..62	.187	5/32	

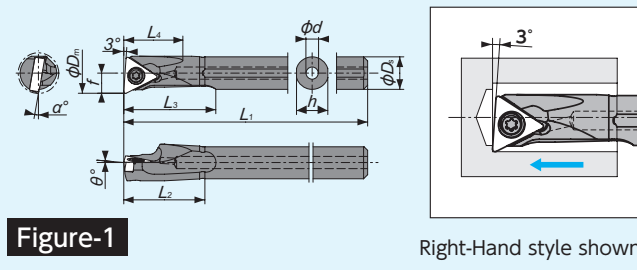
80 degree Diamond Positive type (CP..)

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	Graph			
					PVD Coated															
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1						
	CPGH 21.508 FNA M5	CPGH 060202 FNA M5	1/4	.008																
	CPGP 2.51.508 FNA M5	CPGP 080202 FNA M5	5/16	.008																
	CPGM 3208 FNA M5	CPGM 090302 FNA M5	3/8	.008																
	CPGM 321 FNA M5	CPGM 090304 FNA M5	3/8	.016																
	CPGM 322 FNA M5	CPGM 090308 FNA M5	3/8	.031																
	CPGP 6208 FR 1/4 A1	CPGH 040102 FR 1/4 A1	.187	.008																
	CPGP 621 FR 1/4 A1	CPGH 040104 FR 1/4 A1	.187	.016																
	CPGP 21.508 FR 1/4 A	CPGH 060202 FR 1/4 A	1/4	.008																
	CPGP 21.51 FR 1/4 A	CPGH 060204 FR 1/4 A	1/4	.016																
	CPGH 2.51.508 FR 1/4 A	CPGH 080202 FR 1/4 A	5/16	.008																
	CPGH 2.51.51 FR 1/4 A	CPGH 080204 FR 1/4 A	5/16	.016																
	CPGP 6204 FR 1/4 F1	CPGH 040101 FR 1/4 F1	.187	.004	R															
	CPGP 6208 FR 1/4 F1	CPGH 040102 FR 1/4 F1	.187	.008	R															
	CPGP 621 FR 1/4 F1	CPGH 040104 FR 1/4 F1	.187	.016	R															
	CPGP 21.508 FR 1/4 F1	CPGH 060202 FR 1/4 F1	1/4	.008	R															
	CPGP 21.51 FR 1/4 F1	CPGH 060204 FR 1/4 F1	1/4	.016	R															
	CPGP 6204 3/8 S	CPGH 040101 3/8 S	.187	.004																
	CPGP 6208 3/8 S	CPGH 040102 3/8 S	.187	.008																
	CPGP 621 3/8 S	CPGH 040104 3/8 S	.187	.016																
	CPGP 21.508 3/8 S	CPGH 060202 3/8 S	1/4	.008																
CPGP 21.51 3/8 S	CPGH 060204 3/8 S	1/4	.016																	

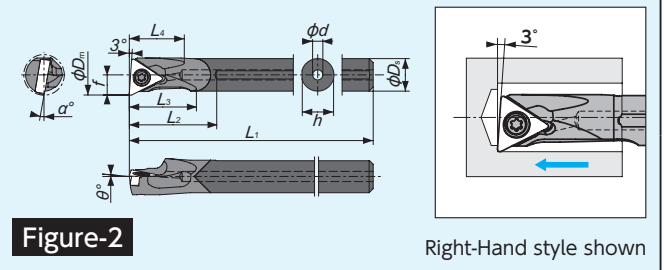
Mogul Bar for 60° Triangle (TC style)

S-STUC (Coolant through)



Minimum Bore Diameter .315"(8.0mm)

C-STUC (Coolant through)



TC style - Toolholders

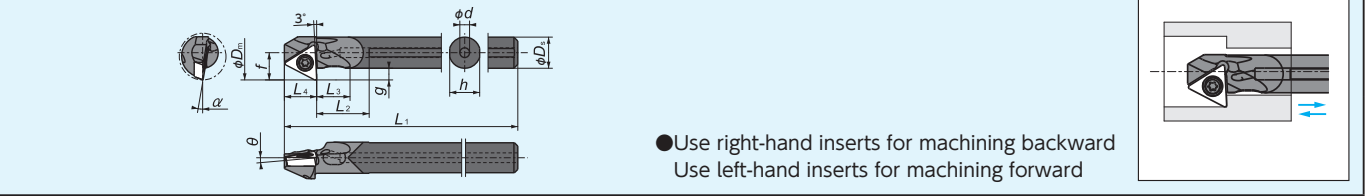


Gagelinsert	Item number*	Figure	Stock		φ D _s (inch) (mm)	Min. bore Dia. φ D _m (inch) (mm)	h	L ₁	f	L ₂	L ₃	L ₄	φ d	θ	α	Std. corner radius r _e		Clamp screw	Wrench	
			R	L												(inch)	(mm)			
TC..52..	S07G-STUC%{06D08-OH	1	●	○	.276	7.0	.315	8.0	6.75	90	4.0	16	19.5	12.5	2.5	0° - 11°	.008	0.2	LR-S-2 × 4.4	CLR-135
TC..52..	C07J-STUC%{06D08-OH	2	●	○	.276	7.0	.315	8.0	6.75	110	4.0	17.5	13.0	12.5	2.0	0° - 11°	.008	0.2	LR-S-2 × 4.4	CLR-135

* "S" denotes steel shank, "C" denotes carbide shank

C-STZC (Coolant through)

Minimum Bore Diameter .394"(10.0mm) Carbide shank



Insert	Item number*	Stock	φ D _s (inch) (mm)	Min. bore Dia. φ D _m (inch) (mm)	Max. shoulder height g (inch) (mm)	h	L ₁	f	L ₂	L ₃	L ₄	φ d	θ	α	Std. corner radius r _e		Clamp screw	Wrench		
															(inch)	(mm)				
TC..52..	C06H-STZCR06D10-OH	○	.236	6	.394	10	.098	2.5	5.75	100	5.5	10.5	6	6	2.0	0° -10°	.008	0.2	LR-S-2 × 4.4	CLR-135

TC.. inserts - Carbide

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	Graphs				
					PVD Coated																
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1							
	TCGH 5204 T%{B1	TCGH 060101 T%{B1	5/32	.004	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	TCGH 5208 F%{B1	TCGH 060102 F%{B1	5/32	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	TCGH 5208 T%{B1	TCGH 060102 T%{B1	5/32	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	TCGH 521 F%{B1	TCGH 060104 F%{B1	5/32	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	TCGH 521 TR%{B1	TCGH 060104 TR%{B1	5/32	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	TCGP 5204 F%{F05	TCGH 060101 F%{F05	5/32	.004	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	TCGP 5208 F%{F05	TCGH 060102 F%{F05	5/32	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	TCGP 521 F%{F05	TCGH 060104 F%{F05	5/32	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	TCGH 5208 F%{K	TCGH 060102 F%{K	5/32	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	TCGH 521 F%{K	TCGH 060104 F%{K	5/32	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

Cutting condition → V4

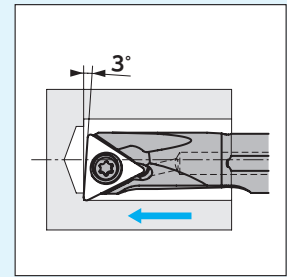
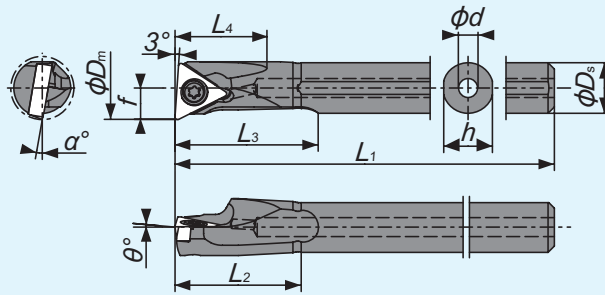
● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R/L) : 1-2 week delivery (Right / Left-hand only)
 (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Mogul Bar for 60° Triangle (TP..73.. style)

Minimum Bore Diameter .394"(10.0mm)

S-STUP (Coolant through)

Steel shank

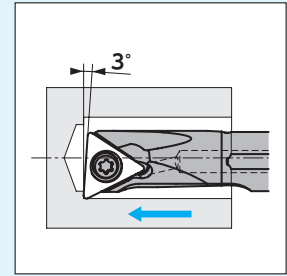
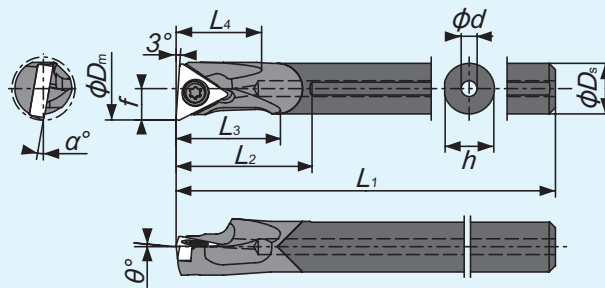


Right-Hand style shown

Figure-1

C-STUP (Coolant through)

Carbide shank

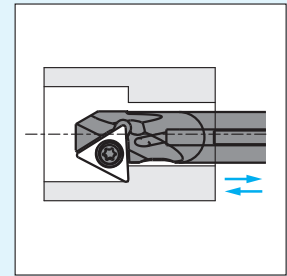
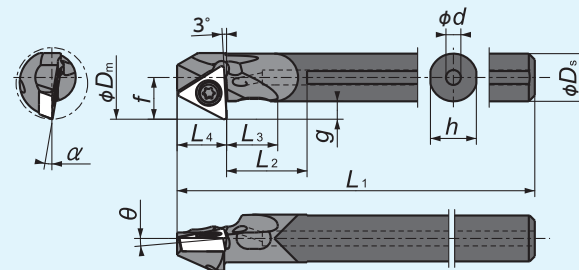


Right-Hand style shown

Figure-2

C-STZP (Coolant through)

Minimum Bore Diameter .472"(12.0mm) Carbide shank



● Use right-hand inserts for machining backward
 Use left-hand inserts for machining forward

Figure-3

TP..73.. style - Toolholders

GageInsert	Item number*	Figure	Stock		ϕD_s		Min. bore Dia. ϕD_m		Max. shoulder height g		h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius r_ϵ		Clamp screw	Wrench
			R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)										(inch)	(mm)		
	S08H-STUP%{09D10-OH	1	●		.315	8.0	.394	10.0	—	—	7.7	100	5.0	20	22.5	14.5	3.0	+5°	-10°	.016	0.4	LR-S-2.5 × 4.8	CLR-15S
	C08K-STUP%{09D10-OH	2	●	○	.315	8.0	.394	10.0	—	—	7.7	125	5.0	21.5	16.5	14.5	2.5	+5°	-10°	.016	0.4	LR-S-2.5 × 4.8	CLR-15S
	C08K-STZP%{09D12-OH	3	○		.315	8.0	.472	12.0	.118	3	7.7	125	7.0	13.5	8.5	8.3	2.5	+5°	-10°	.016	0.4	LR-S-2.5 × 4.8	CLR-15S
	C10M-STZP%{09D14-OH	3	○		.394	10.0	.551	14.0	.118	3	9.6	150	8.0	18.5	12	8.3	2.5	+5°	-7°	.118	0.4	LR-S-2.5 × 4.8	CLR-15S

* "S" denotes steel shank, "C" denotes carbide shank

Cutting condition → V4

TP..73.. inserts - Carbide

(inch)	IC	T
TP..73	7/32	3/32

Shape	Item Number	ISO Item Number	IC	R	Carbide											CVD	Diamond Coating	Graphs							
					PVD Coated								CP1	UC1											
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1													
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	TPGH 7308 F 3/4 B2	TPGH 090202 F 3/4 B2	7/32	.008									(L)		(L)										
	TPGH 731 F 3/4 B2	TPGH 090204 F 3/4 B2	7/32	.016									(L)		(L)										
	TPGH 732 3/4 B2	TPGH 090208 F 3/4 B2	7/32	.031									(L)		(L)										
	TPGH 7304 F 3/4 F1	TPGH 090201 F 3/4 F1	7/32	.004	(R)					(R)		(R)		(R)											
	TPGH 7308 F 3/4 F1	TPGH 090202 F 3/4 F1	7/32	.008	(R)					(R)		(R)		(R)											
	TPGH 731 F 3/4 F1	TPGH 090204 F 3/4 F1	7/32	.016	(R)					(R)		(R)		(R)											
	TPGH 732 F 3/4 F1	TPGH 090208 F 3/4 F1	7/32	.031	(R)					(R)		(R)		(R)											
	TPGP 7308 3/4 FG	TPGH 090202 3/4 FG	7/32	.008	(R)					R		R													
	TPGP 731 3/4 FG	TPGH 090204 3/4 FG	7/32	.016	(R)					R		R													
	TPGP 7308 F 3/4 K	TPGH 090202 F 3/4 K	1/4	.008									(L)												
	TPGP 7318 F 3/4 K	TPGH 090204 F 3/4 K	1/4	.016									(L)												
	TPGP 7328 F 3/4 K	TPGH 090208 F 3/4 K	1/4	.031									(L)												

*For F05, F1 and FG chipbreaker, right-hand inserts fit to right-hand toolholder
Note: F05, F1 and FG chipbreaker evacuates chips BACKWARD

TP..73.. inserts - CBN / PCD

(inch)	IC	T
TP.. 22	1/4	1/8
TP.. 73	7/32	3/32

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)											PCD	Diamond Coating					
								BIDEMICS Coated		Solid CBN		Coated													
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2			UC1				
								Steel	P																
								Stainless Steel	M																
								Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
								Non-Ferrous Material	N																
								Heat Resistant Alloy	S	●															
								Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TPGD 7308 PT S0415	TPGW 090202 PT S01015	S0415	7/32	.008	3	.087																		
	TPGD 7308 PT S0525	TPGW 090202 PT S01325	S0525	7/32	.008	3	.087																		
	TPGD 7308 PT S0635	TPGW 090202 PT S01535	S0635	7/32	.008	3	.087																		
	TPGD 731 PT S0415	TPGW 090204 PT S01015	S0415	7/32	.016	3	.079																		
	TPGD 731 PT S0525	TPGW 090204 PT S01325	S0525	7/32	.016	3	.079																		
	TPGD 731 PT S0635	TPGW 090204 PT S01535	S0635	7/32	.016	3	.079																		
	TPGD 732 PT S0415	TPGW 090208 PT S01015	S0415	7/32	.031	3	.067																		
	TPGD 732 PT S0525	TPGW 090208 PT S01325	S0525	7/32	.031	3	.067																		
	TPGD 732 PT S0635	TPGW 090208 PT S01535	S0635	7/32	.031	3	.067																		
	TPMT 7304 PBF	TPMT 090201 PBF	None	7/32	.004	1	—																		
	TPMT 7308 PBF	TPMT 090202 PBF	None	7/32	.008	1	—																		
with 3D chipbreaker	TPMT 731 PBF	TPMT 090204 PBF	None	7/32	.016	1	—																		
	TPMT 7308 PF	TPMT 090202 PF	None	7/32	.008	1	—																		
	TPMT 731 PF	TPMT 090204 PF	None	7/32	.016	1	—																		

● : Stock
● : Stock (Newly added)
■□□□ : While stocks last

R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
Ⓞ : Coolant through

(R,L) : 1-2 week delivery (Right / Left-hand only)
(R,L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Mogul Bar for 60° Triangle (TP..22.. style)

Minimum Bore Diameter .472"(12.0mm)

S-STUP (Coolant through)

Steel shank

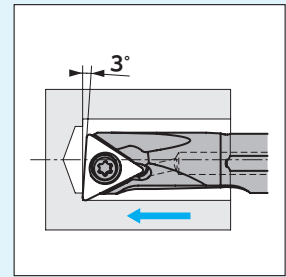
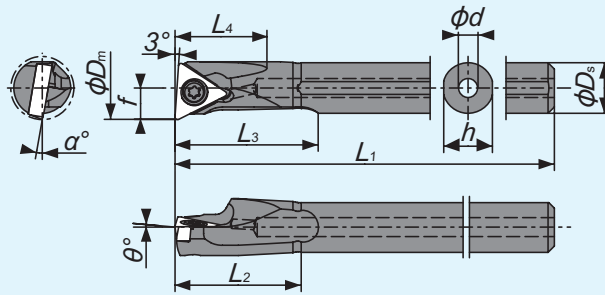


Figure-1

Right-Hand style shown

C-STUP (Coolant through)

Carbide shank

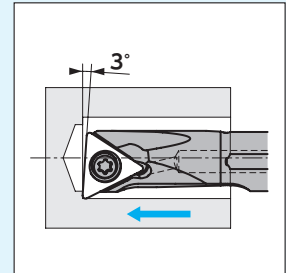
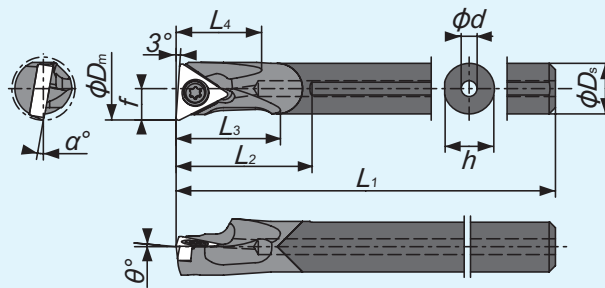


Figure-2

Right-Hand style shown

C-STZP (Coolant through)

Minimum Bore Diameter .689"(17.5mm) Carbide shank

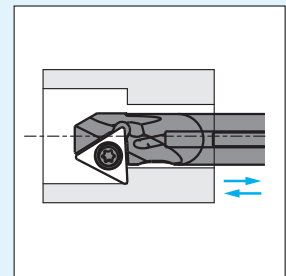
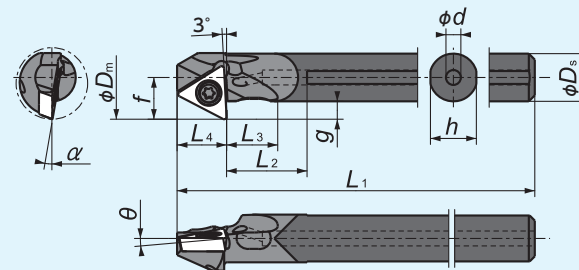


Figure-3

● Use right-hand inserts for machining backward
● Use left-hand inserts for machining forward

TP..22.. style - Toolholders

GageInsert	Item number*	Figure	Stock		ϕD_s		Min. bore Dia. ϕD_m		Max. shoulder height g		h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius r_ϵ		Clamp screw	Wrench
			R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)										(inch)	(mm)		
	S10K-STUP $\frac{1}{2}$ 11D12-OH	1	●		.394	10.0	.472	12.0	—	—	9.6	125	6.0	24	27.5	18.5	3.5	+5°	-7.5°	.016	0.4	LR-S-3 × 5.8	RLR-20S
	S12M-STUP $\frac{1}{2}$ 11D14-OH	1	●		.472	12.0	.551	14.0	—	—	11.5	150	7.0	28	32.5	22.0	4.0	+5°	-5°	.016	0.4	LR-S-3 × 5.8	RLR-20S
	S16Q-STUP $\frac{1}{2}$ 11D18-OH	1	●		.630	16.0	.709	18.0	—	—	15.4	180	9.0	32	42.5	28.5	5.0	+5°	-3°	.016	0.4	LR-S-3 × 5.8	RLR-20S
	S20Q-STUP $\frac{1}{2}$ 11D22-OH	1	●		.787	20.0	.866	22.0	—	—	19.4	180	11	40	46.0	38.0	5.0	+5°	-3°	.016	0.4	LR-S-3 × 5.8	RLR-20S
	C10M-STUP $\frac{1}{2}$ 11D12-OH	2	●	○	.394	10.0	.472	12.0	—	—	9.6	150	6.0	25.0	20.0	17.5	2.5	+5°	-7.5°	.016	0.4	LR-S-3 × 5.8	RLR-20S
	C12M-STUP $\frac{1}{2}$ 11D14-OH	2	●		.472	12.0	.551	14.0	—	—	11.5	150	7.0	29.0	23.0	21.5	3.0	+5°	-5°	.016	0.4	LR-S-3 × 5.8	RLR-20S
	C16Q-STUP $\frac{1}{2}$ 11D18-OH	2	●		.630	16.0	.709	18.0	—	—	15.4	180	9.0	37.0	29.0	28.0	4.0	+5°	-3°	.016	0.4	LR-S-3 × 5.8	RLR-20S
	C12M-STZP11D175-OH	3	○		.472	12	.689	17.5	.177	4.5	11.5	150	10.5	22	14.5	9.6	3.0	+5°	-5°	.117	0.4	LR-S-3 × 5.8	RLR-20S

* "S" denotes steel shank, "C" denotes carbide shank

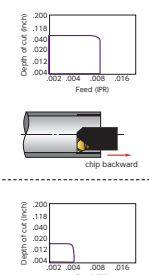
Cutting condition → V4

TP..22.. inserts - Carbide

(inch)	IC	T
TP..22	1/4	1/8

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide																			
					PVD Coated								CVD	Diamond Coating										
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1			CP1	UC1								
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	TPGH 2208 F 3/4 F1	TPGH 110302 F 3/4 F1	1/4	.008	●				●	●	●	●												
	TPGH 221 F 3/4 F1	TPGH 110304 F 3/4 F1	1/4	.016	●				●	●	●	●												
	TPGH 222 F 3/4 F1	TPGH 110308 F 3/4 F1	1/4	.031	●				●	●	●	●												
	TPGH 2208 3/4 FG	TPGH 110302 3/4 FG	1/4	.008	●				●	●														
	TPGH 221 3/4 FG	TPGH 110304 3/4 FG	1/4	.016	●				●	●														



TP..22.. inserts - CBN / PCD

(inch)	IC	T
TP.. 22	1/4	1/8

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS										PCD			Diamond Coating				
								Coated		Solid CBN		CBN (Brazed)						PD1	PD2	UC1					
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30									
								Steel	P																
								Stainless Steel	M																
								Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
								Non-Ferrous Material	N										●	●	●				
								Heat Resistant Alloy	S	●															
								Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	TPGW 2208 PT S0415	TPGW 110302 PT S01015	S0415	1/4	.008	3	.087																		
	TPGW 2208 PT T0420	TPGW 110302 PT T01020	T0420	1/4	.008	3	.087																		
	TPGW 2208 PT S0525	TPGW 110302 PT S01325	S0525	1/4	.008	3	.087																		
	TPGW 2208 PT S0635	TPGW 110302 PT S01535	S0635	1/4	.008	3	.087																		
	TPGW 221 PT S0415	TPGW 110304 PT S01015	S0415	1/4	.016	3	.079																		
	TPGW 221 PT T0420	TPGW 110304 PT T01020	T0420	1/4	.016	3	.079																		
	TPGW 221 PT S0525	TPGW 110304 PT S01325	S0525	1/4	.016	3	.079																		
	TPGW 221 PT T0615	TPGW 110304 PT T01515	T0615	1/4	.016	3	.079																		
	TPGW 221 PT S0635	TPGW 110304 PT S01535	S0635	1/4	.016	3	.079																		
	TPGW 222 PT S0415	TPGW 110308 PT S01015	S0415	1/4	.031	3	.067																		
	TPGW 222 PT T0420	TPGW 110308 PT T01020	T0420	1/4	.031	3	.067																		
	TPGW 222 PT S0525	TPGW 110308 PT S01325	S0525	1/4	.031	3	.067																		
	TPGW 222 PT T0615	TPGW 110308 PT T01515	T0615	1/4	.031	3	.067																		
	TPGW 222 PT S0635	TPGW 110308 PT S01535	S0635	1/4	.031	3	.067																		
TPGW 223 PT S0415	TPGW 110312 PT S01015	S0415	1/4	.047	3	.091																			
TPGW 223 PT T0420	TPGW 110312 PT T01020	T0420	1/4	.047	3	.091																			
TPGW 223 PT S0525	TPGW 110312 PT S01325	S0525	1/4	.047	3	.091																			
TPGW 223 PT T0615	TPGW 110312 PT T01515	T0615	1/4	.047	3	.091																			
TPGW 223 PT S0635	TPGW 110312 PT S01535	S0635	1/4	.047	3	.091																			
	TPMT 2204 PBF	TPMT 110301 PBF	None	1/4	.004	1	—																		
	TPMT 2208 PBF	TPMT 110302 PBF	None	1/4	.008	1	—																		
	TPMT 221 PBF	TPMT 110303 PBF	None	1/4	.016	1	—																		
	TPMT 2208 PF	TPMT 110302 PF	None	1/4	.008	1	—																		
	TPMT 221 PF	TPMT 110304 PF	None	1/4	.016	1	—																		
	TPMH 2208 F 3/4 F1	TPMH 110302 FRF1	None	1/4	.008	3	—															●			
	TPMH 221 F 3/4 F1	TPMH 110304 FRF1	None	1/4	.016	3	—															●			

● : Stock
 ● : Stock (Newly added)
 ■ □ □ □ : While stocks last

R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ : Mirror finish

○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through

● : 1-2 week delivery (Right / Left-hand only)
 ● : 1-2 week delivery (Right / Left-hand only, Newly added)

ID Tooling

Mogul Bar for 80° Diamond ("CC" style)

S-SCLC (Coolant through)

Steel shank

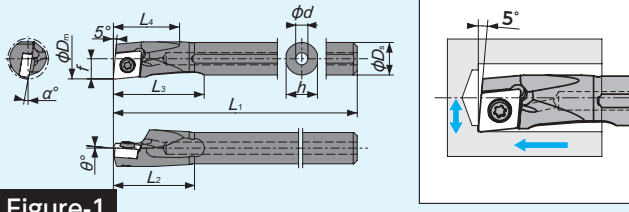


Figure-1

Minimum Bore Diameter .394"(10mm)

C-SCLC (Coolant through)

Carbide shank

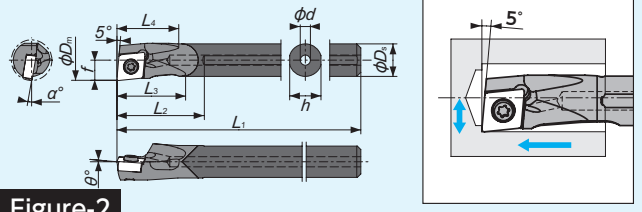


Figure-2

"CC" style - Toolholders



Gage Insert	Item number*	Figure	Stock		ϕD_s	Min. bore Dia.		h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius r_c	Clamp screw	Wrench	
			R	L		(inch)	(mm)													(inch)	(mm)
CC..21.5..	S08H-SCLC 3/8" 06D10-OH	1	●	●	.315	8.0	.394	10.0	7.7	100	5.0	20.0	22.0	16.0	3.0	0°	-13°	.016	0.4	LR15-2.5 x 5 CLR-155
	S10K-SCLC 3/8" 06D12-OH	1	●	●	.394	10.0	.472	12.0	9.6	125	6.0	24.0	27.5	20.0	3.5	0°	-11°	.016	0.4	LR15-2.5 x 5 CLR-155
	S12M-SCLC 3/8" 06D14-OH	1	●	●	.472	12.0	.551	14.0	11.5	150	7.0	28.0	32.5	23.0	4.0	0°	-9°	.016	0.4	LR15-2.5 x 5 CLR-155
CC..32.5..	S16Q-SCLC 3/8" 09D18-OH	1	●	●	.630	16.0	.709	18.0	15.4	180	9.0	36.0	42.5	30.0	5.0	0°	-10°	.016	0.4	LR15-4 x 8 CLR-255-20 x 65
	C08K-SCLC 3/8" 06D10-OH	2	●	○	.315	8.0	.394	10.0	7.7	125	5.0	21.5	16.5	15.0	2.5	0°	-13°	.016	0.4	LR15-2.5 x 5 CLR-155
CC..21.5..	C10M-SCLC 3/8" 06D12-OH	2	●	○	.394	10.0	.472	12.0	9.6	150	6.0	25.0	20.0	19.5	2.5	0°	-11°	.016	0.4	LR15-2.5 x 5 CLR-155
	C12M-SCLC 3/8" 06D14-OH	2	●	○	.472	12.0	.551	14.0	11.5	150	7.0	29.0	23.5	22.5	3.0	0°	-9°	.016	0.4	LR15-2.5 x 5 CLR-155

* "S" denotes steel shank, "C" denotes carbide shank

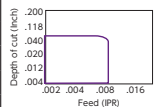
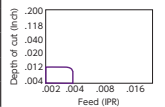
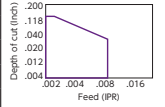
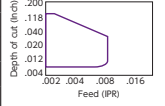
CC.. inserts - Carbide

	(inch)	IC	T
CC..21.5	1/4	3/32	
CC..32.5	3/8	5/32	

● : 1st Choice ● : 2nd choice

Shape	Item Number	ISO Item Number	IC	R	Carbide										CVD	Diamond Coating	Depth of cut (inch)	Feed (IPR)	
					PVD Coated														
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
	CCGT 32.501 YL	CCGT 09T300 YL	3/8	.001	●	●	●	●	●	●	●	●	●	●	●	●	●		
	CCGT 32.504M YL	CCGT 09T301M YL	3/8	.003	●	●	●	●	●	●	●	●	●	●	●	●			
	CCGT 32.508M YL	CCGT 09T302M YL	3/8	.007	●	●	●	●	●	●	●	●	●	●	●				
	CCGT 32.51M YL	CCGT 09T304M YL	3/8	.015	●	●	●	●	●	●	●	●	●	●	●				
	CCGT 32.52M YL	CCGT 09T308M YL	3/8	.031	●	●	●	●	●	●	●	●	●	●	●				
	CCGT 21.504M CL	CCGT 060201M CL	1/4	.003	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.508M CL	CCGT 060202M CL	1/4	.007	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.501 CL	CCGT 09T300 CL	3/8	.001	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.504M CL	CCGT 09T301M CL	3/8	.003	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.508M CL	CCGT 09T302M CL	3/8	.007	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.51M CL	CCGT 09T304M CL	3/8	.015	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.501 FNAM3	CCGT 060200 FNAM3	1/4	.001	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.504M FNAM3	CCGT 060201M FNAM3	1/4	.003	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.508M FNAM3	CCGT 060202M FNAM3	1/4	.007	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.508 FNAM3	CCGT 060202 FNAM3	1/4	.008	○	○	○	○	○	○	○	○	○	○	○	○			
CCGT 21.51M FNAM3	CCGT 060204M FNAM3	1/4	.015	○	○	○	○	○	○	○	○	○	○	○	○				
	CCGT 32.501 FNAM3	CCGT 09T300 FNAM3	3/8	.001	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.504M FNAM3	CCGT 09T301M FNAM3	3/8	.003	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.508M FNAM3	CCGT 09T302M FNAM3	3/8	.007	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.508 FNAM3	CCGT 09T302 FNAM3	3/8	.008	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.51M FNAM3	CCGT 09T304M FNAM3	3/8	.015	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.51 FNAM3	CCGT 09T304 FNAM3	3/8	.016	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.52 FNAM3	CCGT 09T308 FNAM3	3/8	.031	○	○	○	○	○	○	○	○	○	○	○	○			
	CCMT 21.508 FNAM3	CCMT 060202 FNAM3	1/4	.008	○	○	○	○	○	○	○	○	○	○	○	○			
CCMT 21.51 FNAM3	CCMT 060204 FNAM3	1/4	.016	○	○	○	○	○	○	○	○	○	○	○	○				
	CCGT 21.501 AZ7	CCGT 060200 AZ7	1/4	.001	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.504M AZ7	CCGT 060201M AZ7	1/4	.003	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 21.508M AZ7	CCGT 060202M AZ7	1/4	.007	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.501 AZ7	CCGT 09T300 AZ7	3/8	.001	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.504M AZ7	CCGT 09T301M AZ7	3/8	.003	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.508M AZ7	CCGT 09T302M AZ7	3/8	.007	○	○	○	○	○	○	○	○	○	○	○	○			
	CCGT 32.51M AZ7	CCGT 09T304M AZ7	3/8	.015	○	○	○	○	○	○	○	○	○	○	○	○			

				Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Shape	Item Number	ISO Item Number	IC	R	Carbide														
					PVD Coated										CVD	Diamond Coating			
					ST4	DM4	DT4	QM3	TM4	VM1	ZM3	KM1	CP1	UC1					
	CCGT 21.501 R $\frac{1}{4}$ S	CCGT 060200 R $\frac{1}{4}$ S	1/4	.001															
	CCGT 21.504M R $\frac{1}{4}$ S	CCGT 060201M R $\frac{1}{4}$ S	1/4	.003															
	CCGT 21.504 R $\frac{1}{4}$ S	CCGT 060201 R $\frac{1}{4}$ S	1/4	.004															
	CCGT 21.508M R $\frac{1}{4}$ S	CCGT 060202M R $\frac{1}{4}$ S	1/4	.007															
	CCGT 21.508 R $\frac{1}{4}$ S	CCGT 060202 R $\frac{1}{4}$ S	1/4	.008															
	CCGT 21.51 R $\frac{1}{4}$ S	CCGT 060204 R $\frac{1}{4}$ S	1/4	.016															
	CCGT 32.501 R $\frac{3}{8}$ S	CCGT 09T300 R $\frac{3}{8}$ S	3/8	.001															
	CCGT 32.504M R $\frac{3}{8}$ S	CCGT 09T301M R $\frac{3}{8}$ S	3/8	.003															
	CCGT 32.504 R $\frac{3}{8}$ S	CCGT 09T301 R $\frac{3}{8}$ S	3/8	.004															
	CCGT 32.508M R $\frac{3}{8}$ S	CCGT 09T302M R $\frac{3}{8}$ S	3/8	.007															
	CCGT 32.508 R $\frac{3}{8}$ S	CCGT 09T302 R $\frac{3}{8}$ S	3/8	.008															
	CCGT 32.51M R $\frac{3}{8}$ S	CCGT 09T304M R $\frac{3}{8}$ S	3/8	.015															
CCGT 32.51 R $\frac{3}{8}$ S	CCGT 09T304 R $\frac{3}{8}$ S	3/8	.016																
	CCGT 21.501 R $\frac{1}{4}$ U	CCGT 060200 R $\frac{1}{4}$ U	1/4	.001															
	CCGT 21.504 R $\frac{1}{4}$ U	CCGT 060201 R $\frac{1}{4}$ U	1/4	.004															
	CCGT 21.508 R $\frac{1}{4}$ U	CCGT 060202 R $\frac{1}{4}$ U	1/4	.008															
	CCGT 32.501 R $\frac{3}{8}$ U1	CCGT 09T300 R $\frac{3}{8}$ U1	3/8	.001															
	CCGT 32.504 R $\frac{3}{8}$ U1	CCGT 09T301 R $\frac{3}{8}$ U1	3/8	.004															
	CCGT 32.508 R $\frac{3}{8}$ U1	CCGT 09T302 R $\frac{3}{8}$ U1	3/8	.008															
	CCGT 32.51 R $\frac{3}{8}$ U1	CCGT 09T304 R $\frac{3}{8}$ U1	3/8	.016															
	CCET 21.502 R $\frac{1}{4}$ KHG	CCET 0602005 R $\frac{1}{4}$ KHG	1/4	.002															
	CCET 21.503 R $\frac{1}{4}$ KHG	CCET 0602008 R $\frac{1}{4}$ KHG	1/4	.003															
	CCET 21.507 R $\frac{1}{4}$ KHG	CCET 0602018 R $\frac{1}{4}$ KHG	1/4	.007															
	CCET 21.508 R $\frac{1}{4}$ KHG	CCET 060202 R $\frac{1}{4}$ KHG	1/4	.008															
	CCET 32.502 R $\frac{3}{8}$ KHG	CCET 09T3005 R $\frac{3}{8}$ KHG	3/8	.002															
	CCET 32.503 R $\frac{3}{8}$ KHG	CCET 09T3008 R $\frac{3}{8}$ KHG	3/8	.003															
	CCET 32.507 R $\frac{3}{8}$ KHG	CCET 09T3018 R $\frac{3}{8}$ KHG	3/8	.007															
CCET 32.508 R $\frac{3}{8}$ KHG	CCET 09T302 R $\frac{3}{8}$ KHG	3/8	.008																
	CCGT 21.504 F $\frac{1}{4}$ F1	CCGT 060201 F $\frac{1}{4}$ F1	1/4	.004															
	CCGT 21.508 F $\frac{1}{4}$ F1	CCGT 060202 F $\frac{1}{4}$ F1	1/4	.008															
	CCGT 21.51 F $\frac{1}{4}$ F1	CCGT 060204 F $\frac{1}{4}$ F1	1/4	.016															
	CCGT 32.508 F $\frac{3}{8}$ F1	CCGT 09T302 F $\frac{3}{8}$ F1	3/8	.008															
	CCGT 32.51 F $\frac{3}{8}$ F1	CCGT 09T304 F $\frac{3}{8}$ F1	3/8	.016															
	CCGW 21.501 FN	CCGW 060200 FN	1/4	.001															
	CCGW 21.501 H	CCGW 060200 H	1/4	.001															
	CCGW 21.504 FN	CCGW 060201 FN	1/4	.004															
	CCGW 21.504 H	CCGW 060201 H	1/4	.004															
	CCGW 21.508 H	CCGW 060202 H	1/4	.008															
	CCGW 21.51 FN	CCGW 060204 FN	1/4	.016															
	CCGW 21.52 FN	CCGW 060208 FN	1/4	.031															
	CCGW 32.500 V	CCGW 09T30 V	3/8	.001															
	CCGW 32.501 FN	CCGW 09T300 FN	3/8	.001															
	CCGW 32.501 H	CCGW 09T300 H	3/8	.001															
	CCGW 32.504 FN	CCGW 09T301 FN	3/8	.004															
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CCGW 32.508 P	CCGW 09T302 P	3/8	.008																



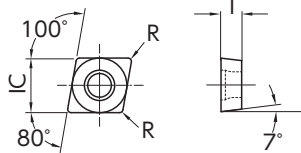
Cutting condition → V4

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) M : Mirror finish
 ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through
 (R)L : 1-2 week delivery (Right / Left-hand only) (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

CC.. inserts - CBN / PCD

(inch)	IC	T
CC.. 21	1/4	3/32
CC.. 32	3/8	5/32

● : 1st Choice ● : 2nd choice



Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material											PCD			Diamond Coating		
								Steel											PCD					
								Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material	P	M	K	N	S	H	PD1	PD2	UC1			
JP2	B99	B5K	CBN (Brazed)						PD1	PD2	UC1													
			B52	B6K	B36	B40	B23	B30																
	CCGW 21.508 PD FNX	CCGW 060202 PD FNX	None	1/4	.008	2	.091																	
	CCGW 21.508 PD S0415	CCGW 060202 PD S01015	S0415	1/4	.008	2	.091																	
	CCGW 21.508 PD S0525	CCGW 060202 PD S01325	S0525	1/4	.008	2	.091																	
	CCGW 21.508 PD S0635	CCGW 060202 PD S01535	S0635	1/4	.008	2	.091																	
	CCGW 21.51 PD FNX	CCGW 060204 PD FNX	None	1/4	.016	2	.091																	
	CCGW 21.51 PD S0415	CCGW 060204 PD S01015	S0415	1/4	.016	2	.091																	
	CCGW 21.51 PD S0525	CCGW 060204 PD S01325	S0525	1/4	.016	2	.091																	
	CCGW 21.51 PD S0635	CCGW 060204 PD S01535	S0635	1/4	.016	2	.091																	
	CCGW 21.52 PD FNX	CCGW 060208 PD FNX	None	1/4	.031	2	.087																	
	CCGW 21.52 PD S0415	CCGW 060208 PD S01015	S0415	1/4	.031	2	.087																	
	CCGW 21.52 PD S0525	CCGW 060208 PD S01325	S0525	1/4	.031	2	.087																	
	CCGW 21.52 PD T0620	CCGW 060208 PD T01520	T0620	1/4	.031	2	.087																	
	CCGW 21.52 PD S0635	CCGW 060208 PD S01535	S0635	1/4	.031	2	.087																	
	CCGW 32.508 PD FNX	CCGW 09T302 PD FNX	None	3/8	.008	2	.091																	
	CCGW 32.508 PD S0415	CCGW 09T302 PD S01015	S0415	3/8	.008	2	.091																	
	CCGW 32.508 PD S0525	CCGW 09T302 PD S01325	S0525	3/8	.008	2	.091																	
	CCGW 32.508 PD S0635	CCGW 09T302 PD S01535	S0635	3/8	.008	2	.091																	
	CCGW 32.51 PD FNX	CCGW 09T304 PD FNX	None	3/8	.016	2	.091																	
	CCGW 32.51 PD S0415	CCGW 09T304 PD S01015	S0415	3/8	.016	2	.091																	
	CCGW 32.51 PD S0525	CCGW 09T304 PD S01325	S0525	3/8	.016	2	.091																	
CCGW 32.51 PD S0635	CCGW 09T304 PD S01535	S0635	3/8	.016	2	.091																		
CCGW 32.52 PD FNX	CCGW 09T308 PD FNX	None	3/8	.031	2	.087																		
CCGW 32.52 PD S0415	CCGW 09T308 PD S01015	S0415	3/8	.031	2	.087																		
CCGW 32.52 PD S0525	CCGW 09T308 PD S01325	S0525	3/8	.031	2	.087																		
CCGW 32.52 PD S0635	CCGW 09T308 PD S01535	S0635	3/8	.031	2	.087																		
CCGW 32.53 PD FNX	CCGW 09T312 PD FNX	None	3/8	.047	2	.063																		
CCGW 32.53 PD S0415	CCGW 09T312 PD S01015	S0415	3/8	.047	2	.063																		
CCGW 32.53 PD S0525	CCGW 09T312 PD S01325	S0525	3/8	.047	2	.063																		
	CCMW 32.504	CCMW 09T301	None	3/8	.004	1	—																	
	CCMW 32.508	CCMW 09T302	None	3/8	.008	1	—																	
	CCMW 32.51	CCMW 09T304	None	3/8	.016	1	—																	
	CCMW 32.52	CCMW 09T308	None	3/8	.031	1	—																	
	CCMT 21.504 PBF	CCMT 060201 PBF	None	1/4	.004	1	—																	
	CCMT 21.508 PBF	CCMT 060202 PBF	None	1/4	.008	1	—																	
	CCMT 21.51 PBF	CCMT 060204 PBF	None	1/4	.016	1	—																	
	CCMT 32.504 PBF	CCMT 09T301 PBF	None	3/8	.004	1	—																	
	CCMT 32.508 PBF	CCMT 09T302 PBF	None	3/8	.008	1	—																	
	CCMT 32.51 PBF	CCMT 09T304 PBF	None	3/8	.016	1	—																	
	CCMT 32.508 PF	CCMT 09T302 PF	None	3/8	.008	1	—																	
	CCMT 32.51 PF	CCMT 09T304 PF	None	3/8	.016	1	—																	

ID boring bars → V30
Cutting condition → V4

TMN Series

TGC Minimum Bore Diameter .315" (80mm) ~

Carbide shank

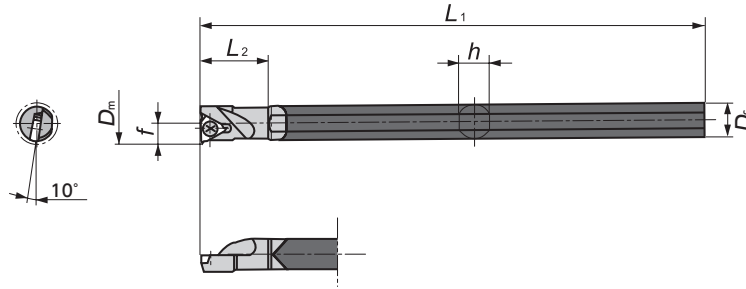
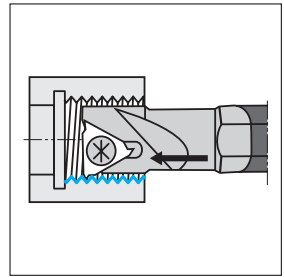


Figure-1



Right-Hand style shown

HN Minimum Bore Diameter .315" (80mm) ~

Steel shank

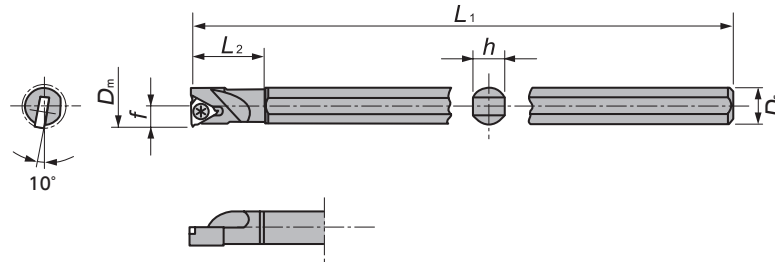
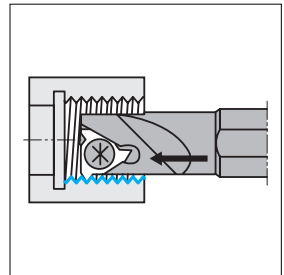


Figure-2



Right-Hand style shown

TMN Series - Toolholders



TGC/HN

Gage Insert	Item Number	Figure	Stock	Min. Machining Dia. D_m (Inch) (mm)	D_s (Inch) (mm)	h (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	L_2 (Inch) (mm)	Clamp Screw	Wrench
TMN..06..	TGC10T06H161R	1	○	.315 8	.236 6	.217 5.5	3.937 100	.150 3.8	.512 13.0	LR-S-2 × 4.4	CLR-13S
TMN..08..	TGC10T08K162R	1	○	.394 10	.315 8	.276 7.0	4.921 125	.185 4.7	.669 17.0	LR-S-2 × 5.5	CLR-13S
TMN..09..	TGC10T10M163R	1	○	.472 12	.394 10	.354 9.0	5.906 150	.236 6.0	.787 20.0	LRIS-2.2 × 6	CLR-13S
TMN..06..	HN59Z-0028	2	○	.315 8	.236 6	.217 5.5	3.937 100	.150 3.8	.512 13.0	LR-S-2 × 4.4	CLR-13S
TMN..08..	HN59Z-0029	2	○	.394 10	.315 8	.276 7.0	4.921 125	.185 4.7	.669 17.0	LR-S-2 × 5.5	CLR-13S
TMN..09..	HN59Z-0030	2	○	.472 12	.236 10	.354 9.0	5.906 150	.236 6.0	.787 20.0	LRIS-2.2 × 6	CLR-13S

TMN Series - Inserts

TMN

Shape	Item Number	ϕd (Inch) (mm)	s (Inch) (mm)	r_e (Inch) (mm)	Recommended Pitch (TPI) (mm)	Pitch (TPI) (mm)	Coated Carbide ZM3
<p>Right-hand type shown</p>	TMN06FR03	.156 3.97	.063 1.59	.001 .003	51 0.5	63-34 0.4-0.75	○
	TMN08FR03	.187 4.76	.094 2.38	.001 .003	51 0.5	63-34 0.4-0.75	○
	TMN09FR03	.219 5.56	.094 2.38	.001 .003	51 0.5	63-34 0.4-0.75	○

Cutting condition →V5

Chipbreakers for Mogul Bar

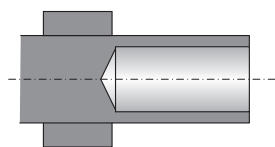
Molded Chipbreakers

Name	Chipbreaker Geometry	Features	ER Style	CC Style	CP Style	TC Style	TP Style
FG		● Evacuate chips BACKWARD at light depth of cut	—	—	—	—	
YL		● Great combination of sharpness and toughness ● Covers extremely wide range ● Excellent chip control	—		—	—	—
CL		● Double-positive geometry ● Sharp edge and low tool pressure ● Very wide chip control range	—		—	—	—
AM3		● Great combination of sharp edge and chip control	—			—	—
AZ7		● Excellent chip control at light feed and light depth of cut	—		—	—	—
ZR		● Covers a wide range of depth of cut under high-speed and low-feed conditions	—		—	—	—
AM5		● Provides both good cutting performance and chip control	—			—	—

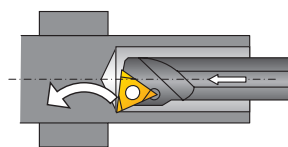
Ground Chipbreakers

Name	Chipbreaker Geometry	Features	ER Style	CC Style	CP Style	TC Style	TP Style
F05 • F1		● Exclusively designed for ID boring ● Evacuate chips BACKWARD					
S		● Sharp cutting edge with excellent chip control	—			—	—
U • U1		● Sharp cutting edge prevents work materials from work hardening	—		—	—	—
KHG		● Excellent chip control on finishing cuts ● For super high-precision machining	—		—	—	—
K		● Superb chip control on finishing applications	—	—	—		—
A • A1		● Tough cutting edge and good chip control ● General-purpose ID chipbreaker	—	—		—	—
A2		● Sharp cutting edge due to large rake angle		—	—	—	—
B1•B2•B3		● Stable cutting in boring thanks to sharp and tough cutting edge	—	—	—		

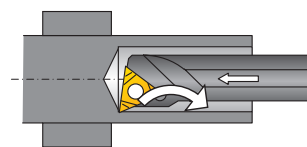
Boring on CNC Swiss-Type Lathes



Blind hole due to bar stock



Typical inserts direct chips forward
Then packed chips damage and break cutting edges



FG, F1 and F05 chipbreakers direct chips backward and prevent cutting edges from breaking

Note: Use right-hand inserts with FG, F1 and F05 chipbreakers for right-hand boring bars

W



Shaper

Shaper

SHAPER DUO



Hexalobular Socket



Hexagon Socket



Square Socket




WATCH ON YouTube

- Now available for Hexalobular(6-lobe) Socket
- Perfect fit for back spindle of Swiss machine
- Achieves good corner edge sharpness


- Less tool pressure than Rotary-Broaching
- Easy to adjust for correct dimension
- Economical double-ended insert bar (Except for Hexalobular)

Comparison Chart of Hexalobular Socket Machining

	Tool Pressure	Cycle Time	Tool Cost	High speed spindle	Program	
Shaper Duo 	◎	◎	◎	Not necessary	Simple	<ul style="list-style-type: none"> ● No high speed spindle needed ● A lot less cycle time
End milling	○	×	△	Necessary	Complicated	<ul style="list-style-type: none"> ● Need high speed spindle ● Time consuming process

- Small diameter endmill driven by high-speed spindle is popular way to create Hexalobular(6-lobe) socket. It has some flexibility but needs high speed spindle unit and it is a time consuming process.
- SHAPER DUO can make Hexalobular(6-lobe) socket faster and simpler.

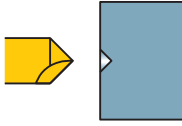
Comparison Chart of HEX Socket Machining

	Tool Pressure	Cycle Time	Flexibility	Tool Cost	
Shaper Duo 	◎	△ * Can be off-set by over-wrapping operation	○	◎	<ul style="list-style-type: none"> ● Less tool pressure-especially on small diameter parts ● One size can cover several socket sizes
Broach Tool	△	○	×	△	<ul style="list-style-type: none"> ● Need to have tools for each socket size

- Rotary-broach is an efficient way for Hexagon socket. But tool pressure is high and often times it pushes part too hard.
- SHAPER DUO system enables less tool pressure and provides better tolerance with less cost.

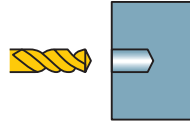
Process Chart

① Center drilling



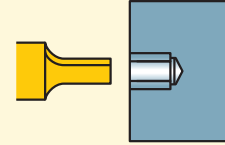
Make a center hole which is smaller than pilot hole drill.

② Drilling (Pilot hole)



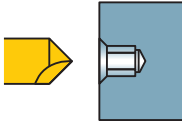
Select a drill with same or smaller (0~0.1mm) dia. as AF and machine a bit deeper because burrs may cause chipping on shaper insert

③ Shaper tool



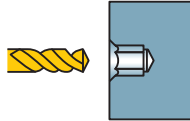
Machine socket rotating 60 degrees 6 times

④ Chamfering



Chamfer with the same pilot hole drill as ①

⑤ Deburring



Finish and deburr with the same drill as in process②
☆Reduce cutting conditions due to heavy interruption

SHAPER DUO Process Chart -Hexalobular-

Socket Size	Tool	Pilot bore Dia. (mm)	Starting "X" position (mm)	Number of passes			Estimated cycle time *		
				Final "X" position (mm)	Roughing pass 0.025mm	Finishing pass 0.005mm	ISO10664 Standard depth of Hexalobular hole (mm)	Whole process ①-⑤	Process④ Shaper
T6	SSP050N25T06	1.15	1.14	1.75	13	1	1.82	51 sec	23.2 sec
T7	SSP050N31T07	1.38	1.35	2.06	15	1	2.44	59 sec	28.2 sec
T8	SSP050N36T08	1.62	1.59	2.40	17	1	3.05	67 sec	33.8 sec
T10	SSP050N41T10	1.92	1.89	2.80	19	1	3.56	75 sec	39.5 sec
T15	SSP050N43T15	2.30	2.29	3.35	22	1	3.81	84 sec	46.2 sec
T20	SSP050N46T20	2.71	2.69	3.95	26	1	4.07	94 sec	55.4 sec
T25	SSP050N50T25	3.13	3.09	4.50	29	1	4.45	105 sec	63.8 sec
T27	SSP050N55T27	3.52	3.51	5.07	32	1	4.70	115 sec	71.8 sec
T30	SSP050N55T30	3.91	3.89	5.60	35	1	4.95	125 sec	80.2 sec

* Using Carbide drill

* Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.005 mm (Finishing)

SHAPER DUO Process Chart -Hexagonal-

HEX Standard	Tool	Pilot bore Dia. (mm)	Starting "X" position (mm)	Number of passes			Estimated cycle time *		
				Final "X" position (mm)	Roughing pass 0.025mm	Finishing pass 0.005mm	ISO 2936 standard depth of Hex hole (mm)	Whole process ①-⑤	Process④ Shaper
HEX 1.5	SSP020N1130H	1.5	1.47	1.73	6	1	2	39 sec	14 sec
HEX 2.0	SSP020N1430H	2.0	1.95	2.31	8	1	2.5	44 sec	16 sec
HEX 2.5	SSP030N1940H	2.5	2.48	2.89	9	1	3	50 sec	20 sec
HEX 3.0	SSP030N1940H	3.0	2.95	3.46	11	1	3.5	55 sec	23 sec
HEX 4.0	SSP040N2450H	4.0	3.96	4.62	14	1	5	73 sec	33 sec
HEX 5.0	SSP050N3260H	5.0	4.96	5.77	17	1	6	90 sec	46 sec
HEX 6.0	SSP060N42120H	6.0	5.97	6.93	20	1	8	117 sec	63 sec
HEX 8.0	SSP080N62160H	8.0	7.98	9.24	26	1	10	155 sec	92 sec

* Pilot bore diameter is same or smaller(0-0.1mm) as AF.
* Using Carbide drill

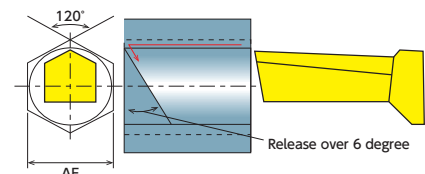
* Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.005 mm (Finishing)

Recommended Cutting Conditions

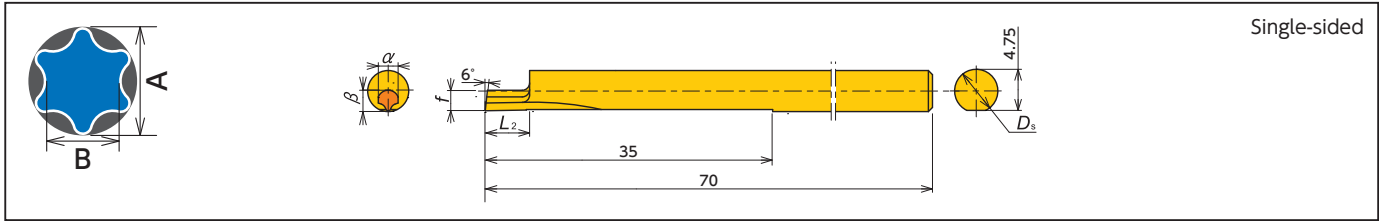
Feed : 3000 mm/min (120 IPM)
DOC : Roughing ... 0.025 mm (.0010") + Finishing ... 0.005 mm (.0002")

Program Example → W6 · W7



Sleeves → W8-W11

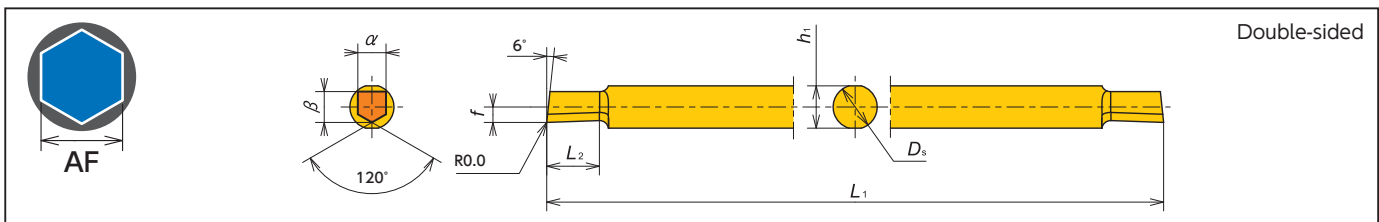
Insert Bar -Hexalobular-



Single-sided

Item Number	Socket Size	Hexalobular Socket			D_s (mm)	L_2 (mm)	α (mm)	β (mm)	f (mm)	Pilot Bore Dia (mm)	Coated Carbide
		#	A (mm)	B (mm)							TM4
SSP050N25T06	T6	6	1.75	1.27	$\phi 5$	2.5	1.08	1.09	2.4	$\phi 1.15$	●
SSP050N31T07	T7	-	-	-	$\phi 5$	3.1	1.27	1.29	2.4	$\phi 1.38$	●
SSP050N36T08	T8	8	2.4	1.75	$\phi 5$	3.6	1.48	1.50	2.4	$\phi 1.62$	●
SSP050N41T10	T10	10	2.8	2.05	$\phi 5$	4.1	1.67	1.70	2.4	$\phi 1.92$	●
SSP050N43T15	T15	15	3.35	2.4	$\phi 5$	4.3	2.04	2.10	2.4	$\phi 2.30$	●
SSP050N46T20	T20	20	3.95	2.85	$\phi 5$	4.6	2.41	2.50	2.4	$\phi 2.71$	●
SSP050N50T25	T25	25	4.5	3.25	$\phi 5$	5.0	2.78	2.90	2.4	$\phi 3.13$	●
SSP050N55T27	T27	-	-	-	$\phi 5$	5.5	3.15	3.30	2.4	$\phi 3.52$	●
SSP050N55T30	T30	30	5.6	4.05	$\phi 5$	5.5	3.52	3.70	2.4	$\phi 3.91$	●

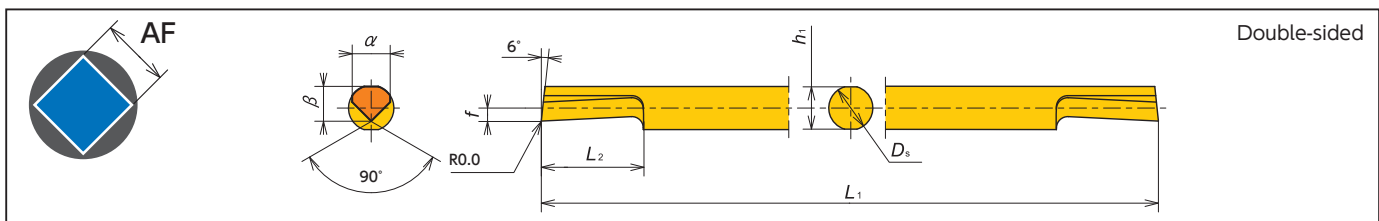
Insert Bar -Hexagon-



Double-sided

Item Number	Base AF (mm)	HEX Standard size range (mm)	AF range		D_s (mm)	L_1 (mm)	L_2 (mm)	h_1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide
			(Inch)	(mm)								TM4
SSP020N1130H	HEX 1.5	HEX 1.5 - 2.0	.055 - .078	1.4 - 2.0	$\phi 2$	50	3.0	1.8	1.1	0.8	0.40	●
SSP020N1430H	HEX 2.0	HEX 2.0 - 2.5	.075 - .102	1.9 - 2.6	$\phi 2$	50	3.0	1.8	1.4	1.1	0.55	●
SSP030N1940H	HEX 3.0	HEX 2.5 - 3.5	.095 - .141	2.4 - 3.6	$\phi 3$	50	4.0	2.8	1.9	1.6	0.8	●
SSP040N2450H	HEX 4.0	HEX 3.5 - 4.5	.134 - .181	3.4 - 4.6	$\phi 4$	60	5.0	3.8	2.4	2.6	1.3	●
SSP050N3260H	HEX 5.0	HEX 4.5 - 6.0	.174 - .244	4.4 - 6.2	$\phi 5$	70	6.0	4.8	3.2	3.4	1.70	●
SSP060N42120H	HEX 6.0	HEX 6.0 - 8.0	.233 - .322	5.9 - 8.2	$\phi 6$	80	12.0	5.6	4.2	4.0	2.00	●
SSP080N62160H	HEX 8.0	HEX 8.0 - 12.0	.311 - .480	7.9 - 12.2	$\phi 8$	80	16.0	7.6	6.2	4.7	2.35	●

Insert Bar -Square-



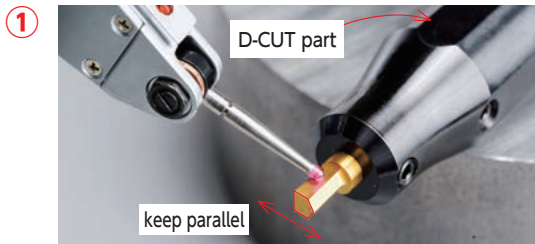
Double-sided

Item Number	Base AF (mm)	AF range		D_s (mm)	L_1 (mm)	L_2 (mm)	h_1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide
		(Inch)	(mm)								TM4
SSP020N1740S	2.0	.075 - .090	1.9 - 2.3	$\phi 2.0$	50	4.0	1.8	1.70	1.60	0.70	●
SSP025N1940S	2.5	.087 - .102	2.2 - 2.6	$\phi 2.5$	50	4.0	2.3	1.95	1.80	0.65	●
SSP030N2260S	3.0	.099 - .118	2.5 - 3.0	$\phi 3.0$	50	6.0	2.8	2.20	2.05	0.65	●
SSP035N2760S	3.5	.115 - .145	2.9 - 3.7	$\phi 3.5$	60	6.0	3.3	2.70	2.25	0.60	●
SSP040N3380S	4.0	.142 - .181	3.6 - 4.6	$\phi 4.0$	60	8.0	3.8	3.35	3.05	1.15	●
SSP050N39100S	5.0	.178 - .212	4.5 - 5.4	$\phi 5.0$	70	10.0	4.8	3.90	3.95	1.55	●
SSP060N47120S	6.0	.209 - .259	5.3 - 6.6	$\phi 6.0$	80	12.0	5.6	4.75	4.50	1.70	●
SSP080N58160S	8.0	.256 - .318	6.5 - 8.1	$\phi 8.0$	80	16.0	7.6	5.80	5.50	1.70	●

● : Stock

SHAPER DUO Set-up Instructions - Hexagonal

Outside machine

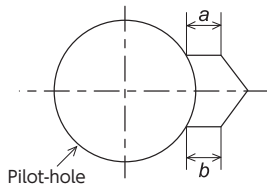
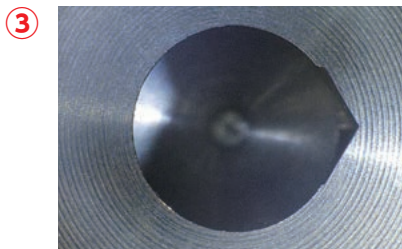


- Set the insert bar in the sleeve and check the parallelism of the flat portion of the sleeve and the insert bar.
- Minimize the overhang of the insert.

Inside machine



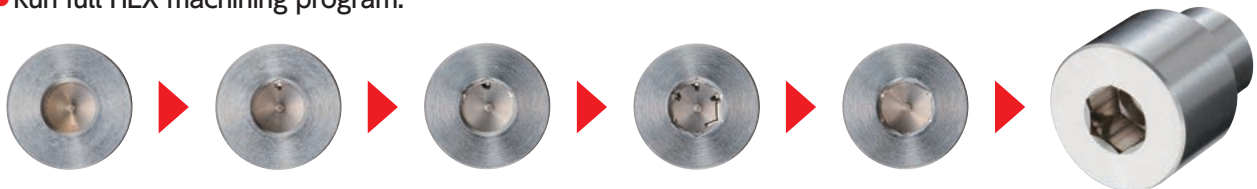
- Set the sleeve into the tool post and make sure the sleeve is set parallel.
- Minimize sleeve overhang.



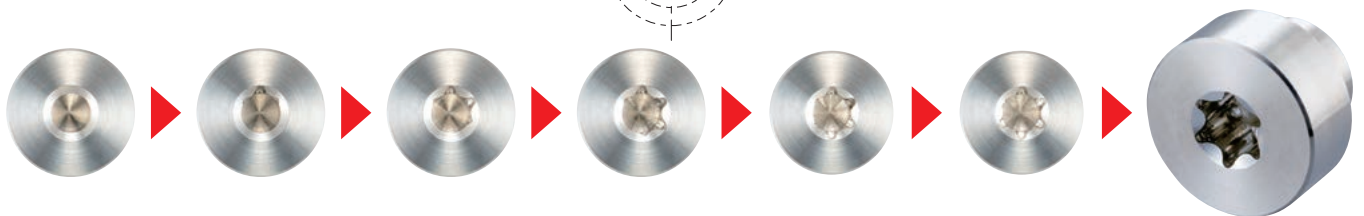
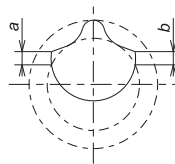
- Increase the number of machining passes with smaller depth of cut if the insert chips with large depth of cut. (0.025mm×5pass is recommended)
No chamfering process is required for measuring purpose.
- Measure the length of both [a] and [b] with comparator or magnifier.
- Adjust centerline height by rotating the sleeve until you get the same length for [a] and [b]. (The difference should be less than .0008")
*If the straight is not seen with increased passes, please reset the insert and the sleeve.
Please make sure both the insert and the sleeve are set up correctly.

4 Machine Hexagonal shape

- Run full HEX machining program.



For Hexalobular machining Basically same as Hexagonal socket



Hexagon Socket Programming Code Examples from Machine Builders in Metric

Hex socket size : Hex 3.0mm, AF(Final "X" position) 3.46mm, Depth 3.5mm
Pilot drill diameter : 3.0mm **Starting "X" position :** 2.95mm (see chart on W3)
Insert : SSP030N1940N TM4
Parameters : Feed 3000mm/min(120 IPM), DOC(Roughing) 0.025mm, (Finishing) 0.005mm

Programming tips

Make a program considering final " X "position.

- #1 Final "X"position : 3.46mm(AF)
- #2 Finishing position of roughing : $3.46 - 0.01$ (Finishing) = 3.45mm
- #3 Calculate total DOC for roughing : $3.45 - 3.0$ (Pilot hole) = 0.45mm
- #4 Determine number of cuts : $0.45 \div 0.05$ (DOC for Dia.) = 9.0 + 2 (round down to whole number and add "2" for program adjustment)
 → Roughing sequence runs 11 times
- #5 Set starting point : $3.45 - (0.05 \times (11 - 1)) = 2.95$ mm : must subtract by "1" for program adjustment

CITIZEN

Main Program Sequence

```
M25
M78 S0 .....I
Shaper T****
G50 U1.6 .....II
G0 X2.95 Z-2.0 T** .....III
M98 P2100 L11 .....IV
M98 P2200 .....V
```

```
M78 S60 .....I
G0 X2.95 Z-2.0
M98 P2100 L11
M98 P2200 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at S120, S180, S240, S300 (represents 120°, 180°, 240°, 300°).

```
M20
G0 Z-2.0
G50 U-1.6
G0 U0 W0 T0
M1
```

STAR

Main Program Sequence

```
M25
Shaper T****
G50 U1.6 .....II
M8
G0 X2.95 Z-2.0 C0 T** .....I, III
M98 P2100 L11 .....IV
M98 P2200 .....V
```

```
G0 C60.0 .....I
G0 X2.95 Z-2.0
M98 P2100 L11
M98 P2200 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at C120.0, C180.0, C240.0, C300.0 (represents 120°, 180°, 240°, 300°).

```
G0 Z-2.0
G50 U-1.6
G0 T0
G28 W0
M1
```

TSUGAMI

Main Program Sequence

```
M105
M150
G28 H0 .....I
M182
Shaper T****
G50 U1.6 .....II
G0 X2.95 Z2.0 T** .....III
M98 P2100 L11 .....IV
M98 P2200 .....V
M183
```

```
G0 C60 .....I
M182
G0 X2.95 Z2.0
M98 P2100 L11
M98 P2200
M183 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at C120, C180, C240, C300 (represents 120°, 180°, 240°, 300°).

```
M151
G0 Z2.0
G50 U-1.6
G0 U0 W0 T0
M1
```

Sub-Program Sequence #1 for Roughing

```
N2100
G4 U0.02 .....A
G98 G1 Z3.5 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z3.5 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z-3.5 F3000 .....B
G4 U0.02
U-0.2 W0.018 .....C
G4 U0.02
G0 Z2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #2 for Finishing

```
N2200
G98 G1 X3.46 Z-2.0 F1000 .....E
G4 U0.02
Z3.5 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

```
O2200
G98 G1 X3.46 Z-2.0 F1000 .....E
G4 U0.02
Z3.5 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

```
O2200
G98 G1 X3.46 Z2.0 F1000 .....E
G4 U0.02
Z-3.5 F3000
G4 U0.02
U-0.2 W0.018
G4 U0.02
G0 Z2.0
M99
```

- I. Index the sub-spindle 6 times in 60 degree increments.
- II. Specify the coordinate system shift command (in X axis direction) for the tool. [2 x f, where f is tool dimension located in catalog].
 - A positive direction shift is recommended for easier programming.
- III. Execute the positioning of the tool.
 - X position should be smaller than pilot drill diameter.
 - Z position should be offset 2.0 mm from material to achieve program feed rate.
- IV. Go to the Sub-Program #1.
 - Sequence runs 11 times. First cutting point X2.95 and final cutting point X3.45, with 0.05 DOC (for diameter) each time.
- V. Go to the Sub-Program #2, for finishing sequence.
- A. Specify dwell time. This allows the program and machine to stay synchronized.
- B. Cut into part 3.5mm. F3000 is recommended feed to be used for most materials; including Titanium Alloy and Stainless Steel.
- C. This code backs off the tool with an angle greater than 6 degrees (10 degrees used in example). See page W3.
- D. Return to the X position + 0.05mm (the DOC for diameter).
- E. Finishing operation with 0.005mm DOC (X 3.46) is recommended for better surface finish.

Hexalobular Socket Programming Code Examples from Machine Builders in Metric

Hexalobular socket size : Hexalobular T15 (depth : 3.81mm)

Pilot drill diameter : 2.3mm

Insert : SSP050N43T15 TM4

Parameters : Feed 3000mm/min(120 IPM), DOC(Roughing) 0.025mm, (Finishing) 0.005mm

■ Programming tips

● **Make a program considering final “ X ” position.**

- #1 Final “ X ” position : $3.35\text{mm}(A)$
- #2 Finishing position of roughing : $3.35 - 0.01$ (Finishing) = 3.34mm
- #3 Calculate total DOC for roughing : $3.34 - 2.3$ (Pilot hole) = 1.04mm
- #4 Determine number of cuts : $1.04 \div 0.05$ (DOC for Dia) = $20.8 + 2$ (round down to whole number and add “2” for program adjustment)
→ Roughing sequence runs 22 times
- #5 Set starting point : $3.34 - (0.05 \times (22 - 1)) = 2.29\text{mm}$: must subtract by “1” for program adjustment

CITIZEN

Main Program Sequence

```
M25
M78 S0 .....I
Shaper T****
G50 U4.8 .....II
G0 X2.29 Z-2.0 T** .....III
M98 P2100 L22 .....IV
M98 P2200 .....V
```

```
M78 S60 .....I
G0 X2.29 Z-2.0
M98 P2100 L22
M98 P2200 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at S120, S180, S240, S300 (represents 120°, 180°, 240°, 300°).

```
M20
G0 Z-2.0
G50 U-4.8
G0 U0 W0 T0
M1
```

STAR

Main Program Sequence

```
M25
Shaper T****
G50 U4.8 .....II
M8
G0 X2.29 Z-2.0 C0 T** .....I, III
M98 P2100 L22 .....IV
M98 P2200 .....V
```

```
G0 C60.0 .....I
G0 X2.29 Z-2.0
M98 P2100 L22
M98 P2200 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at C120.0, C180.0, C240.0, C300.0 (represents 120°, 180°, 240°, 300°).

```
G0 Z-2.0
G50 U-4.8
G0 T0
G28 W0
M1
```

TSUGAMI

Main Program Sequence

```
M105
M150
G28 H0 .....I
M182
Shaper T****
G50 U4.8 .....II
G0 X2.29 Z2.0 T** .....III
M98 P2100 L22 .....IV
M98 P2200 .....V
M183
```

```
G0 C60 .....I
M182
G0 X2.29 Z2.0
M98 P2100 L22
M98 P2200
M183 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at C120, C180, C240, C300 (represents 120°, 180°, 240°, 300°).

```
M151
G0 Z2.0
G50 U-4.8
G0 U0 W0 T0
M1
```

Sub-Program Sequence #1 for Roughing

```
N2100
G4 U0.02 .....A
G98 G1 Z3.81 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z3.81 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z-3.81 F3000 .....B
G4 U0.02
U-0.2 W0.018 .....C
G4 U0.02
G0 Z2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #2 for Finishing

```
N2200
G98 G1 X3.35 Z-2.0 F1000 .....E
G4 U0.02
Z3.81 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

```
O2200
G98 G1 X3.35 Z-2.0 F1000 .....E
G4 U0.02
Z3.81 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

```
O2200
G98 G1 X3.35 Z2.0 F1000 .....E
G4 U0.02
Z-3.81 F3000
G4 U0.02
U-0.2 W0.018
G4 U0.02
G0 Z2.0
M99
```

- I. Index the sub-spindle 6 times in 60 degree increments.
- II. Specify the coordinate system shift command (in X axis direction) for the tool. [2 x f, where f is tool dimension located in catalog].
 - A positive direction shift is recommended for easier programming.
- III. Execute the positioning of the tool.
 - X position should be smaller than pilot drill diameter.
 - Z position should be offset 2.0 mm from material to achieve program feed rate.
- IV. Go to the Sub-Program #1.
 - Sequence runs 22 times. First cutting point X2.29 and final cutting point X3.34, with 0.05 DOC (for diameter) each time.
- V. Go to the Sub-Program #2, for finishing sequence.
 - A. Specify dwell time. This allows the program and machine to stay synchronized.
 - B. Cut into part 3.81mm. F3000 is recommended feed to be used for most materials; including Titanium Alloy and Stainless Steel.
 - C. This code backs off the tool with an angle greater than 6 degrees (10 degrees used in example). See page W3.
 - D. Return to the X position + 0.05mm (the DOC for diameter).
 - E. Finishing operation with 0.005mm DOC (X 3.35) is recommended for better surface finish.

STICK DUO SPLASH - Stick Duo Hyper with Coolant through -

HY-NBH-OH (Coolant through)

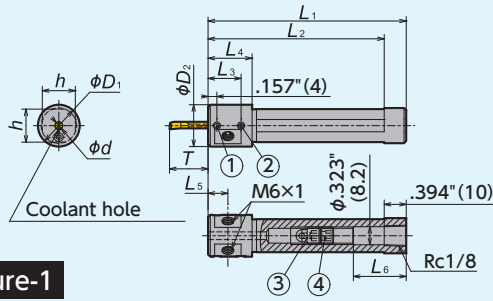


Figure-1

HY-NBH-OH (Coolant through)

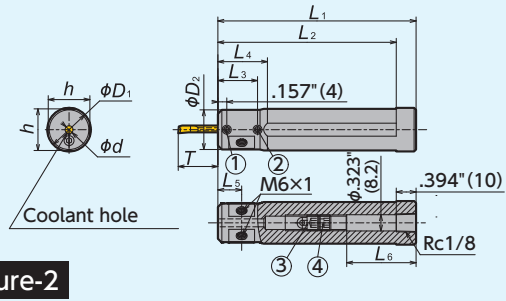
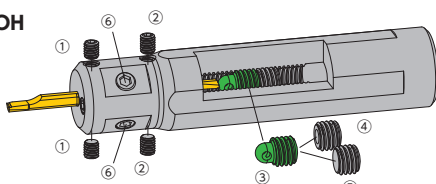


Figure-2

Item Number	Stock	Figure	φ d (Inch) (mm)	φ D ₁ (Inch) (mm)	φ D ₂ (mm)	h (mm)	L ₁ (mm)	L ₂ (mm)	L ₃ (mm)	L ₄ (mm)	L ₅ (mm)	L ₆ (mm)	Overhang Length of Bar T	
													Min. (Inch) (mm)	Max. (Inch) (mm)
HY-NBH02016G-OH	●	1	.079 2.0	.630 16.0	19	15	90	80	15	19	9.5	29	.197 5.0	.709 18.0
HY-NBH02516G-OH	●	1	.098 2.5	.630 16.0	19	15	90	80	15	19	9.5	30	.248 6.3	.768 19.5
HY-NBH03016G-OH	●	1	.118 3.0	.630 16.0	19	15	90	80	15	19	9.5	31	.295 7.5	.827 21.0
HY-NBH03516G-OH	●	1	.138 3.5	.630 16.0	19	15	90	80	15	19	9.5	23	.346 8.8	.965 24.5
HY-NBH04016G-OH	●	1	.157 4.0	.630 16.0	19	15	90	80	20	24	12	23	.394 10.0	1.102 28.0
HY-NBH05016G-OH	●	1	.197 5.0	.630 16.0	19	15	90	80	20	24	12	16	.492 12.5	1.378 35.0
HY-NBH02019J-OH	●	2	.079 2.0	3/4 19.05	19.05	18	110	100	15	—	9.5	49	.197 5.0	.709 18.0
HY-NBH02519J-OH	●	2	.098 2.5	3/4 19.05	19.05	18	110	100	15	—	9.5	50	.248 6.3	.768 19.5
HY-NBH03019J-OH	●	2	.118 3.0	3/4 19.05	19.05	18	110	100	15	—	9.5	51	.295 7.5	.827 21.0
HY-NBH03519J-OH	●	2	.138 3.5	3/4 19.05	19.05	18	110	100	15	—	9.5	43	.346 8.8	.965 24.5
HY-NBH04019J-OH	●	2	.157 4.0	3/4 19.05	19.05	18	110	100	20	—	12	43	.394 10.0	1.102 28.0
HY-NBH05019J-OH	●	2	.197 5.0	3/4 19.05	19.05	18	110	100	20	—	12	36	.492 12.5	1.378 35.0
HY-NBH06019J-OH	●	2	.236 6.0	3/4 19.05	19.05	18	110	100	20	—	12	28.5	.591 15.0	1.654 42.0
HY-NBH02020J-OH	●	2	.079 2.0	.787 20.0	20	19	110	100	15	—	9.5	49	.197 5.0	.709 18.0
HY-NBH02520J-OH	●	2	.098 2.5	.787 20.0	20	19	110	100	15	—	9.5	50	.248 6.3	.768 19.5
HY-NBH03020J-OH	●	2	.118 3.0	.787 20.0	20	19	110	100	15	—	9.5	51	.295 7.5	.827 21.0
HY-NBH03520J-OH	●	2	.138 3.5	.787 20.0	20	19	110	100	15	—	9.5	43	.346 8.8	.965 24.5
HY-NBH04020J-OH	●	2	.157 4.0	.787 20.0	20	19	110	100	20	—	12	43	.394 10.0	1.102 28.0
HY-NBH05020J-OH	●	2	.197 5.0	.787 20.0	20	19	110	100	20	—	12	36	.492 12.5	1.378 35.0
HY-NBH06020J-OH	●	2	.236 6.0	.787 20.0	20	19	110	100	20	—	12	28.5	.591 15.0	1.654 42.0
HY-NBH02022X-OH	●	2	.079 2.0	.866 22.0	20	21	120	110	15	25	9.5	59	.197 5.0	.709 18.0
HY-NBH02522X-OH	●	2	.098 2.5	.866 22.0	20	21	120	110	15	25	9.5	60	.248 6.3	.768 19.5
HY-NBH03022X-OH	●	2	.118 3.0	.866 22.0	20	21	120	110	15	25	9.5	61	.295 7.5	.827 21.0
HY-NBH03522X-OH	●	2	.138 3.5	.866 22.0	20	21	120	110	15	25	9.5	53	.346 8.8	.965 24.5
HY-NBH04022X-OH	●	2	.157 4.0	.866 22.0	20	21	120	110	20	25	12	53	.394 10.0	1.102 28.0
HY-NBH05022X-OH	●	2	.197 5.0	.866 22.0	20	21	120	110	20	25	12	46	.492 12.5	1.378 35.0
HY-NBH06022X-OH	●	2	.236 6.0	.866 22.0	20	21	120	110	20	25	12	28.5	.591 15.0	1.654 42.0
HY-NBH02025.0K-OH	●	2	.079 2.0	.984 25.0	20	24	125	115	15	25	9.5	64	.197 5.0	.709 18.0
HY-NBH02525.0K-OH	●	2	.098 2.5	.984 25.0	20	24	125	115	15	25	9.5	65	.248 6.3	.768 19.5
HY-NBH03025.0K-OH	●	2	.118 3.0	.984 25.0	20	24	125	115	15	25	9.5	66	.295 7.5	.827 21.0
HY-NBH03525.0K-OH	●	2	.138 3.5	.984 25.0	20	24	125	115	15	25	9.5	58	.346 8.8	.965 24.5
HY-NBH04025.0K-OH	●	2	.157 4.0	.984 25.0	20	24	125	115	20	25	12	58	.394 10.0	1.102 28.0
HY-NBH05025.0K-OH	●	2	.197 5.0	.984 25.0	20	24	125	115	20	25	12	51	.492 12.5	1.378 35.0
HY-NBH06025.0K-OH	●	2	.236 6.0	.984 25.0	20	24	125	115	20	25	12	28.5	.591 15.0	1.654 42.0
HY-NBH02025.4K-OH	●	2	.079 2.0	1.000 25.4	20	24	125	115	15	25	9.5	64	.197 5.0	.709 18.0
HY-NBH02525.4K-OH	●	2	.098 2.5	1.000 25.4	20	24	125	115	15	25	9.5	65	.248 6.3	.768 19.5
HY-NBH03025.4K-OH	●	2	.118 3.0	1.000 25.4	20	24	125	115	15	25	9.5	66	.295 7.5	.827 21.0
HY-NBH03525.4K-OH	●	2	.138 3.5	1.000 25.4	20	24	125	115	15	25	9.5	58	.346 8.8	.965 24.5
HY-NBH04025.4K-OH	●	2	.157 4.0	1.000 25.4	20	24	125	115	20	25	12	58	.394 10.0	1.102 28.0
HY-NBH05025.4K-OH	●	2	.197 5.0	1.000 25.4	20	24	125	115	20	25	12	51	.492 12.5	1.378 35.0
HY-NBH06025.4K-OH	●	2	.236 6.0	1.000 25.4	20	24	125	115	20	25	12	28.5	.591 15.0	1.654 42.0

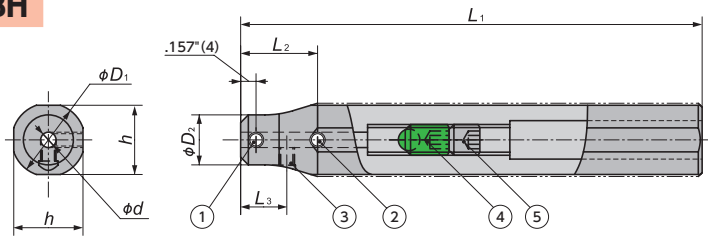
Parts for STICK DUO SPLASH

Item Number	Clamp Screw		Overhang Adjustment		
	①	②	③	④	⑤
HY-NBH ... -OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F
	M6 Screw		Wrench		
	⑥		for ①②	for ③④⑤	for ⑥
	SS0605SC		LW-2	LW-4×104	LW-3



STICK DUO HYPER

HY-NBH



Spare Parts

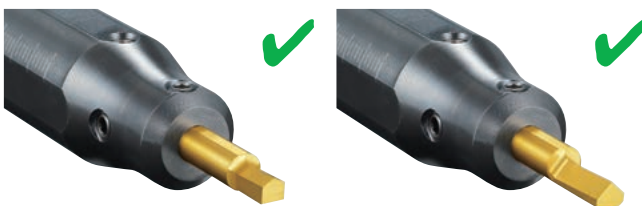
Item Number	Overhang Adjustment		Wrench	
	④	⑤	for ①②③	for ④⑤
HY-NBH ... K	SS0812R	SS0808F	LW-2	LW-4×104

Please refer to ϕd to find correct-size inserts (bars)

Item Number	Stock	ϕd		ϕD_1		ϕD_2	h	L_1	L_2	L_3	Clamp Screws		
		(Inch)	(mm)	(Inch)	(mm)						①	②	③
HY-NBH02016H	○	.079	2.0	.630	16.0	11	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02516H	○	.098	2.5	.630	16.0	11.5	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03016H	○	.118	3.0	.630	16.0	12	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03516H	○	.138	3.5	.630	16.0	12.5	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH04016H	○	.157	4.0	.630	16.0	13	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH05016H	○	.197	5.0	.630	16.0	14	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH02019K	●	.079	2.0	3/4	19.05	11	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02519K	●	.098	2.5	3/4	19.05	11.5	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03019K	●	.118	3.0	3/4	19.05	12	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03519K	●	.138	3.5	3/4	19.05	12.5	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04019K	●	.157	4.0	3/4	19.05	13	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05019K	●	.197	5.0	3/4	19.05	14	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02020K	○	.079	2.0	.787	20.0	11	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02520K	○	.098	2.5	.787	20.0	11.5	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03020K	○	.118	3.0	.787	20.0	12	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03520K	○	.138	3.5	.787	20.0	12.5	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04020K	○	.157	4.0	.787	20.0	13	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05020K	○	.197	5.0	.787	20.0	14	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02022K	●	.079	2.0	.866	22.0	11	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02522K	●	.098	2.5	.866	22.0	11.5	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03022K	●	.118	3.0	.866	22.0	12	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03522K	●	.138	3.5	.866	22.0	12.5	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04022K	●	.157	4.0	.866	22.0	13	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05022K	●	.197	5.0	.866	22.0	14	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K-MET	○	.079	2.0	.984	25.0	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K-MET	○	.098	2.5	.984	25.0	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K-MET	○	.118	3.0	.984	25.0	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K-MET	○	.138	3.5	.984	25.0	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K-MET	○	.157	4.0	.984	25.0	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K-MET	○	.197	5.0	.984	25.0	14	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K	●	.079	2.0	1.000	25.4	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K	●	.098	2.5	1.000	25.4	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K	●	.118	3.0	1.000	25.4	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K	●	.138	3.5	1.000	25.4	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K	●	.157	4.0	1.000	25.4	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K	●	.197	5.0	1.000	25.4	14	24	125	20	12	SS04045FS	SS0406F	SS0404F

Precaution for Shaper duo with STICK DUO HYPER sleeve

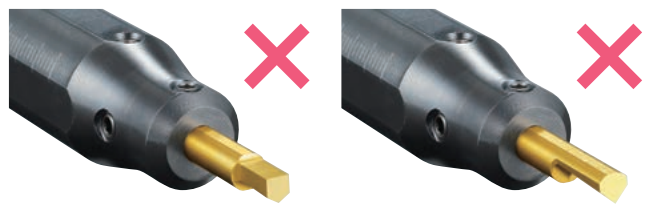
● Set insert in this position



Hexagon

Square

● To avoid insert chipping don't set insert in this position



Hexagon

Square

● : Stock

○ : 1-2 week delivery

● : Coolant through

Insert bars → W4

Cutting condition → W3

STICK DUO - Sleeves for ID machining -

NBH

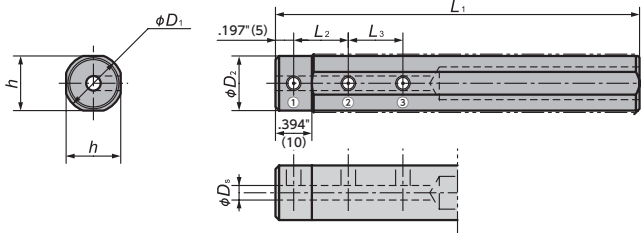


Figure-1

NBH

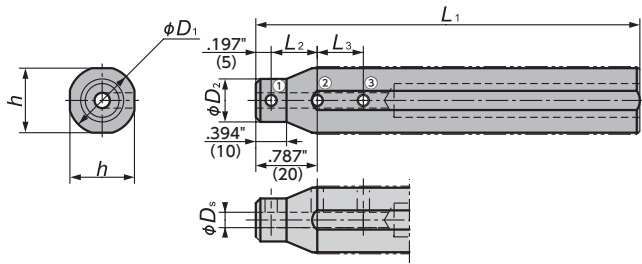


Figure-2

Item number	Figure	Stock	ϕD_s		ϕD_1		ϕD_2	h	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)	(Inch)	(mm)						①	②	③	
NBH02015H	1	○	.079	2.0	5/8	15.875	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02515H	1	○	.098	2.5	5/8	15.875	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03015H	1	○	.118	3.0	5/8	15.875	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03515H	1	○	.138	3.5	5/8	15.875	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04015H	1	○	.157	4.0	5/8	15.875	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04515H	1	○	.177	4.5	5/8	15.875	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05015H	1	○	.197	5.0	5/8	15.875	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06015H	1	○	.236	6.0	5/8	15.875	15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08015H	1	○	.315	8.0	5/8	15.875	15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02016H	1	○	.079	2.0	.630	16.0	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02516H	1	○	.098	2.5	.630	16.0	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03016H	1	○	.118	3.0	.630	16.0	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03516H	1	○	.138	3.5	.630	16.0	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04016H	1	○	.157	4.0	.630	16.0	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04516H	1	○	.177	4.5	.630	16.0	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05016H	1	○	.197	5.0	.630	16.0	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06016H	1	●	.236	6.0	.630	16.0	15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH07016H	1	○	.276	7.0	.630	16.0	15	15	100	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH08016H	1	●	.315	8.0	.630	16.0	15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02019K	1	○	.079	2.0	3/4	19.05	18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH02519K	1	○	.098	2.5	3/4	19.05	18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH03019K	1	○	.118	3.0	3/4	19.05	18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH03519K	1	○	.138	3.5	3/4	19.05	18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH04019K	1	○	.157	4.0	3/4	19.05	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH04519K	1	○	.177	4.5	3/4	19.05	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH05019K	1	○	.197	5.0	3/4	19.05	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH06019K	1	●	.236	6.0	3/4	19.05	18	18	125	20	20	SS0406F	SS0406F	SS0406F	LW-2
NBH07019K	1	○	.276	7.0	3/4	19.05	18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08019K	1	●	.315	8.0	3/4	19.05	18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10019K	1	○	.394	10.0	3/4	19.05	18	18	125	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH02020K	2	○	.079	2.0	.787	20.0	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH02520K	2	○	.098	2.5	.787	20.0	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH03020K	2	○	.118	3.0	.787	20.0	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH03520K	2	○	.138	3.5	.787	20.0	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH04020K	2	○	.157	4.0	.787	20.0	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04520K	2	○	.177	4.5	.787	20.0	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05020K	2	○	.197	5.0	.787	20.0	14	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06020K	2	●	.236	6.0	.787	20.0	15	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07020K	2	○	.276	7.0	.787	20.0	16	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08020K	2	●	.315	8.0	.787	20.0	17	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10020K	2	○	.394	10.0	.787	20.0	19	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2

Item number	Figure	Stock	ϕD_s		ϕD_1		ϕD_2	h_1	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)	(Inch)	(mm)						①	②	③	
NBH02022K	2	○	.079	2.0	.866	22.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02522K	2	○	.098	2.5	.866	22.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03022K	2	○	.118	3.0	.866	22.0	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03522K	2	○	.138	3.5	.866	22.0	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04022K	2	○	.157	4.0	.866	22.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04522K	2	○	.177	4.5	.866	22.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05022K	2	○	.197	5.0	.866	22.0	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06022K	2	●	.236	6.0	.866	22.0	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07022K	2	○	.276	7.0	.866	22.0	16	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08022K	2	●	.315	8.0	.866	22.0	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10022K	2	○	.394	10.0	.866	22.0	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12022K	2	○	.472	12.0	.866	22.0	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02023K	2	○	.079	2.0	.906	23.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02523K	2	○	.098	2.5	.906	23.0	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03023K	2	○	.118	3.0	.906	23.0	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03523K	2	○	.138	3.5	.906	23.0	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04023K	2	○	.157	4.0	.906	23.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04523K	2	○	.177	4.5	.906	23.0	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05023K	2	○	.197	5.0	.906	23.0	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06023K	2	○	.236	6.0	.906	23.0	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08023K	2	○	.315	8.0	.906	23.0	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10023K	2	○	.394	10.0	.906	23.0	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12023K	2	○	.472	12.0	.906	23.0	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K-MET	2	○	.079	2.0	.984	25.0	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K-MET	2	○	.098	2.5	.984	25.0	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K-MET	2	○	.118	3.0	.984	25.0	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K-MET	2	○	.138	3.5	.984	25.0	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K-MET	2	○	.157	4.0	.984	25.0	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K-MET	2	○	.177	4.5	.984	25.0	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K-MET	2	○	.197	5.0	.984	25.0	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K-MET	2	●	.236	6.0	.984	25.0	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K-MET	2	○	.276	7.0	.984	25.0	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K-MET	2	●	.315	8.0	.984	25.0	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K-MET	2	○	.394	10.0	.984	25.0	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K-MET	2	○	.472	12.0	.984	25.0	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K	2	○	.079	2.0	1.000	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K	2	○	.098	2.5	1.000	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K	2	○	.118	3.0	1.000	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K	2	○	.138	3.5	1.000	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K	2	○	.157	4.0	1.000	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K	2	○	.177	4.5	1.000	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K	2	○	.197	5.0	1.000	25.4	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K	2	●	.236	6.0	1.000	25.4	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K	2	○	.276	7.0	1.000	25.4	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K	2	●	.315	8.0	1.000	25.4	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K	2	○	.394	10.0	1.000	25.4	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K	2	○	.472	12.0	1.000	25.4	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH04532K	2	○	.177	4.5	1.260	32.0	13	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05032K	2	○	.197	5.0	1.260	32.0	14	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06032K	2	○	.236	6.0	1.260	32.0	15	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07032K	2	○	.276	7.0	1.260	32.0	16	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08032K	2	○	.315	8.0	1.260	32.0	17	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH10032K	2	○	.394	10.0	1.260	32.0	19	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH12032K	2	○	.472	12.0	1.260	32.0	21	30	125	25	25	SS0404F	SS0406F	SS0406F	LW-2
NBH14032K	2	○	.551	14.0	1.260	32.0	23	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5
NBH16032K	2	○	.630	16.0	1.260	32.0	25	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5

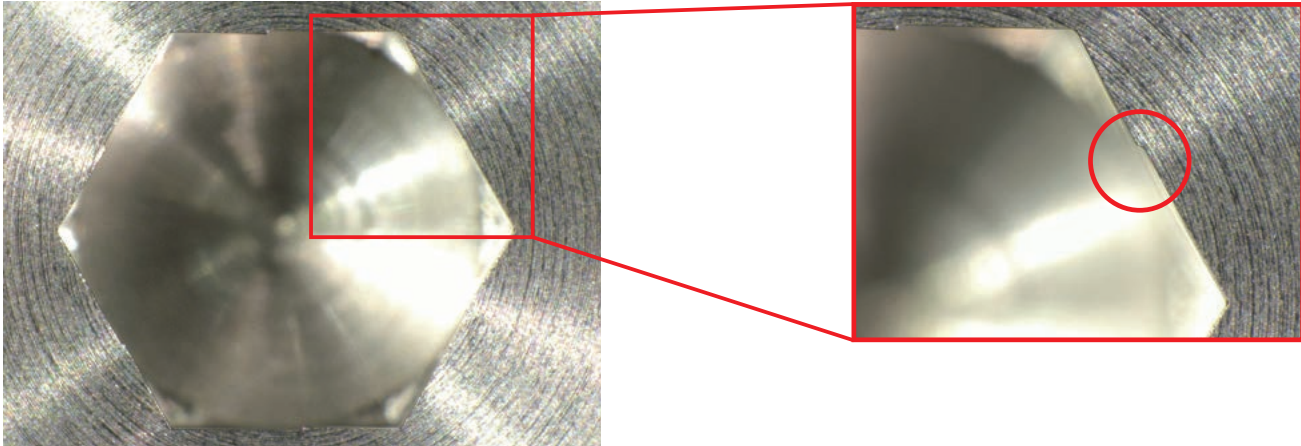
● : Stock ○ : 1-2 week delivery

Insert bars **W4**

Cutting condition **W3**

SHAPER DUO Troubleshooting

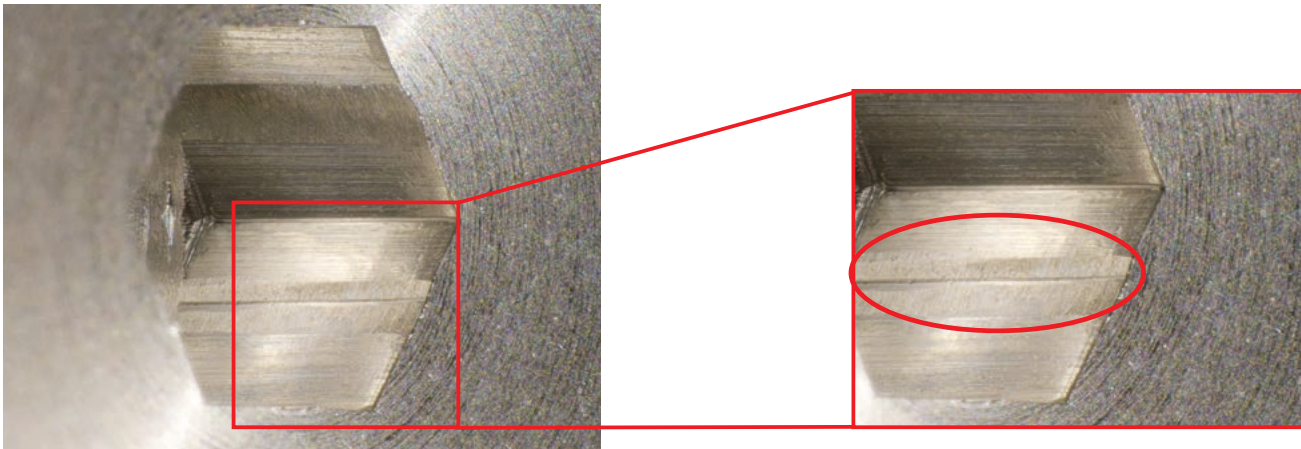
Problem: Step on sides



Cause: Incorrect tool set-up
(Center-line shift)

Solution: Machine one angle and make sure both [a] and [b] lengths are identical, rotating the sleeve if necessary

Problem: Wall dented



Cause: Pilot hole remaining

Solution: Need pilot hole tool's offset

Problem: Wall tapered

Solution: ● Smaller depth of cut
● Less tool overhang

Problem: Chuck is slipping / Insert chipped

Solution: ● Run at 3000 mm/min (120 IPM) feed rate
● Smaller depth of cut

- 3000 mm/min (120 IPM) feed rate can cover most materials including Titanium alloy and Stainless steel.
- Too slow or too fast of a feed rate may cause excessive tool pressure for the workpiece and tool.

X



Endmills

- Solid Endmills X2
- Indexable Endmills X4

S-MILL / Solid Carbide End-mill



Features

- The tools sharpness creates a remarkable finish on machined surface.
- 2, 3, and 4 flute designs with a selection of diameters to cover a variety of applications. (2 flute available in 2mm ϕ)
- 40, 45, and 50mm lengths ideal for automatic lathes.

Two style



Three flute options



Surface finish

	NTK (S-MILL)	Competitor A	Competitor B
Magnified work material (side face)			
Magnified work material			
	Excellent surface finish	Bad surface finish	
304 SS (ϕ 16mm) ϕ 6mm -2 flute 3,000 rpm, 11.8 IPM, 118" DOC, .047" width			

Field Result

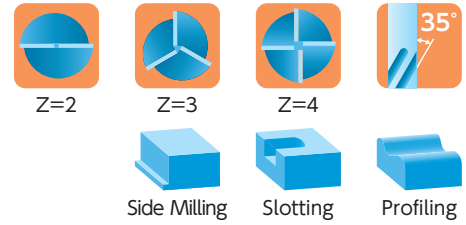
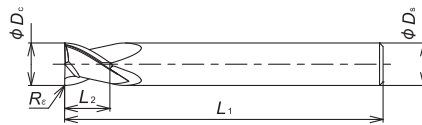
316 SS (D-cut) ϕ 6mm-2 flute	
3,200 rpm	
5.5 IPM	
.024 DOC	
WET	
NTK : S-MILL	12,000 pcs/corner+ α
Competitor's solid endmill	10,000 pcs/corner
<i>The competitor's end mill showed an obvious decrease in surface finish quality as it reached the end of its tool life. NTK's S-MILL maintained a quality surface finish throughout the extent of its longer tool life.</i>	

1045 (AF 8mm HEX) ϕ 6mm-2 flute	
2,600 rpm	
18.9 IPM	
.039 DOC	
WET	
NTK : S-MILL	70 pcs/corner+ α
Competitor's solid endmill	50 pcs/corner
<i>The S-MILL sharpness reduces the occurrence of burrs and tool life is increased; clear improvements over the competitor's tool. The sharp cutting edge also produces noticeably less sound than the current tooling.</i>	

RWEM

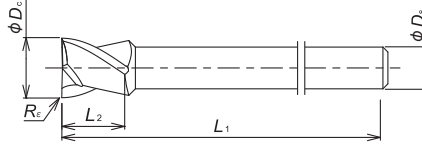
○ No center cutting edge

Figure-1



○ No center cutting edge

Figure-2



Steel	P	●
Stainless steel	M	●

● : 1st Choice ● : 2nd choice

Flute	Item Number	Figure	Grade AC3	Flute	φD _c		φD _s		L ₁		L ₂		R _c	
					(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)
2 flute	RWEM020H2R00S04	1	●	2	.080	2.0	.158	4.0	1.575	40.0	.080	2.0	0.0	0.0
	RWEM030H2R00S04	1	●		.118	3.0	.158	4.0	1.575	40.0	.118	3.0	0.0	0.0
	RWEM040H2R00S04	1	●		.158	4.0	.158	4.0	1.575	40.0	.158	4.0	0.0	0.0
	RWEM050H2R00S06	1	●		.197	5.0	.236	6.0	1.772	45.0	.197	5.0	0.0	0.0
	RWEM060H2R00S06	1	●		.236	6.0	.236	6.0	1.772	45.0	.236	6.0	0.0	0.0
	RWEM070H2R00S08	1	●		.276	7.0	.315	8.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM080H2R00S07	2	●		.315	8.0	.276	7.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM080H2R00S08	1	●		.315	8.0	.315	8.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM100H2R00S07	2	●		.394	10.0	.276	7.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM100H2R00S10	1	●		.394	10.0	.394	10.0	1.969	50.0	.236	6.0	0.0	0.0
3 flute	RWEM030H3R00S04	1	●	3	.118	3.0	.158	4.0	1.575	40.0	.118	3.0	0.0	0.0
	RWEM040H3R00S04	1	●		.158	4.0	.158	4.0	1.575	40.0	.158	4.0	0.0	0.0
	RWEM050H3R00S06	1	●		.197	5.0	.236	6.0	1.772	45.0	.197	5.0	0.0	0.0
	RWEM060H3R00S06	1	●		.236	6.0	.236	6.0	1.772	45.0	.236	6.0	0.0	0.0
	RWEM070H3R00S08	1	●		.276	7.0	.315	8.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM080H3R00S07	2	●		.315	8.0	.276	7.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM080H3R00S08	1	●		.315	8.0	.315	8.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM100H3R00S07	2	●		.394	10.0	.276	7.0	1.969	50.0	.236	6.0	0.0	0.0
	RWEM100H3R00S10	1	●		.394	10.0	.394	10.0	1.969	50.0	.236	6.0	0.0	0.0
	4 flute	RWEM030H4R00S04	1		●	4	.118	3.0	.158	4.0	1.575	40.0	.118	3.0
RWEM040H4R00S04		1	●	.158	4.0		.158	4.0	1.575	40.0	.158	4.0	0.0	0.0
RWEM050H4R00S06		1	●	.197	5.0		.236	6.0	1.772	45.0	.197	5.0	0.0	0.0
RWEM060H4R00S06		1	●	.236	6.0		.236	6.0	1.772	45.0	.236	6.0	0.0	0.0
RWEM070H4R00S08		1	●	.276	7.0		.315	8.0	1.969	50.0	.236	6.0	0.0	0.0
RWEM080H4R00S07		2	●	.315	8.0		.276	7.0	1.969	50.0	.236	6.0	0.0	0.0
RWEM080H4R00S08		1	●	.315	8.0		.315	8.0	1.969	50.0	.236	6.0	0.0	0.0
RWEM100H4R00S07		2	●	.394	10.0		.276	7.0	1.969	50.0	.236	6.0	0.0	0.0
RWEM100H4R00S10		1	●	.394	10.0		.394	10.0	1.969	50.0	.236	6.0	0.0	0.0

[Recommend Cutting Conditions]

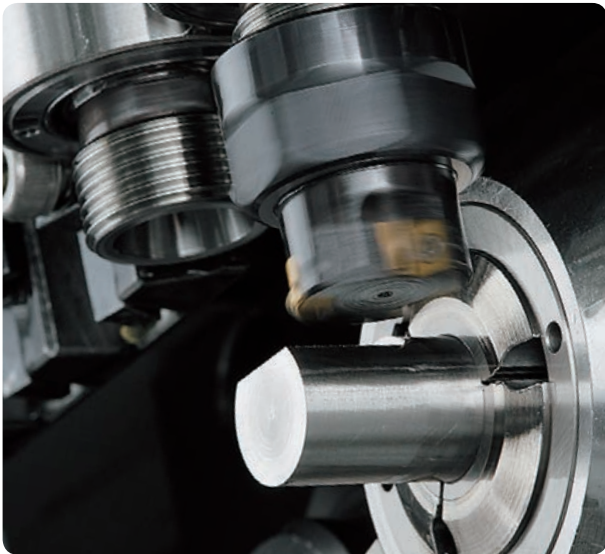
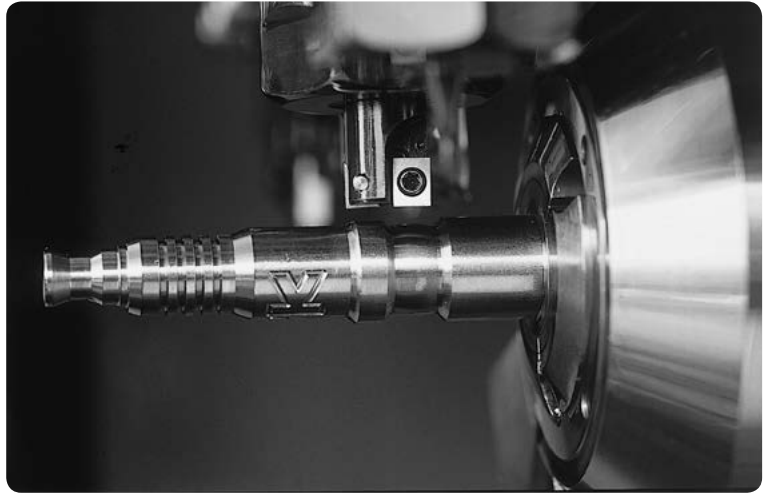
Flute	φD _c (mm)	Carbon Steel		Alloy steel		Stainless steel		Side Milling		Slotting
		rpm	IPM	rpm	IPM	rpm	IPM	DOC		DOC
								a _p (Inch)	a _s (Inch)		a_{p} (Inch)
2	2	14,300	9.1	11,100	7.1	10,300	5.5	-.079	-.016	-.016
	3	9,500	13.0	7,400	10.2	6,900	8.3	-.118	-.024	-.024
	4	7,200	15.4	5,600	11.8	5,200	9.4	-.157	-.031	-.031
	5	5,700	16.5	4,500	13.0	4,100	10.2	-.197	-.039	-.039
	6	4,800	17.3	3,700	13.4	3,400	10.6	-.236	-.047	-.047
	7	4,100	16.5	3,200	13.0	3,000	10.6	-.236	-.055	-.055
	8	3,600	16.1	2,800	12.6	2,600	9.8	-.236	-.063	-.063
	10	2,900	14.6	2,200	11.0	2,100	9.1	-.236	-.079	-.079
3	3	9,500	15.4	7,400	12.2	6,900	9.8	-.118	-.024	-.024
	4	7,200	18.5	5,600	14.2	5,200	11.4	-.157	-.031	-.031
	5	5,700	19.7	4,500	15.7	4,100	12.2	-.197	-.039	-.039
	6	4,800	20.9	3,700	16.1	3,400	13.0	-.236	-.047	-.047
	7	4,100	20.1	3,200	15.7	3,000	12.6	-.236	-.055	-.055
	8	3,600	19.3	2,800	15.0	2,600	12.2	-.236	-.063	-.063
	10	2,900	17.3	2,200	13.0	2,100	11.0	-.236	-.079	-.079
4	3	9,500	18.1	7,400	14.2	6,900	11.4	-.118	-.024	-.024
	4	7,200	21.3	5,600	16.5	5,200	13.4	-.157	-.031	-.031
	5	5,700	23.2	4,500	18.1	4,100	14.6	-.197	-.039	-.039
	6	4,800	24.4	3,700	18.9	3,400	15.0	-.236	-.047	-.047
	7	4,100	23.2	3,200	18.1	3,000	15.0	-.236	-.055	-.055
	8	3,600	22.4	2,800	17.3	2,600	14.2	-.236	-.063	-.063
10	2,900	20.1	2,200	15.4	2,100	12.6	-.236	-.079	-.079	

*Please adjust speed and table feed by same ratio.

● : Stock ● : Stock (Newly added) ■ : While stocks last R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) Ⓜ : Mirror finish ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) Ⓞ : Coolant through (R/L) : 1-2 week delivery (Right / Left-hand only) (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Indexable End mill

Small Diameter Indexable Endmills



Features

- Attach .787"(20mm) end mills in ER16 collet
- Just change inserts to index. No need to make any adjustments
- High quality surface finish, as low as 1um (Rz) when wiper inserts are used
- Corner radius as small as .002"
- In addition to D cut, ramp machining can be performed*

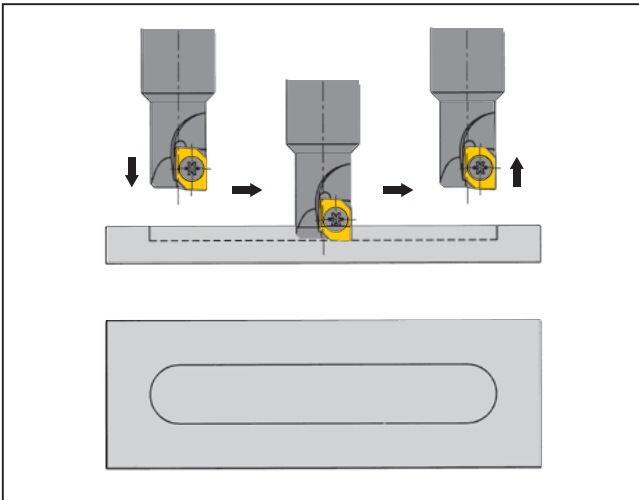
*A combination of single-blade type endmills and inserts with center blade is required

[Recommended Cutting Conditions]

Work Material	Speed SFM	Axial feed IPR	Traverse feed IPR	Depth of cut Inch	Width of cut
Steel	260 - 400	~.001	~.002	~.118	~50% of cutter diameter
Stainless Steel	130 - 200	~.0008	~.0015	~.079	~50% of cutter diameter

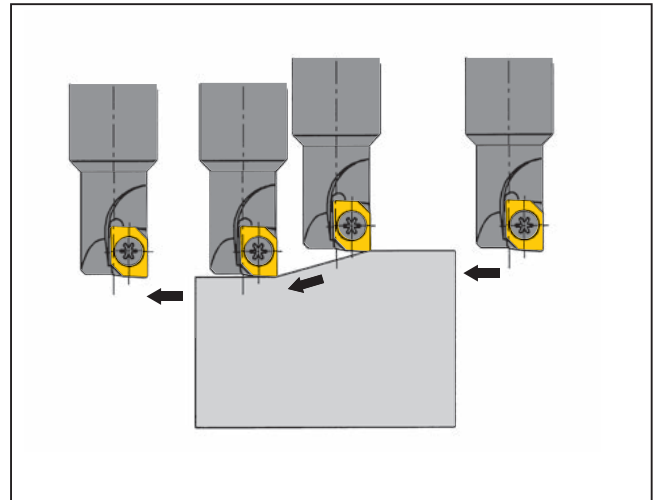
Application Example

Application Example-1



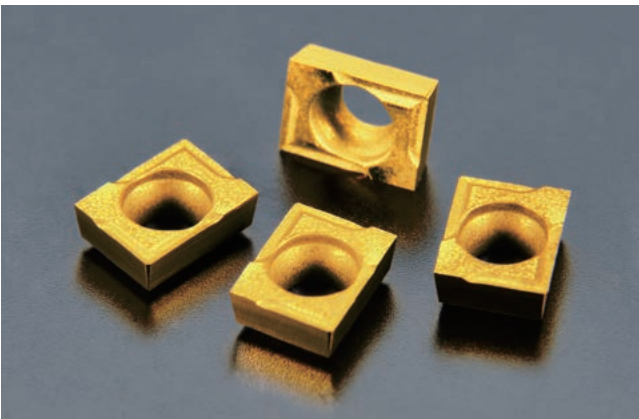
- A single tooth endmill equipped with a center cutting edge insert can be used for both plunge and side cut operations.

Application Example-2



- A single tooth endmill equipped with a center cutting edge insert can be used for slope milling operations.

Insert



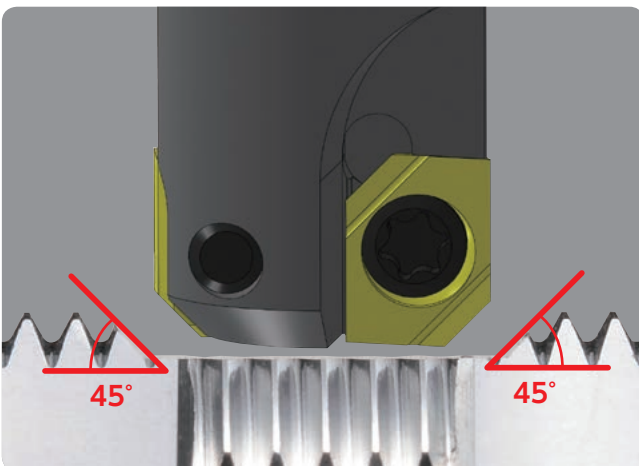
Wiper

- Excellent surface finish obtained with new wiper insert

Chipbreaker

- Less tool pressure with chipbreaker

45°



Chamfered surface finish insert	
S45C	
310 SFM	
.0056 IPR	
.039 DOC	
WET	
NTK : QM3 C45 type	700 pcs
Competitor's solid endmill	500 pcs

REZ Series

REZ

<D cutting = lead angle 90 type end milling tool>

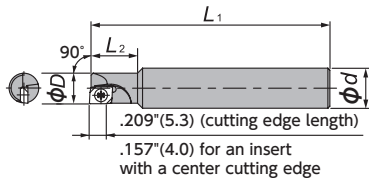


Figure-1

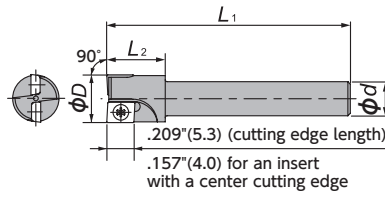


Figure-2

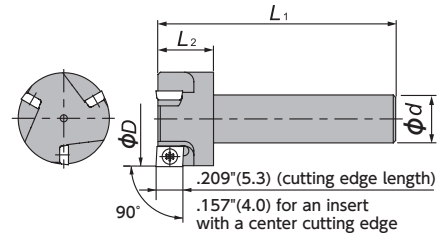


Figure-3

<D cutting = lead angle 45 type end milling tool>

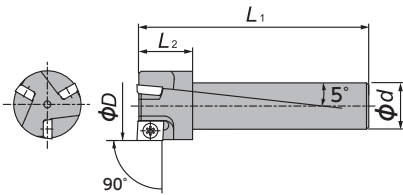


Figure-4 Right-Hand style shown

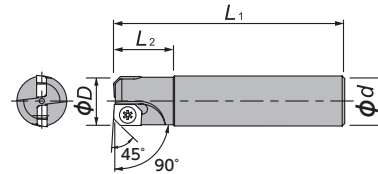


Figure-5

REZ Series - Toolholders



REZ

Gage Insert	Item Number	Figure	Stock		No. of teeth	ϕD		ϕd		L_1		L_2		Clamp Screw	Wrench
			R	L		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CZH04..CFR...	REZ080C1R212	1	○		1	.315	8	.394	10	2.362	60	.472	12	FS102-2.2 × 4.0	T-07
CZH05..CFR...	REZ100C1R218	1	○		1	.394	10	.394	10	2.953	75	.472	12	FS102-2.2 × 4.3	T-07
CZH04..CFR...	REZ100B2R329	2	○		2	.394	10	.197	5	1.575	40	.394	10	FS102-2.2 × 4.3	T-07
	REZ100C2R133	2	○		2	.394	10	.236	6	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ100C2R132	2	○		2	.394	10	.276	7	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ100C2R141	2	●		2	.394	10	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ120C2R141	2	○		2	.472	12	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ140C2R141	2	○		2	.551	14	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ150B3R330	3	○		3	.591	15	.197	5	1.575	40	.394	10	FS102-2.2 × 4.3	T-07
	REZ200M3R319	3	○		3	.787	20	.276	7	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ200M3R320	3	●		3	.787	20	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ200C3R403	4	●		3	.787	20	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
CZH0400CFR-C45	REZ100C2R466	5	○		2	.394	10	.276	7	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
CZH04..CFR...	REZ100C2R461	5	●		2	.394	10	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07

CZH Series - Inserts

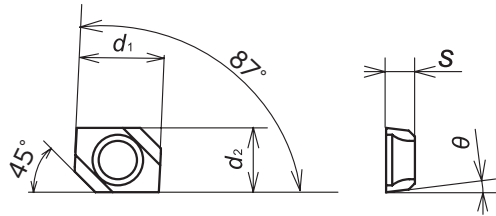


Figure-1 Chipbreaker with wiper

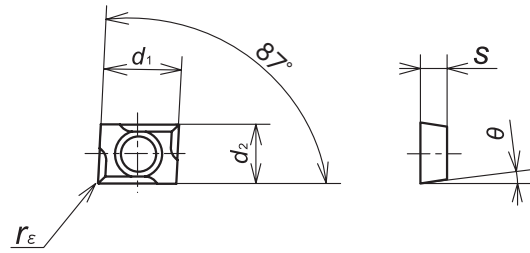


Figure-2 Chipbreaker

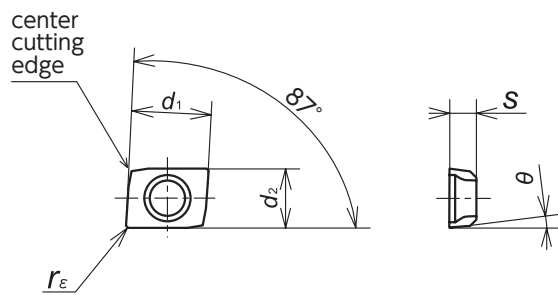


Figure-3 Center cutting edge without wiper

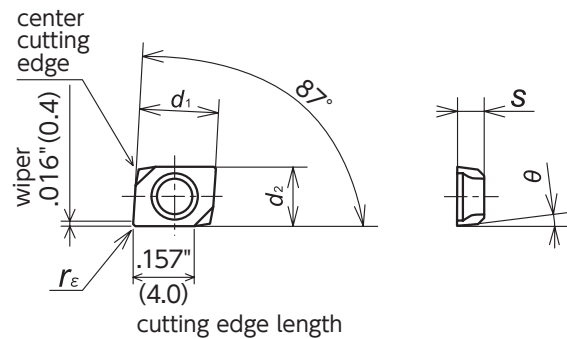


Figure-4 Center cutting edge with wiper

CZH

Item Number	Figure	Chip-breaker	Center Blade	Wiper	d_1		d_2		s		θ	C or r_e		Coated Carbide				
					(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	DM4	DT4	QM3	TM4	ZM3
CZH0400CFR-C45*	1	Yes	No	Yes	.219	5.56	.165	4.20	.074	1.88	7°	C.053	C1.35		●	○		
CZH04005CFR-BL	2	Yes	No	No	.219	5.56	.165	4.20	.074	1.88	7°	.002	0.05	●			○	
CZH0402CFR-BL	2	Yes	No	No	.219	5.56	.165	4.20	.074	1.88	7°	.008	0.2	●			○	
CZH04005CFR-070	3	No	Yes	No	.219	5.56	.165	4.20	.074	1.88	7°	.002	0.05		●			●
CZH0402CFR-070	3	No	Yes	No	.219	5.56	.165	4.20	.074	1.88	7°	.008	0.2		●			○
CZH04005CFR-140	4	No	Yes	Yes	.219	5.56	.165	4.20	.074	1.88	7°	.002	0.05		●			●
CZH0402CFR-140	4	No	Yes	Yes	.219	5.56	.165	4.20	.074	1.88	7°	.008	0.2		●			●
CZH05005CFR-141	4	No	Yes	Yes	.208	5.28	.219	5.56	.086	2.18	10°	.002	0.05					○
CZH0502CFR-141	4	No	Yes	Yes	.208	5.28	.219	5.56	.086	2.18	10°	.008	0.2					○

*Must be used with REZ100C2R461/466 Cutters

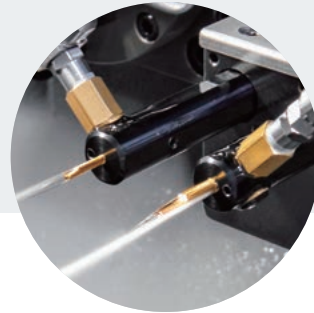
Cutting condition → X2

● : Stock
● : Stock (Newly added)
■ □ □ □ : While stocks last

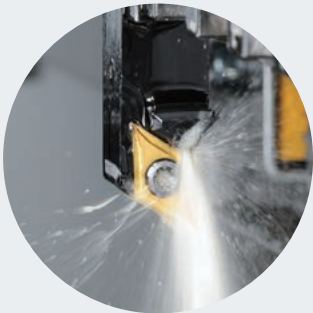
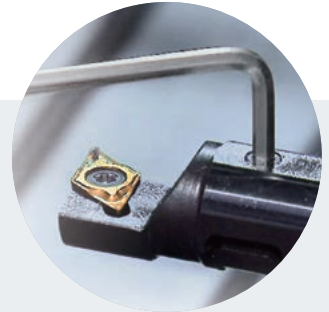
R L : Stock (Right / Left-hand only)
R L : Stock (Right / Left-hand only, Newly added)
Ⓜ : Mirror finish

○ : 1-2 week delivery
○ : 1-2 week delivery (Newly added)
⦿ : Coolant through

Ⓜ : 1-2 week delivery (Right / Left-hand only)
Ⓜ : 1-2 week delivery (Right / Left-hand only, Newly added)

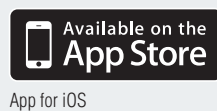


www.youtube.com/ntkcuttingtools



<http://www.ntkcuttingtools.com/>

Please visit the website of "NTK CUTTING TOOLS" for the latest information and consultation about cutting tools.



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Grade Comparison Chart

BIDEMICS/Ceramics

	NTK	GREENLEAF	HERTEL	INDEXABLE	ISCAR	KENAMETAL	KYOCERA	NEWCOMER	ROMAY	SANDVIK	SPK	SSANGYONG	SUMIOTOMO	TAEGUTECH	TUNGALOY	VALENITE
Cast iron [K]	HC1 HW2	GEM19	AC5	I50	IN11	K060	KA30	NP5200	CC10			SZ200 SZ300		AB120 AW20		
	HC2 HC5 HC6	GEM7	HT610CA MC2	I100	IN22 IN23	K090 KY1615	A65 A66N PT600M	NP5000	CC20 CC30	CC620 CC650 CC6050	SN60 SN80 SH2		NB90S	AB30	LX11 LX21 CX710	Q32
	SX6 SP9	CSN100 CSN200 GSN100 HSN100 HSN200		MW30 MW43	I56 I58 I580	KY3000 KY3400 KY3500 KYK25 KYK35 KY4400 KYK10 KY1320	CS7050 KS500 KS6000 KS6050		CC510 CC513 CC514 CC514SC CC515 CC516 CC516SC	CC1690 CC6090 CC6190	SL506 SL508 SL550C SL554C SL654 SL808 SL854C	SN26 SN300 SN400 SN500 SN600 SN700 SN800	NS260 NS260C SN2000K SN2100K	AS10 AS500 SC10 AW20 AB30 AB20	CX710 FX105	VPQ130 VPQ135
Heat resistant alloy [S]	JX0 JX1															
	WA1	WG300 WG600 WG700			IW7	KY1525 KY4300			CC60	CC670		SW400 SW500 SW700 SW800	WX1500 WX120	TC430		
	SX3 SX5 SX7 SX9	XSYTIN-1		MW37	I59	KY1540 KY2100 KYS25 KYS30 KYSP30 KYSM10	CF1 KS6030 KS6040		CC5477	CC6060 CC650 CC6065		SN800 SN900	WX2500 WX2000	AS20	M101S	
Hardened material [H]	HC4 ZC4 HC5 HC7 ZC7	GEN7	HT610CA	I100	IN22 IN23 IN420	KY1615 KY4400	A65 A66N KT66 PT600M		CC30SC	CC6050 CC650		ST500 TM300 TC100 TC300	NB90S NB150H	AW120 AB30	LX11	Q35 VPZ205 VPZ215
	WA1	WG300 WG600 WG700			IW7	KY4300 KYS25				CC670		SW400 SW500 SW700 SW800				

BIDEMICS/CBN

	NTK	DIJET	HITACHI	INDEXABLE	ISCAR	KENAMETAL	KYOCERA	MITSUBISHI	SANDVIK	SECO	SPK	SSANGYONG	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Cast iron [K]	B23 B30 B99	JBN330 JBN795	BH200 BH250	CBN90 CBN95 CBN100	IB50 IB55 IB85	KB1345 KB1630 KB5630 KB9610 KB9640 KB1340	KBN60M KBN65B KBN900	BC5030 MB710 MB730 MB5015 MBS140	CB7525 CB7925	CBN20 CBN050C CBN200 CBN300 CBN300P CBN350 CBN600	WBN100 WBN105 WBN115 WBN120 WBN750	SBN1000 SBN1600	BN500 BN600 BN700 BNS800	KB90 KB90A TB650 TB670 TB730	BX470 BX480 BX850 BX870 BX90S BX910 BX930 BX950 BXC90	
Heat resistant alloy [S]	JP2			CBN80		KB1340 KB1630 KB5630		MB730		CBN170			BN700	KB90 TB730	BX950	
Hardened material [H]	B52 B36 B40 B5K B6K	JBN245 JBN300	BH200 BH250	CBN45 CBN50 CBN60 CBN70	IB10HC IB20H IB25HA IB25HC IB50 IB55	KB1340 KB1610 KB1625 KB5610 KB5625 KB5630 KB9610 KB9640	KBN05M KBN10C KBN10M KBN25C KBN25M KBN30M KBN35N KBN510 KBN525 KBN900	BC8020 MB810 MB825 MB835 MB8025 MBC010	CB20 CB50 CB7015 CB7025 CB7525	CBN10 CBN050C CBN100 CBN150 CBN160P CBN170 CBN200 CBN300P CBN350	WBN500 WBN550 WBN600 WBN650	SBN1000 SBN2000 SBN4000	BN250 BN300 BN350 BN1000 BN2000 BNC80 BNC100 BNC150 BNC160 BNC200 BNC300 BNC2010 BNC2020 BNX10 BNX20 BNX25 BNX300	KB50 TB610 TB650 TB670	BX310 BX330 BX360 BX380 BX530 BXC50 BXM10 BXM20	VPC225 WLB30 WLB50

PCD

	NTK	DIJET	INDEXABLE	ISCAR	KENAMETAL	KYOCERA	MITSUBISHI	SANDVIK	SECO	SSANGYONG	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Non-ferrous material [N]	PD1 PD2	JDA10 JDA30 JDA40 JDA715 JDA735 JDA745	PCD3 PCD-F PCD-UF	ID5 ID8	KD1400 KD1405 KD1425 KD1410 KD1415 KD1425	KPD001 KPD010 KPD230	MD205 MD220 MD230	CD10	PD10 PD20 PD30	SPD1000 SPD2000 SPD3000	DA10 DA90 DA150 DA200 DA1000 DA2200	KP100 KP300 KP500	DX110 DX120 DX140 DX160 DX180	WCD10

(Note) This chart is based on published data and not authorized by each manufacturer

● Non coated carbide

	NTK	DIJET	GREENLEAF	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	ROMAY	SANDVIK	SECO	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Steel P	KM1	DX30 DX35 SR30 SRT	G20M G60 G50 G70	EX35 EX40 EX45 WS10	CI5 CI6 CI7 CI9	IC50M IC54 IC70 IC28	KU10 K420 K125M	PW30	UTI20T			S10M S25M S60M	A30 ST10P ST20E ST30E ST40E	CT3000	TX40 UX25 UX30	
Non-ferrous material N	KM1	CR1 KG03 KG1 KG10 KG20 KG30 KT9 LF12	G02 G23	WH02 WH05 WH10 WH20D	CI1 CI2 CI3 CI4 CI65	IC04 IC10 IC20 IC28	K313 K68 K110M K115M K600 K1	GW15 GW25 KW10	HTI05T HTI10 UTI20T	R600	H10 H10F H13A	883 890 HX	EH520 G10E H1	UF1	G1F G2 G2F G3 KS05F KS15F KS20 TH03 TH10 TU10	WK1 WSN10

● PVD coated carbide

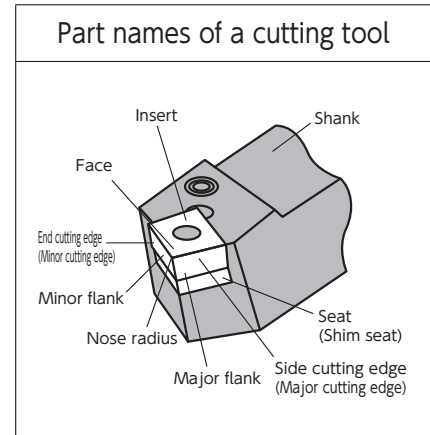
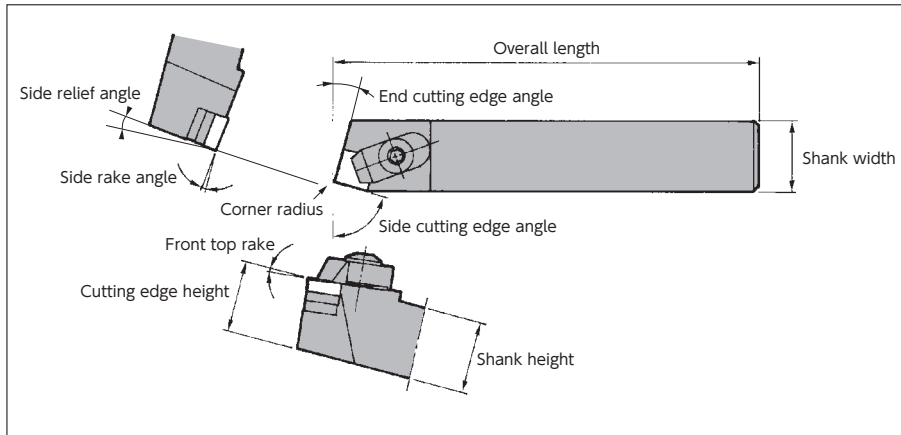
	NTK	DIJET	GREENLEAF	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	SANDVIK	SECO	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER	
Steel P	VM1 ZM3 QM3 TM4 DT4 DM4	JC5003 JC5015 JC5030 JC5040	G915 G920 G925 G935	CY15 CY150 CY250 CY9020 HC844 IP2000 IP3000	CI25A CI29	IC328 IC507 IC807 IC907 IC908 IC928 IC3028 IC830 IC570	KC5010 KC5025 KC5510 KC5525 KCU10 KCU25 KC710 KC720 KC722 KC730 KC735M KC792M	PR915 PR930 PR1005 PR1025 PR1115 PR1215 PR1225	VP10MF VP10RT VP15TF VP20MF VP20RT	GC1125 GC1525 GC15 GC1025 GC1145 GC2035 GC2145 GC4125	CP200 CP250 CP500	AC350 AC520U AC530U ACZ150 ACZ310 ACZ330 ACZ350	TT1040 TT7220 TT8010 TT8020 TT9030 TT9080	AH120 AH130 AH140 AH710 AH725 AH730 AH740 GH130 GH330 SH730 AH330 GH730	WSM30 WXM33 WXP20 WXP43	
Stainless steel M	VM1 ZM3 QM3 TM4 DT4 DM4	JC5003 JC5015 JC5030 JC5040	G915 G920 G925	CY250 CY9020 IP0505 IP1005	CI23 CI24 CI29	IC308 IC507 IC520 IC807/907 IC908 IC928 IC1008 IC1028 IC3028 IC830 IC570	KC5010 KC5025 KC5510 KC5525 KCU10 KCU25 KC710 KC720 KC722 KC730 KC735M KC792M	PR915 PR930 PR1025 PR1125 PR1215 PR1225	VP10MF VP10RT VP15TF VP20MF VP20RT	GC15 GC1005 GC1025 GC1105 GC1115 GC1125 GC1145 GC1525 GC2030 GC2035 GC4125	CP200 CP250 CP500 TS2000 TS2500	AC350 AC510U AC520U AC530U AC6040M ACZ150 ACZ310 ACZ330 ACZ350 EH510Z EH520Z AC6030M AC610M AC830P AC630M	TT1040 TT5080 TT7010 TT7080 TT7220 TT8010 TT8020 TT9030 TT9080 TT9020	AH120 AH130 AH140 AH710 AH725 AH730 GH130 GH330 GH730 SH730 AH330	WXM20 WXM33 WXN10 WXP20 WXP43	
Cast iron K	QM3 DM4	JC5003 JC5015		CY10H CY100H CY9020		IC507 IC508 IC908 IC910 IC808 IC1008	KC5010 KC5025 KC5510 KC5525 KCU10 KCU25 KC720 KC730	PR905 PR1215	VP10RT VP15TF VP20RT	GC1020 GC1125 GC15	CP200 CP250 CP500 DTS2500 TK1000 TK2000 TS2000	AC510U AC520U AC530U ACZ310 EH10Z EH20Z EH510Z AC405K	TT1040 TT6080 TT7010 TT7080	AH110 AH120 GH110 GH130		
Heat resistant alloy S			G920 G925			IC807/907 IC908 IC830	KC5010 KC5510 KC5525 KC7310 KCU10 KCU25			GC15 GC1005 GC1025 GC1105 GC1115 GC1125 GC2145 GC4125		AC510U AC520U AC530U	TT8125 TT8135 TT8020 TT9030 TT9080 TT9020	AH905		
Hardened material H							KC5010 KC5510 KCU10 KCU25			GC1010 GC1025 GC1030		AC503U				

● CVD coated carbide

	NTK	DIJET	GREENLEAF	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	ROMAY	SANDVIK	SECO	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Cast iron K	CP1	JC050W JC105V JC110V JC215V JC605W JC605X JC610	GA5022 GA5023	GM25 GM8015 GM8020 GM8025 HG3305 HG3315 HG8010 HX3505 HX3515	CIN2 CINX CIT3 CIT6 CIX	IC418 IC428 IC9007 IC9015 IC9150	KCK05 KCK15 KCK20 KCP05 KCP10 KCP25 KCP30 KC9325	CA4010 CA4115 CA4120 CA4505 CA4515 CA5505	MC5005 MC5015 MY5015 UC5105 UC5115 UE6110	R100 R200 R500	GC3005 GC3205 GC3210 GC3215 GC4215 GC4315	MK1500 TH1000 TK1000 TK2000 TP200 TP2500 TX150	AC300G AC410K AC420K AC700G AC810P AC820P AC8025P ACK200	TT6300 TT6800 TT7005 TT7015	T1015 T1115 T5105 T5115 T5125	WPP01 WPP10 WPP20

Turning Tool Terminology

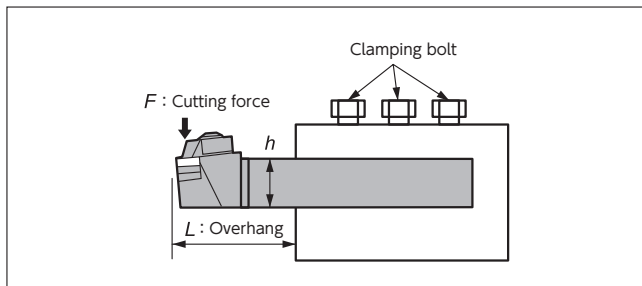
Toolholder part names



Holder rigidity

Toolholder deflection

$$\delta = \frac{4 \times F \times L^3}{E \times b \times h^3} = \frac{4 \times k_c \times f \times L^3}{E \times b \times h^3}$$

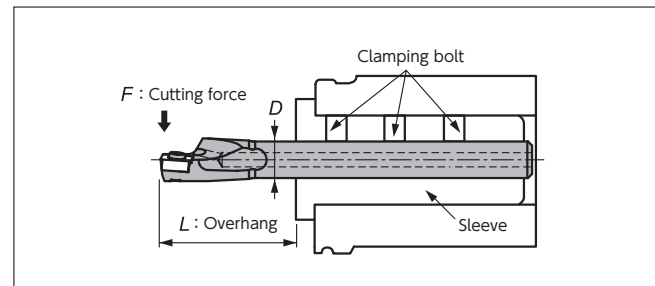


Symbol	Term	Unit
δ	Deflection amount	mm
b	Shank width	mm
h	Shank height	mm
E	Young's modulus	N/mm ²
a_p	Depth of cut	mm
f	Feed amount	mm/rev
k_c	Specific cutting force	N/mm ²
L	Overhang	mm
F	Cutting force	N

$$(F = k_c \times a_p \times f)$$

Boring bar deflection

$$\delta = \frac{64 \times F \times L^3}{3 \times E \times \pi \times D^4} = \frac{64 \times k_c \times a_p \times f \times L^3}{3 \times E \times \pi \times D^4}$$



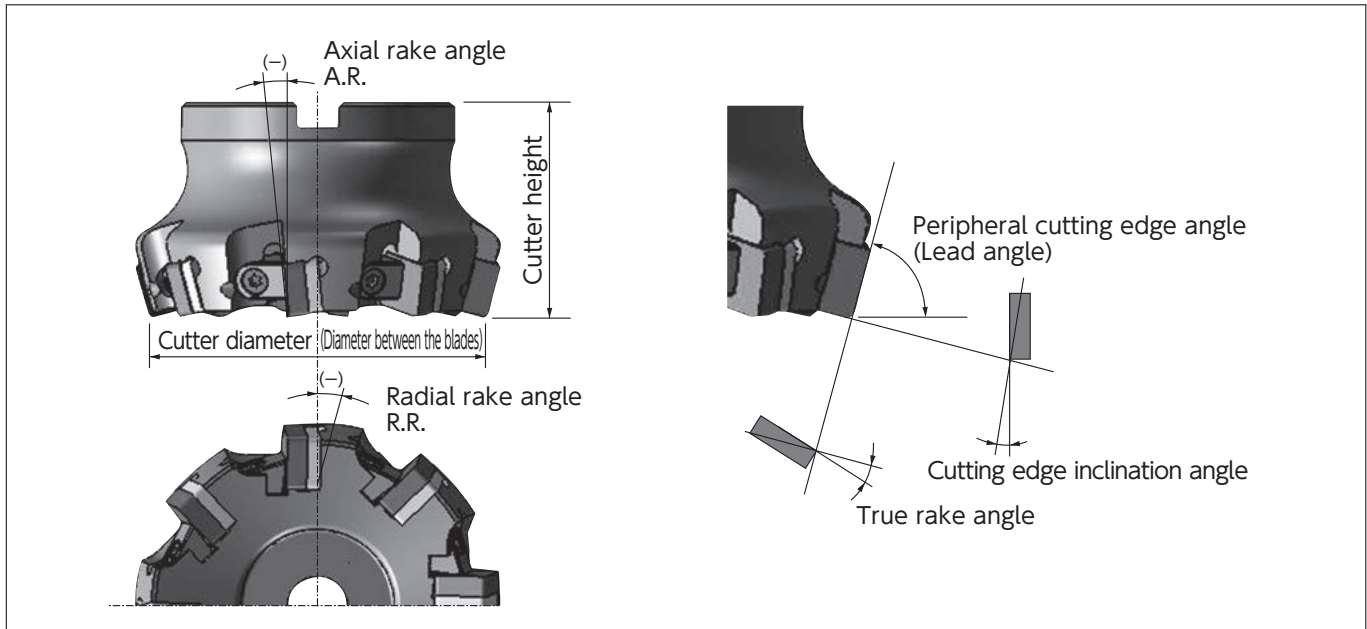
Symbol	Term	Unit
δ	Deflection amount	mm
D	Shank width	mm
E	Young's modulus	N/mm ²
a_p	Depth of cut	mm
f	Feed amount	mm/rev
k_c	Specific cutting force	N/mm ²
L	Overhang	mm
F	Cutting force	N

$$(F = k_c \times a_p \times f)$$

An important factor in improving the rigidity of a toolholder is to ensure the overhang of the tool shank is as short as possible.

■ Milling Cutter Terminology

● Milling cutter terminology



● Functions of each cutting edge angle

Name	Function	Effects
Radial rake angle: R.R.	Controls the direction of chip evacuation and cutting force	Negative (-): Excels in chip control performance
Axial rake angle: A.R.	Controls the direction of chip evacuation and cutting force	Positive (+): Excels in cutting performance and BUE resistance
Lead angle	Controls the thickness and evacuation direction of chips	Larger lead angles decrease the thickness of chips and relieves cutting load
True rake angle	Actual rake angle	Larger angles excel in cutting performance and BUE resistance, but lower the cutting edge strength Smaller angles increase the cutting edge strength but lower the BUE resistance
Cutting edge tilt angle	Controls the direction of chip evacuation	Larger angles excel in chip control performance and relieve cutting load, but lower the strength of the insert corner

● Functions of each angle

《Lead angle》: Relationship of this angle and chip thickness

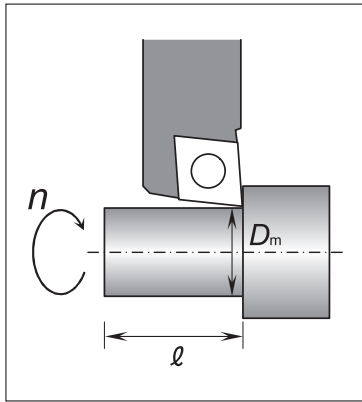
Lead angle : 45 degrees	
Lead angle : 75 degrees	
Lead angle : 90 degrees	

《Rake angle》: Combinations and characteristics

Combinations of the angles for basic cutting edge shapes	(+) Axial rake angle : positive	(-) Axial rake angle : negative	(+) Axial rake angle : positive
Radial rake angle (R.R.)	Positive (+)	Negative (-)	Negative (-)
Axial rake angle (A.R.)	Positive (+)	Negative (-)	Positive (+)
Insert specification	Positive (single side used)	Negative (both sides used)	Positive (single side used)
Work material	Steel	●	●
	Cast iron	—	●
	Aluminum alloy	●	—

■ Calculation Formula for Turning

● Calculating the cutting speed



Calculating the cutting speed from the rotation speed

$$v_c = \frac{\pi \times D_m \times n}{12}$$

(SFM)

v_c : Cutting speed (SFM)
 D_m : Machining diameter (inch)
 n : Spindle speed (rpm)
 π : Pi (3.14)

Calculating the revolution speed from the cutting speed

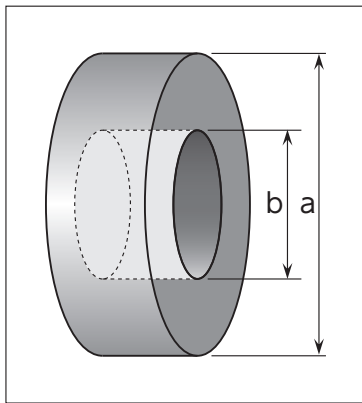
$$n = \frac{12 \times v_c}{\pi \times D_m}$$

(rpm)

Example : Obtaining a cutting speed for machining a work piece of 2" diameter at the spindle speed of 1,000 min⁻¹:

$$v_c = \frac{\pi \times 2 \times 1000}{12} = \underline{523 \text{ (SFM)}}$$

● Calculating the cutting time



Calculating the cutting time for OD (ID) machining

$$T = \frac{l}{f \times n}$$

(min)

T : Cutting time (min)
 l : Cutting length (inch)
 f : Feed rate (IPR)
 n : Spindle speed (rpm)

Calculating the cutting time for facing

$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times v_c \times f}$$

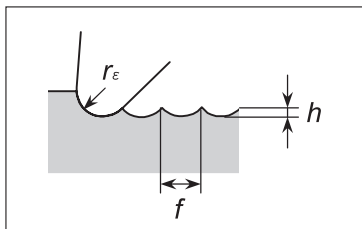
(min)

T : Cutting time (min)
 v_c : Cutting speed (m/min)
 f : Feed amount (mm/rev)
 π : Pi (3.14)

Example : Obtaining a cutting time for machining of work to be cut 4" long at the spindle speed of 1,000 rpm and at a feed rate of .004IPR:

$$T = \frac{4}{.004 \times 1000} = \underline{1 \text{ (min)}}$$

● Calculating the theoretical surface roughness



$$h = \frac{f^2}{8 r_\epsilon} \times 1000^2$$

(μinch)

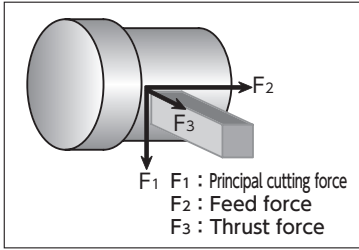
h : Theoretical surface roughness (μinch)
 f : Feed amount (IPR)
 r_ϵ : Corner radius (inch)

Example : Obtaining the theoretical surface roughness when machining with an insert having .031 corner nose radius at a feed rate of 0.004 IPR:

$$h = \frac{.004^2}{8 \times .031} \times 1000^2 = \underline{64.51 \text{ (μinch)}}$$

[Guidelines for actually finished surface roughness]
 Steel type work: Theoretical surface roughness × 1.5 to 3
 Cast iron type work: Theoretical surface roughness × 3 to 5

● Calculating the cutting force



$$F = k_c \times a_p \times f$$

(N)

F : Cutting force (N)
 k_c : Specific cutting force (N/mm²) *See the table below.
 a_p : Depth of cut (mm)
 f : Feed amount (mm/rev)

Example : Calculating the cutting force for grey cast iron cut at the feed rate of 0.2 mm/rev and with a depth of cut of 3 mm:

$$F = 1800 \times 3 \times 0.2 = \underline{1080 \text{ (N)}}$$

● Calculating the power required

$$P_c = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times \eta}$$

(kW)

P_c : Required power (kW)
 v_c : Cutting speed (m/min)
 f : Feed amount (mm/rev)
 a_p : Depth of cut (mm)
 k_c : Specific cutting force (N/mm²) *See the table below.
 η : Mechanical efficiency (0.7~0.8)

Example : Calculating the cutting power for the machining of grey cast iron at a cutting speed of 700 m/min, feed rate of 0.4 mm/rev, and with a depth of cut of 2 mm (with 0.8 set as the mechanical efficiency):

$$P_c = \frac{700 \times 0.4 \times 2 \times 1400}{60 \times 10^3 \times 0.8} = \underline{16.33 \text{ (kW)}}$$

● Specific cutting force

Work material	Tensile strength or hardness	Specific cutting force (N/mm ²) "k _c " to cutting feed rate (mm/rev)					
		0.1mm/rev	0.2mm/rev	0.3mm/rev	0.4mm/rev	0.6mm/rev	
Soft steel	520	3,610	3,100	2,720	2,500	2,280	
Medium steel	620	3,080	2,700	2,570	2,450	2,300	
Hard steel	720	4,500	3,600	6,250	2,950	2,640	
Tool steel	SKD	670	3,040	2,800	2,630	2,500	2,400
		770	3,150	2,850	2,620	2,450	2,340
Cr-Mo steel	SCM	600	3,610	3,200	2,880	2,700	2,500
		730	4,500	3,900	3,400	3,150	2,850
Alloy steel	SNCM	900	3,070	2,650	2,350	2,200	1,980
		HB350	3,310	2,900	2,580	2,400	2,200
Gray cast iron	FC	HB200	2,110	1,800	1,600	1,400	1,330

● Calculating the volume of chips produced

$$Q = v_c \times f \times a_p$$

(cm³/min)

Q : Volume of evacuated chips (cm³/min)
 v_c : Cutting speed (m/min)
 a_p : Depth of cut (mm)
 f : Feed amount (mm/rev)

Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed of 0.4 mm/rev, and a depth of cut of 2mm

$$Q = 700 \times 0.4 \times 2 = \underline{560 \text{ (cm}^3\text{/min)}}$$

Troubleshooting for Turning

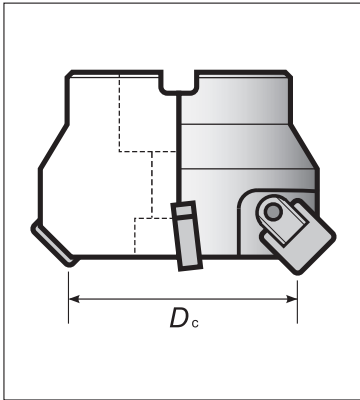
Type of problem		Possible cause	Material/grade selection				Cutting conditions				Tool shape				Machine/installation				
			Change to a harder material/grade	Change to a tougher material/grade	Change to a material/grade more resistant to thermal shock	Change to a material/grade more resistant to deposition	Cutting speed	Feed rate	Depth of cut	Coolant		Review the type of chipbreaker	Rake angle	Nose radius of the insert	Side cutting edge angle	Cutting edge strength, honing	Improve the accuracy of insert	Improve the rigidity of the holder	
										Use non-water-soluble type	Review dry or wet operation								Decrease	Increase
Short tool life	Excessive insert wear	Unsuitable tool material/grade	●																
		Unsuitable cutting edge shape									●	↗	↗	↗	↘				
		Improper cutting conditions					↘	↗			Wet								
	Fracture/chipping of the cutting edge	Unsuitable tool material/grade		●															
		Improper cutting conditions						↘	↘										
		Insufficient cutting edge strength										●	↗		↗				
		Thermal shock			●		↘	↘	↘	●	Dry								
		Built-up edge				●	↗	↗		●	Wet								
Insufficient toughness															●	●	●	●	
Poor dimensional accuracy	Variation in dimensions during cutting	Improper accuracy of insert														●			
		Clearance/relief of the work/tool										●	↗	↘	↘	↘	●	●	●
	Need for offsetting during cutting	Increased flank wear	●											↗					
		Built-up edge				●	↗												
		Improper cutting conditions					↘	↗											
Poor surface finish	Poor surface roughness	Deposition					↗			●	Wet								
		Unsuitable cutting edge shape									●	↗							
		Chatter					↘	↘	↘							●	●	●	●
Heat	Deterioration in tool life/accuracy due to excessive heat generation	Improper cutting conditions					↘	↘	↘										
		Unsuitable cutting edge shape									●	↗		↘					
Burring, chipping, scuffing	Burring	Boundary wear	●																
		Improper cutting conditions					↘	↕			Wet								
		Unsuitable cutting edge shape										●	↗	↘	↘				
	Chipping	Improper cutting conditions						↘	↘										
		Unsuitable cutting edge shape										●	↗	↗	↗	↘			
		Vibration															●	●	●
	Scuffing	Unsuitable tool material/grade				●													
		Improper cutting conditions					↗				●	Wet							
Unsuitable cutting edge shape											●	↗		↘					
Vibration																●	●	●	●
Chip control	Elongated chips	Improper cutting conditions					↘	↗	↗		Wet								
		Chipbreaker's effective chip control range										●							
		Unsuitable cutting edge shape											↘	↘					

Troubleshooting Case Studies: Turning

	Case/Symptom	Possible causes	Corrective measures
Insert	VB wear	<ul style="list-style-type: none"> ●The material / grade is too soft ●Cutting speed is too high ●Relief angle is too small 	<ul style="list-style-type: none"> ●Use a coated grade ●Choose a material/grade highly resistant to wear ●Decrease the cutting speed
	Wear on face	<ul style="list-style-type: none"> ●High temperature causes chemical reactions between the insert material and chips 	<ul style="list-style-type: none"> ●Use a coated grade ●Decrease both of the cutting speed and feed rate ●Widen the rake angle
	Notching wear	<ul style="list-style-type: none"> ●The work surface is too hard ●Boundary area has been oxidized ●Burr, caused by chips in the sheared form, have been cut 	<ul style="list-style-type: none"> ●Widen the side cutting edge angle ●Make the nose radius larger so that cutting is performed within the radius ●Use a round insert
	Chipping/ fracture	<ul style="list-style-type: none"> ●Feed rate is too high ●Chips have become trapped ●Chatter resulting in vibration 	<ul style="list-style-type: none"> ●Enlarge the honed edge ●Make the nose radius larger ●Narrow the rake angle to secure the cutting edge strength
	Flaking	<ul style="list-style-type: none"> ●This is due to compressive forces being applied to the cutting edge from elastic deformation in the area being cut ●This occurs when deposited/adhered material is peeled off 	<ul style="list-style-type: none"> ●Change the cutting conditions by checking the cutting edge ●Choose a material/grade highly resistant to fracture ●Increase the coolant rate and pressure ●Improve the run-out of the main spindle of the machine
	Plastic deformation	<ul style="list-style-type: none"> ●High cutting force and excessive heat is applied to the cutting edge 	<ul style="list-style-type: none"> ●Choose a material/grade highly resistant to wear ●Decrease both of the cutting speed and feed rate ●Make the nose radius larger ●Use coolant
	Built-up edge	<ul style="list-style-type: none"> ●This occurs because the cutting temperature is lower than the recrystallization temperature of the work material 	<ul style="list-style-type: none"> ●Increase the cutting speed ●Use coolant with excellent lubrication performance ●Change to a grade with less affinity to the work material
	Deposition	<ul style="list-style-type: none"> ●The deposition is caused to the face by a chemical reactions of the work material due to heat generation 	<ul style="list-style-type: none"> ●Increase the cutting speed ●Widen the relief angle ●Hone the face with a mirror-like-surface finish ●Change to a grade with less affinity to the work material
	Clamping crack	<ul style="list-style-type: none"> ●The insert was clamped under improper seating conditions 	<ul style="list-style-type: none"> ●Clean the clamping areas and install the insert in the recommended way ●Tighten to the specified torque
Work piece	Chipping	<ul style="list-style-type: none"> ●The feed rate is too high ●An unsuitable insert was selected 	<ul style="list-style-type: none"> ●Decrease the feed rate ●Use a smaller edge preparation ●Change to a grade highly resistant to boundary wear ●Change the cutting edge angle of the holder
	Burring	<ul style="list-style-type: none"> ●The feed rate is incorrect ●The shape of insert is not suitable 	<ul style="list-style-type: none"> ●Decrease the feed rate ●Use a smaller edge preparation
	Chatter mark	<ul style="list-style-type: none"> ●The cutting force is too great ●The rigidity of the work piece and cutting tool is insufficient 	<ul style="list-style-type: none"> ●Decrease the feed rate ●Use a smaller edge preparation ●Ensure tool overhang is minimised ●Change the cutting edge angle of the holder
	Gouging	<ul style="list-style-type: none"> ●Vibration of the cutting edge due to deposition/built-up edge 	<ul style="list-style-type: none"> ●Increase the cutting speed ●Use cutting oil excellent in lubrication performance ●Change to a grade with less affinity to the work material

■ Calculation Formula for Milling Processes

● Calculating the cutting speed



Calculating the cutting speed from the rotation speed

$$v_c = \frac{\pi \times D_c \times n}{12}$$

(SFM)

v_c : Cutting speed (SFM)
 D_c : Cutter diameter (inch)
 n : Spindle speed (rpm)
 π : Pi (3.14)

Calculating the revolution speed from the cutting speed

$$n = \frac{12 \times v_c}{\pi \times D_c}$$

(rpm)

Example : Obtaining the cutting speed for machining with an 8" diameter cutter at the Spindle speed of 1,000 rpm:

$$v_c = \frac{\pi \times 8 \times 1000}{12} = \underline{2093 \text{ (SFM)}}$$

● Calculating the feeding speed and feed rate

Calculating the feed rate per blade

$$f_z = \frac{v_f}{z \times n}$$

(IPT)

f_z : Inch amount per tooth (IPT)
 v_f : Table feed (inch/min)
 z : Number of tooth
 n : Spindle speed (rpm)

Calculating the feeding speed per minute

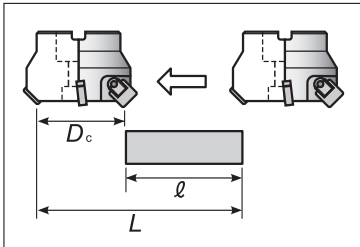
$$v_f = f_z \times z \times n$$

(inch/min)

Example : Obtaining the feed rate for milling with a 10-teeth cutter at the .008IPT and the revolution speed of 1,000 rpm

$$v_f = .008 \times 10 \times 1000 = \underline{80 \text{ (inch/min)}}$$

● Calculating the machining time



$$T = \frac{L}{v_f}$$

(min)

T : Cutting time (min)
 L : Total length of table feed
 ($\ell + D_c$)
 v_f : Table feed (inch/min)

Example : Obtaining the machining time for milling 8" on a work piece fed at the rate of 40 inch/min:

$$T = \frac{8}{40} = \underline{0.2 \text{ (min)}}$$

● Calculating the cutting power

$$P_c = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times \eta}$$

(kW)

P_c : Required power (kW)

a_e : Cutting length (mm)

a_p : Depth of cut (mm)

v_f : Feed rate (mm/min)

k_c : Specific cutting force (N/mm³) *See the table below.

η : Mechanical efficiency (0.7~0.8)

Example : Calculating the power required to machine gray cast iron for a length of 150 mm, at a feed rate of 1,100 mm/min, and with a depth of cut of 3 mm (with 0.8 set as the mechanical efficiency and 0.2 mm as the feed par tooth/blade)

$$P_c = \frac{150 \times 3 \times 1100 \times 1400}{60 \times 10^6 \times 0.8} = \underline{14.44 \text{ (kW)}}$$

● Specific cutting force

Work material		Tensile strength or hardness	Specific cutting force (N/mm ³) “ k_c ” to cutting feed amount (mm/rev)				
			0.1mm/t	0.2mm/t	0.3mm/t	0.4mm/t	0.6mm/t
Soft steel		520	2,200	1,950	1,820	1,700	1,580
Medium steel		620	1,980	1,800	1,730	1,600	1,570
Hard steel		720	2,520	2,200	2,040	1,850	1,740
Tool steel	SKD	670	1,980	1,800	1,730	1,700	1,600
		770	2,030	2,030	1,800	1,750	1,700
Cr-Mo steel	SCM	600	2,180	2,000	1,860	1,800	1,670
		730	2,540	2,250	2,140	2,000	1,800
Alloy steel	SNCM	900	2,000	1,800	1,680	1,600	1,500
		HB350	2,100	1,900	1,760	1,700	1,530
Gray cast iron	FC	HB200	1,750	1,400	1,240	1,050	970
Aluminum alloy	AC,ADC	160	580	480	400	350	320

※For power required for NTK HCC, please refer to page P31.

● Calculating the volume of evacuated chips

$$Q = a_e \times a_p \times v_f$$

(cm³/min)

Q : Volume of evacuated chips (cm³/min)

a_e : Cutting length (mm)

a_p : Depth of cut (mm)

v_f : Feed rate (mm/min)

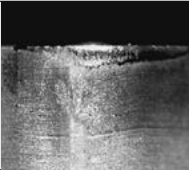

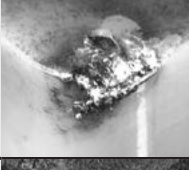
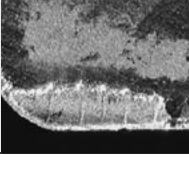
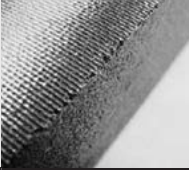
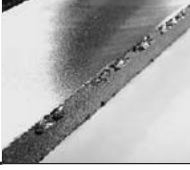
Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed rate of 0.4 mm/rev, and with a 2 mm depth of cut:

$$Q = 150 \times 3 \times 1100 = \underline{495 \text{ (cm}^3\text{/min)}}$$

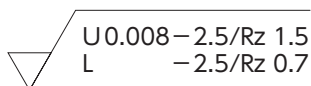
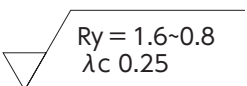
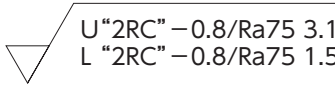
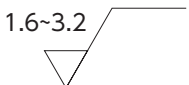
Troubleshooting for Milling

Type of problem		Possible cause	Material/grade selection				Cutting conditions						Tool shape								
			Change to a harder material/grade	Change to a tougher material/grade	Change to a material/grade more resistant to thermal shock	Change to a material/grade more resistant to deposition	Cutting speed Decrease ↙ Increase ↘	Feed rate Increase ↘	Depth of cut Increase ↘	Review cutter diameter and cutting width	Review tool path	Coolant		Relief angle of insert Decrease ↙ Increase ↘	Nose radius of cutting edge Increase ↘	Cutting edge strength, honing Increase ↘	Number of teeth/blades	Enlarge the chip pocket	Check the wiper shape	Improve accuracy of cutting edge run-out	Improve rigidity of tool
												Wet	Dry								
Damaged or broken cutting edge of the insert	Increased flank wear	Improper cutting conditions					↘						●								
		Unsuitable cutting edge shape	●											↘	↘			●			
	Increased wear on face	Improper cutting conditions					↘	↘	↘				●								
		Unsuitable cutting edge shape	●											↘	↘	↘					
	Fracture/chipping on cutting edge	Improper cutting conditions						↘	↘		●								●	●	
		Unsuitable cutting edge shape		●										↘	↘	↘			●	●	
	Thermal shock	Improper cutting conditions					↘	↘	↘					●							
		Unsuitable cutting edge shape			●									↘	↘						
Built-up edge	Improper cutting conditions					↘	↘					●									
	Unsuitable cutting edge shape				●								↘	↘							
Machining accuracy	Poor surface finish	Improper cutting conditions					↘	↘	↘				●								
		Unsuitable cutting edge shape	●			●									↘	↘		●	●		
	Burring	Improper cutting conditions						↕	↘	●	●										
		Unsuitable cutting edge shape												↘	↘	↘		●			
	Chipping	Improper cutting conditions						↘	↘		●										
		Unsuitable cutting edge shape												↘	↘	↘	↘		●		
Poor flatness and parallelism	Improper cutting conditions						↘	↘				●		↘	↘	↘		●	●		
Others	Increased chatter/vibration	Improper cutting conditions					↘	↘	↘	●	●				↘	↘	↘				
		Improper cutting conditions					↘	↘		●			●	●							
	Poor chip evacuation	Unsuitable tool/blade edge shape												↘			↘	●			

Troubleshooting Case Studies: Milling

	Case/Symptom	Possible causes	Corrective measures
Insert	VB wear 	<ul style="list-style-type: none"> ●Cutting speed is too high. ●Feed rate is too low. ●The shape of the insert is not suitable. ●The material / grade of the insert is not suitable. 	<ul style="list-style-type: none"> ●Decrease the cutting speed. ●Increase the feed rate. ●Make the nose radius larger. ●Change to a grade highly resistant to boundary wear.
	Notching wear 	<ul style="list-style-type: none"> ●The material / grade of the inserts is not suitable. ●The shape of the cutter is not suitable ●The shape of insert is not suitable. 	<ul style="list-style-type: none"> ●Change to a grade highly resistant to boundary wear. ●Widen the rake angle. ●Change the Insert shape to a different one.
	Chipping / fracture 	<ul style="list-style-type: none"> ●The cutting speed is incorrect. ●The shape of the cutter is not suitable ●The shape of insert is not suitable. 	<ul style="list-style-type: none"> ●Decrease the feed rate and depth of cut in order to reduce the cutting force. ●Use a smaller edge preparation. ●Prepare the cutting edge to give it a round honing. ●Change to a grade highly resistant to fracture.
	Thermal crack 	<ul style="list-style-type: none"> ●The cutting conditions are incorrect ●The material / grade of insert is not suitable 	<ul style="list-style-type: none"> ●Decrease the cutting speed. ●Change to dry cutting from wet cutting. ●Use a material / grade highly resistant to thermal shock
Work piece	Chipping 	<ul style="list-style-type: none"> ●The feed rate is too high. ●An unsuitable insert is selected. ●The shape of the cutter is not suitable. 	<ul style="list-style-type: none"> ●Decrease the feed rate. ●Use a smaller edge preparation ●Change to a grade highly resistant to boundary wear. ●Set the lead angle at 45 degrees.
	Burring 	<ul style="list-style-type: none"> ●The feed rate is incorrect. ●The shape of insert is not suitable. ●The shape of the cutter is not suitable. 	<ul style="list-style-type: none"> ●Adjust the feed rate. ●Use a smaller edge preparation. ●Make the lead angle narrower.

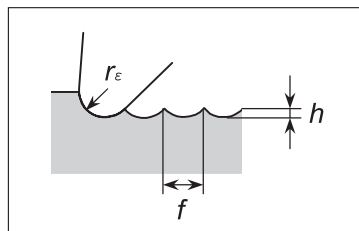
Surface Roughness Standards

		JIS B0601 (2001) ISO 4287 (1997) / ISO 1302 (2002)	JIS B0601 (1994) JIS B0031 (1982)	
Cross-section curve		No filter, digital signal	No filter, digital signal	
	Evaluation length	Shape length	—	
	Maximum height	Pt	—	
	10-point average roughness	—	—	
Roughness curve		Phase correction, band $\lambda_s - \lambda_c$	Phase correction, short wavelength λ_c	
	Evaluation length	Determine individually for each standard length λ_c .	Average for λ_n , calculated for each standard length λ_c	
	Maximum height	Maximum height Rz	Maximum height Ry	
	Set standard length based on height parameters Rz, Rmax, and Ry.	0.25mm	0.1~0.5 μ m	0.1~0.5 μ m
		0.8mm	0.5~10 μ m	0.5~10 μ m
		2.5mm	10~50 μ m	10~50 μ m
	Dimension indicated in drawing		 U 0.008 - 2.5/Rz 1.5 L - 2.5/Rz 0.7	 Ry = 1.6~0.8 λ_c 0.25
	10-point average roughness		Rz_{JIS}	Rz
	Center line average roughness		Ra₇₅	Ra75
	Arithmetic average roughness		Arithmetic average roughness Ra	Arithmetic average roughness Ra
	Set standard length based on height parameters Rz, Rmax, and Ry.	0.25mm	0.1~0.5 μ m	0.1~0.5 μ m
		0.8mm	0.5~10 μ m	0.5~10 μ m
2.5mm		10~50 μ m	10~50 μ m	
Dimension indicated in drawing		 U "2RC" - 0.8/Ra75 3.1 L "2RC" - 0.8/Ra75 1.5	 1.6~3.2	

Theoretical surface roughness

The theoretical surface roughness for lathe machining is the minimum value which can be obtained under the set machining conditions, and can be expressed by the following formula.

$$h_{(\mu\text{m})} = \frac{f^2}{8 r_\epsilon} \times 1000$$



h : Theoretical surface roughness (μm)

f : Feed amount (mm/rev)

r_ϵ : Nose radius (mm)

Actual surface roughness

- When machining steel: Theoretical surface roughness x 1.5-3
- When machining cast iron: Theoretical surface roughness x 3-5

Surface finish improvement measures

- Increase the nose radius.
- Use a wiper insert.
- Adjust the cutting speed and/or feed amount.
- Change the material and/or shape of the insert

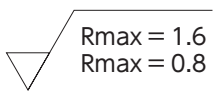
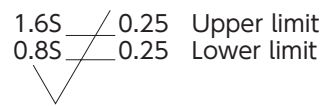
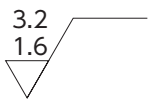
Relationship with triangle symbols

Arithmetic average roughness Ra (μm)	Maximum height Rz (μm)	10-point average roughness Rz _{JIS} (μm)	※ (Triangle symbol)
0.025	0.1	0.1	
0.05	0.2	0.2	
0.1	0.4	0.4	
0.2	0.8	0.8	
0.4	1.6	1.6	▽▽▽
0.8	3.2	3.2	
1.6	6.3	6.3	
3.2	12.5	12.5	▽▽
6.3	25	25	
12.5	50	50	▽
25	100	100	

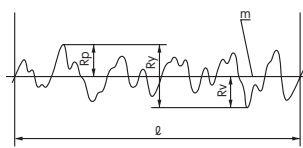
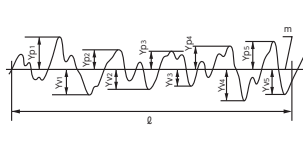
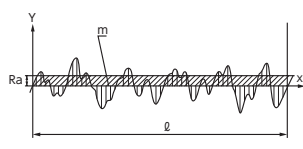
• Examples of reading

- When Ra = 1.6 μm → 1.6 μm Ra
- When Rz = 6.3 μm → 6.3 μm Rz
- When Rz_{JIS} = 6.3 μm → 6.3 μm Rz_{JIS}

※ The finishing symbols (triangle symbol ▽ and symbol -) are no longer used in JIS pursuant to the 1994 revision.

JIS B0601 (1982) JIS B0031 (1982)	JIS B0601 (1970) JIS B0031 (1970)	JIS B0601 (1970)	
No filter, analog signal	No filter, analog signal	No filter, analog signal	
One standard length	One standard length	One standard length	
Rmax	Rmax (S indication)	Hmax (S)	
Rz	Rz (Z indication)	—	
2RC, short wavelength cut-off λc	2RC, short wavelength cut-off λc	—	
One measured length $\geq 3\lambda c$	One measured length $\geq 3\lambda c$	—	
—	—	—	
0.8 μm or less	0.8 μm or less	Select from 0.3, 1, 3, 5 and 10mm	
0.8~6.3 μm	0.8~6.3 μm	Select from 0.3, 1, 3, 5 and 10mm	
6.3~25 μm	6.3~25 μm	Select from 0.3, 1, 3, 5 and 10mm	
	Surface symbol or triangle symbol	Triangle symbol	
		0.8S or less	▽▽▽▽
	—	1.5S~6S	▽▽▽
	—	12S~25S	▽▽
—	—	35S or higher	▽
—	—	—	
Ra	Ra ("a" indication)	—	
—	—	—	
—	—	—	
Ra shall be 12.5 μm or less.	λc shall be 0.8 mm.	—	
12.5~100 μm	—	—	
	Surface symbol or triangle symbol	—	
	0.2a or less	▽▽▽▽	
	0.4a~1.6a	▽▽▽	
	3.2a~6.3a	▽▽	
	12.5a to 25a or more	▽	

● Obtaining the surface roughness







Type	New symbol	Old symbol	Calculation	Obtaining method (example)
	JIS B0601:01	JIS B0601:94		
Max. height (Peak)	Rz	Ry	<p>The addition of the max. value for the depth R_v and the max. height R_p on the roughness curve for the reference length:</p> $R_z = R_p + R_v$	
Average roughness of 10 points	Rz _{JIS}	Rz	<p>The addition of the average of the maximum to fifth highest vales and the average of the deepest to the fifth deepest values on the roughness curve for the reference length:</p> $R_{z_{JIS}} = \frac{(Y_{p1} + Y_{p2} + Y_{p3} + Y_{p4} + Y_{p5}) + (Y_{v1} + Y_{v2} + Y_{v3} + Y_{v4} + Y_{v5})}{5}$	
Arithmetic average of roughness	Ra	Ra	<p>The average of absolute values on the roughness curve $f(x)$ for the reference length:</p> $R_a = \frac{1}{l} \int_0^l \{f(x)\}$	

● Conditions for measuring R parameters

Non-cyclic wave form (random wave form)		Settings for measuring	
Range of Ra (μm)	Range of Rz (μm)	Reference length $\lambda r(\text{mm}) = \text{cut-off } \lambda c(\text{mm})$	Evaluated length $\lambda n(\text{mm}) = \lambda r \times 5$
0.006 < Ra \leq 0.2	0.025 < Rz \leq 0.1	0.08	0.4
0.02 < Ra \leq 0.1	0.1 < Rz \leq 0.5	0.25	1.25
0.1 < Ra \leq 2	0.5 < Rz \leq 10	0.8	4
2 < Ra \leq 10	10 < Rz \leq 50	2.5	12.5
10 < Ra \leq 80	50 < Rz \leq 200	8	40

Spare Parts - Wrenches

Standard Items


Item Number	Appearance
CLR-13S (Formerly RLR-13S)	
CLR-15S (Formerly RLR-15S)	
RLR-20S	
LLR-25S	
LLR-25S-20*65	
LLR-28S	

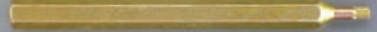



Optional Items

<LLR Type>

Item Number	Appearance
LLR-13S	
LLR-15S	
LLR-20S	

<Driver type wrench for increased adaptability>

Item Number	Magnetic Driver Handle
XX2815-04	

Item Number	Replaceable Bits
HLR-13S	
HLR-15S	
HLR-20S	
HLR-25S	

<Driver type wrench kits>

Item Number	Contents
XX2815-04-13S	XX2815-04 with HLR-13S
XX2815-04-15S	XX2815-04 with HLR-15S
XX2815-04-20S	XX2815-04 with HLR-20S
XX2815-04-25S	XX2815-04 with HLR-25S

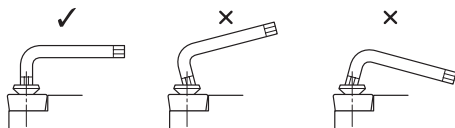


Clamp Screws and Wrenches

Clamp Screw			Dimension (mm)				Standard Wrench			
Appearance	Order Code	Item Number	a	b	c	θ (°)	Order Code	Item Number		
	5704739	LR-S-2×3.5	M2×P0.4	3.1	3.5	82	5681994	CLR-13S		
	5907704	LR-S-2×3.7	M2×P0.4	3.1	3.7	82				
	5907712	LR-S-2×4.4	M2×P0.4	3.1	4.4	82				
	5907720	LR-S-2×5.5	M2×P0.4	3.0	5.5	90				
	5907738	LR-S-2.5×4.8	M2.5×P0.45	3.6	4.8	82				
	5704747	LR-S-2.5×5.5	M2.5×P0.45	3.6	5.5	82	5681978	CLR-15S		
	5907746	LR-S-2.5×6	M2.5×P0.45	3.5	6.0	90				
	5907753	LR-S-2.5×6.8	M2.5×P0.45	3.5	6.8	90				
	5773619	LR-S-3×5.8	M3×P0.5	4.1	5.8	90				
	5907761	LR-S-3×6.2	M3×P0.5	5.2	6.2	82				
	5907779	LR-S-3×7.8	M3×P0.5	4.0	7.8	90	5485164	RLR-20S		
	5907787	LR-S-4×5.8	M4×P0.7	5.8	6.0	82				
	5907795	LR-S-4×9	M4×P0.7	5.8	9.0	82				
	5116991	LR-S-4×10PW	M4×P0.7	5.8	10.0	90			5681978	CLR-15S
		5534029	LRIS-2×6	M2×P0.4	2.6	6.0			60	5681994	CLR-13S
5907803		LRIS-2.2×6	M2.2×P0.45	3.15	6.0	60				
5989181		LRIS-2.5×5	M2.5×P0.45	3.6	5.0	60	5681978	CLR-15S		
5907811		LRIS-2.5×7	M2.5×P0.45	3.6	7.0	60				
5907829		LRIS-3×6	M3×P0.5	4.0	6.0	60	5485164	RLR-20S		
5428156		LRIS-3×8	M3×P0.5	4.2	8.0	60				
5477328		LRIS-4×5	M4×P0.7	5.85	5.0	60	5364930 5794698	LLR-25S LLR-25S-20*65		
5907837		LRIS-4×6	M4×P0.7	5.85	6.0	60				
5977566		LRIS-4×8	M4×P0.7	5.85	8.0	60				
5907845		LRIS-4×10	M4×P0.7	5.85	10.0	60				
5684105	LRIS-4×12	M4×P0.7	5.85	12.0	60	5364948	LLR-28S			
5907852	LRIS-5×10	M5×P0.8	7.0	9.5	60					
5116983	LRIS-4×10PW	M4×P0.7	5.7	10.0	60	5681978	CLR-15S			
5090576	LRIS-4×12PW	M4×P0.7	5.7	12.0	60					

Attention: When tightening screws

- Make sure the wrench tip and wrench hole are neither deformed nor stripped
- Engage the wrench straight to screw hole



- Do not apply more torque than the recommended amount (as shown to the right)

Note: Wrenches and bits come in a pack of five
Clamp screws come in a pack of ten

Recommended Tightening Torque

Item Number	Recommended Tightening Torque (lbs.in)
CLR LLR HLR 13S	6.2 (0.7N·m)
CLR LLR HLR 15S	12.4 (1.4N·m)
RLR LLR HLR 20S	26.6 (3.0N·m)
LLR HLR 25S	44.3 (5.0N·m)
LLR HLR 28S	62.0 (7.0N·m)

Material Cross Reference Chart

ISO	Country	U.S.A.	Japan	Germany	ISO	Country	U.S.A.	Japan	Germany	
	Standard	AISI / SAE	JIS	DIN		Standard	AISI / SAE	JIS	DIN	
Stainless steel [M]	Stainless Steel (Ferrite/Martensitic)				Cast iron [K]	Malleable cast iron				
	403		SUS403	X6Cr13 X7Cr14		—		FCMB310	—	
	416		SUS416	X12CrS13		32510		FCMW330	EN-GJMB350-10	
	430		SUS430	X6Cr17		40010		FCMW370	EN-GJMB450-6	
	410		SUS410	X10Cr13		50005		FCMW490	EN-GJMB550-4	
			SUS420J2	X46Cr13		70003		FCMP540		
	405			X6CrAL13		A220-70003		FCMP590	EN-GJMB650-2	
	420			X20Cr13		A220-80002		FCMP690	EN-GJMB700-2	
	431		SUS431	X19CrNi17-2		Gray cast iron				
	430F		SUS430F	X14CrMoS17		No 20 B		FC100	EN-GJL-100	
	434		SUS434	X6CrMoS17-2		No 25 B		FC150	EN-GJL-150	
	CA6-		SCS5	X3CrNiMo13-4		No 30 B		FC200	EN-GJL-200	
	405		SUS405	X10CrAL13		No 35 B		FD250	EN-GJL-250	
	HNV6		SUH4	X85CrMoV18-2		No 40 B		—	—	
	446		SUH446	X10CrAL2-4		No 45 B		FC300	EN-GJL-300	
	EV8		SUH35,SUH36	X53CrMnNiN21-9		No 50 B		FC350	EN-GJL-350	
	S44400			X1CrMoTi18-2 X20CrMoV12-1 X5CrNiCuNb16-4		No 55 B		—	EN-JLZ	
						A436 Type 2		—	GGL-NiCr20-2	
	630					Ductile cast iron				
	Stainless Steel (Austenitic)									
	304L			X2CrNi19-11		60-40-18		FCD400	EN-GJL-400-15	
	304		SUS304	X5CrNi18-10		—		—	EN-GJL-400-18-LT	
	303		SUS303	X8CrNiS18-9		80-55-06		FCD500	EN-GJL-500-7	
			SUS304L			A43D2		—	EN-GJSA-500	
	304L		SCS19	X2CrNi19-11		—		FCD600	EN-GJS-600-3	
	301		SUS301	X9CrNi18-8		100-70-03		FCD700	EN-GJS-700-2	
	304LN		SUS304LN	X2CrNi18-10		Nonferrous material [N]				
	316		SUS316	X5CrNiMo17-2-2		SC64D		C4BS	G-AISI9MGWA	
	316LN		SUS316LN	X2CrNiMoN17-13-3		GD-AISI12		AC4A	G-ALMG5	
	316L			X2CrNiMoN17-12-2		356.1		A5052		
	316L		SCS16	X2CrNiMo18-14-3		A413.0		A6061	GD-AISI12	
			SUS316L			A380.1		A7075	GD-AISI8Cu3	
	317L		SUS317L	X2CrNiMo18-15-4		A413.1		ADC12	G-AISI12(Cu)	
UNS			X1NiCrMoCu25-20-5	A413.2			G-AISI12			
V 0890A				A360.2			G-AISI10Mg(Cu)			
321		SUS321	X6CrNiTi18-10	Heat-resistant alloy						
347		SUS347	X10CrNiNb18-10	330		SUH330	X12NiCrSi36 16			
316Ti			X6CrNiMoTi17-12-2	5390A		SCH15	G-X40NiCrSi36-18			
318			X10CrNiMoNb 18-12	5666			NiCr22Mo9Nb			
309		SUH309	X15CrNiSi20-12				NiCr20Ti			
310S		SUH310	X8CrNi25-21	5660			NiFe35Cr14MoTi			
308		SCS17	X2CrNiMoN17-11-2	5391			S-NiCr13A16MoNb			
17-7PH			X7CrNiAL 17-7	5383			NiCr19Fe19NbMo			
N08028			X1NiCrMoCu31-27-4	4676			NiCu30AL3Ti			
Stainless Steel (Austenitic/Ferrite)							NiCr20TiAk			
S31500			X2CrNiN23-4	AMS 5399			NiCr19Co11MoTi			
S32900			X8CrNiMo27-5	AMS 5544			NiCr19Fe19NbMo			
S32304			X2CrNiN23-4	AMS 5397			NiCo15Cr10MoAl			
S31803			X2CrNiMoN22-53	5537C			CoCr20W15Ni			
				AMS 5772			CoCr22W14Ni			
Hardened material [H]							Titanium alloy			
5130H		SCr430H	34Cr4	AMS R54520			TiAl5Sn2.5			
5135H		SCr435H	37Cr4	AMS R56400			TiAl6V4			
4135H		SCM435H	34CrMo4	AMS R56401			TiAl6V4ELI			
4140H		SCM440H	42CrMo4				TiAl4Mo4Sn4Si0.5			

ISO	Country	U.S.A.	Japan	Germany	ISO	Country	U.S.A.	Japan	Germany
	Standard	AISI/SAE	JIS	DIN		Standard	AISI/SAE	JIS	DIN
Steel P	Carbon steel				Steel P	A573-81	SM400A;B;C SM490A;B;C;YA;YB	S275J2G3 S355J2G3+C2	
	A570.36	STKM12A;C	S235JRG2	5120		5120	DS355J2G3		
	1115		GC16E	9255		9255	55Si7		
	A573-8165		S235J2G3	9262		9262	S340MGC		
	1015		C15	52100		SUJ2	100Cr6		
	1020		C22	ASTM		ASTM	16Mo3		
	1213	SUM22	11SMn30	4520		4520	16Mo5		
	12L13	SUM22L	11SMnPb30	ASTM		ASTM	14Ni6		
			10SPb20	8620		8620	21NiCrMo2		
	1215		11SMn37	8740		8740	40NiCrMo22		
	12L14		11SMnPb37				17CrNiMo6		
	1015	S15C	Ck15E	5015		5015	15Cr3		
	1025	S25C	Ck25E	5140		5140	42Cr4		
	A572-60		S380N	5155		5155	55Cr3		
	A572-60		17MnV7				SCM415(H)		
	1035		C35	8740		8740	15CrMo5		
	1045		C45	5015		5015	40NiCrMo8-4		
	1040		35S20	ASTMA182		ASTMA182	15Cr3		
	1039		40Mn4	ASTMA182		ASTMA182	13CrMo5		
	1335	SMn438(H)	36Mn5				13CrMo4-5		
	1330	SCMn1	28Mn6				14MoV63		
	1035	S35C	C35G				31CrMo12		
	1045	S45C	C45E				39CrMoV13		
	1050	S50C	C53G				41CrS4		
	1055		C55	L1		L1	22Mo4		
	1060		C60E	8620		8620	50CoMo4		
	1055	S55C	C55E				16MnCr5		
	1060	S58C	C60E				31NiCrMo14		
	1095		C101E	L6		L6	50NiCr13		
	W1	SK3	C101u	3135		3135	36NiCr6		
	W210	SUP4	C105W1	3415		3415	14NiCr10		
	Alloy steel					3415;3310	3415;3310	14NiCr14	
	ASTMA353		X8Ni9	9255		9255			
	2515		12Ni19	9840		9840		36CrNiMo4	
			14NiCrMo13	4340		4340		34CrNiMo6	
	D3	SKD1	X210Cr12	5132		5132	SCr430(H)	34Cr4	
				5140		5140	SCr440(H)	41Cr4	
				5115		5115		16MnCr5	
	H13	SKD61	X40CrMo134	4130		4130	SCM420;SCM430	25CrMo4	
				4137;4135		4137;4135	SCM432;SCCRM3	34CrMo4	
	A2	SKD12	X100CrMoV51	4140;4142		4140;4142	SCM440	41CrMo4	
		SKD2	X210CrW12	4140		4140	SCM440(H)	42CrMo4	
	S1		45WCrV7					32CrMo12	
	H21	SKD5	X30WCrV93	6150		6150	SUP10	51CrV4	
			X30WCrV9					41CrMo7	
		X165CrMoV12	L3	L3		100Cr6			
HW3	SUH1	X45GrSi93			SKS31	105WCr6			
D3	SUH3	S6-5-2	L6	L6	SKS2,SKS3				
M2	SKH51	S6-5-2	Cast steel			55NiCrMoV6			
M35	SKH55	S6-5-2-5			SEMnH1				
M7		S6-9-2			SCMnH/1	G-X120Mn12			
HNV3		X210Cr12G							

Ni-based Heat Resistant Alloys

Material Specifications Cross-Reference List-Aerospace Material Designation

Commercial designation	Hardness Brinell HB		Nominal composition Approximate content in %										
	Ann.	Aged	Ni	Cr	Co	Fe	Mo	C	Mn	Si	Al	Ti	Others
Astroloy*	—	—	56.9	15.0	15.0	—	5.25	0.06	—	—	4.0	3.5	0.05
AerMet 100	—	—	11.1	3.1	13.4	70.0	1.20	0.23	—	—	—	0.05	—
GMR 235*	—	—	63.3	15.5	—	10.0	5.2	0.15	0.25	0.6	3.0	2.0	0.06
GMR 235D	—	—	63.0	15.5	—	4.5	5.0	0.15	0.1	0.3	3.5	2.5	0.05
Hastalloy B*	140	—	64.3	0.6	1.25	5.5	28.0	0.1	0.8	0.7	—	—	—
Hastalloy B-3	—	—	65.0	1.5	3.00	1.5	28.5	0.01	3.0	0.1	0.5	—	1.0
Hastalloy C*	200	—	54.1	16.0	1.25	5.75	17.0	0.07	0.8	0.7	—	—	4.0
Hastalloy C-22	—	—	56.0	22.0	2.50	3.00	—	—	0.5	0.1	—	—	3.8
Hastalloy C*22HS	—	—	74.0	22.0	1.00	2.00	—	—	—	—	—	—	0.0
Hastalloy C-276	—	—	57.0	16.0	2.50	5.00	16.0	0.01	1.0	0.1	—	—	1.0
Hastalloy N*	—	—	72.2	7.0	0.25	3.0	16.5	0.06	0.4	0.25	0.5	—	0.21
Hastalloy W*	—	—	62.7	5.0	1.25	5.5	24.5	0.06	0.5	0.5	—	—	—
Hastalloy X*	160	—	47.1	22.0	1.5	18.5	9.0	0.1	0.6	0.6	—	—	0.6
Hastelloy R235*	—	—	61.0	15.0	2.5	10.0	5.5	0.15	0.25	0.6	3.0	2.0	—
Haynes 25	—	—	10.0	20.0	51.0	3.0	1.0	0.10	1.50	0.4	—	—	15.0
Haynes 75	—	—	73.7	20.0	—	5.0	—	0.12	—	—	0.25	0.4	0.5
Haynes 80A	—	—	70.9	20.0	2.0	3.0	—	0.1	—	—	1.5	2.5	—
Haynes 188	—	—	22.0	22.0	39.0	3.0	—	0.1	1.25	0.35	—	—	1.0
Haynes 263	—	25	51.4	20.0	20.0	—	6.0	0.06	—	—	1.0	1.5	—
Haynes 600	—	—	75.9	16.0	—	8.0	—	0.08	—	—	—	—	—
Haynes 625	—	—	61.4	21.0	—	5.0	9.0	0.1	—	—	—	—	3.5
Haynes 718	—	43	53.5	18.0	—	19.0	3.0	0.08	—	—	0.5	0.9	5.0
Haynes X-750	—	37	74.9	16.0	—	7.0	—	0.08	—	—	0.8	0.25	1.0
IN-100*	—	—	61.6	10.0	15.0	—	3.0	0.18	1.2	0.5	5.5	4.75	—
Incoloy A-286	—	—	25.5	15.0	—	56.5	—	—	—	—	—	2.10	—
Incoloy 800	—	—	35.0	23.0	—	39.5	—	0.10	—	—	0.6	0.60	1.8
Incoloy 804*	—	—	41.0	29.5	—	26.0	—	0.1	1.0	0.75	0.25	0.6	0.5
Incoloy 825*	180	—	42.0	21.0	—	30.0	3.0	0.04	—	—	—	1.0	2.0
Incoloy 901*	180	300	44.3	12.5	—	34.0	6.0	0.05	0.24	0.12	0.15	2.7	0.15
Incoloy 903*	—	380	39.0	—	15.0	41.0	—	0.02	—	—	0.7	1.4	3.0
Incoloy 909	—	—	38.0	—	13.0	42.0	1.25	—	—	0.4	0.0	1.5	4.7
Incoloy MA956	—	—	—	20.0	—	74.0	—	—	—	—	4.5	0.5	0.5
Inconel 600*	170	—	75.0	15.5	—	8.0	—	0.05	—	—	—	—	—
Inconel 601*	150	—	60.0	23.0	—	14.0	—	0.05	—	—	1.4	—	—
Inconel 604*	180	—	74.4	15.8	—	7.2	—	0.04	0.2	0.2	—	—	0.1
Inconel 617	—	—	52.0	22.0	12.5	1.5	9.5	—	—	—	1.2	—	—
Inconel 625*	180	—	61.0	21.5	—	2.5	9.0	0.04	0.5	0.5	0.4	0.4	3.6
Inconel 625CLF	—	—	61.0	21.5	—	2.5	9.0	—	—	—	—	—	3.6
Inconel 700*	—	350	46.0	15.0	23.5	0.7	3.75	0.12	0.1	0.3	3.0	2.2	—
Inconel 702*	—	—	79.6	15.6	—	0.35	—	0.04	0.05	0.2	3.0	0.7	—
Inconel 706*	—	—	42.0	16.0	—	40.0	—	0.03	0.2	0.3	0.4	1.75	—
Inconel 713*	—	—	75.0	12.5	—	—	4.2	0.12	—	—	6.1	0.8	—
Inconel 718*	180	380	52.5	19.0	—	19.0	3.0	0.04	0.35	0.35	0.9	0.9	0.1
Inconel 718SPF	—	—	54.0	18.0	—	18.5	3.0	—	—	—	1.0	5.0	—
Inconel 722*	—	380	74.8	15.0	—	6.5	—	0.04	0.55	0.2	0.6	2.4	—
Inconel 751*	—	—	70.0	15.5	—	7.0	—	0.1	1.0	0.5	1.5	2.6	0.5
Inconel 781	—	—	70.0	16.0	—	8.0	—	0.07	2.25	0.15	0.1	3.0	0.2
Inconel 783	—	—	30.0	3.5	26.5	27.0	—	0.03	0.05	—	6.0	0.4	—
Inconel HX	—	—	47.0	22.0	1.5	18.0	9.0	—	—	—	—	—	0.6
Inconel MA754	—	—	77.5	20.0	—	1.0	—	—	—	—	0.3	0.5	0.6
Inconel X-750*	—	390	73.0	15.5	—	7.0	—	0.04	0.35	0.35	0.7	2.5	—
Invar 36	—	—	36.0	0.25	0.5	62.0	—	0.15	0.60	0.40	—	—	1.00
Invar 42	—	—	41.0	—	—	56.0	—	0.50	0.40	—	—	—	1.00
Jessop G39*	130	—	67.5	19.5	—	5.0	3.0	0.5	—	—	—	—	4.5
Jessop G64*	220	—	60.7	11.0	—	2.0	3.0	0.15	—	—	6.0	—	4.0
Jessop G81*	—	300	79.3	20.0	13.0	—	—	0.05	—	—	1.3	2.3	—
Jethete M-152	—	—	2.5	16.8	—	—	1.8	0.12	0.7	0.18	—	—	0.6
Jethete M-252*	—	320	55.3	20.0	10.0	—	10.0	0.15	0.5	0.5	1.0	2.6	—
MAR-M 200*	—	—	69.4	9.0	10.0	—	—	0.15	—	—	5.0	2.0	13.5
MAR-M 246*	—	270	59.5	9.0	10.0	0.2	2.5	0.15	—	—	5.5	1.5	11.5
MAR-M 421*	—	—	62.3	15.5	10.0	—	1.7	0.15	—	—	4.3	1.75	5.3
MAR-M 432*	—	—	52.3	15.5	20.0	—	—	0.15	—	—	2.8	4.3	5.0
Monel 400*	110	—	65.0	—	—	1.5	—	0.12	1.0	—	—	—	32.0
Monel 405	—	—	63.0	—	—	2.5	—	0.30	2.0	0.5	—	—	34.0
Monel K-500*	120	290	64.0	—	—	1.0	—	0.13	0.8	—	2.8	0.6	30.0

* These alloys can be hardened by an aging process

USA		UK	France	Germany		Others
SAE	AMS	BS	AFNOR	Werkst.-Nr	DIN1706	
—	—	—	—	—	—	—
—	—	—	—	—	—	AISI:686
5396A	5396	—	ND37FeV	2.48	NiCr16MoAl S-NiMo30	N10001
5388C	5388	—	—	2.4602	NiCr17Mo17FeW	N10002
—	—	—	—	—	—	—
5771	5607	—	—	—	—	N10003
—	5786	—	—	—	—	N10004
5390A	5390	—	NC22FeD	2.4603	—	N06002
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	5872	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	5596/5597	—	—	—	—	—
—	5542/5593	—	NC15TNbA	—	—	—
—	5397	—	—	LW2.4674	NiCo15Cr10MoAlTi	N13100
—	—	—	—	—	—	—
—	—	3072-76	NC21FeDU	2.4858	NiCr21Mo	N08825
—	5660	—	ZSNCDT42	LW2.4662	NiFe35Cr14MoTi	N09901
—	—	—	—	—	—	—
5540	5580	3072-76	NC15Fe	2.4816	NiCr15Fe	N06600
—	5715	—	—	2.4851	NiCr23Fe	N06601
—	—	—	—	—	—	—
—	5887-89	—	—	—	—	—
—	5666	—	NC22FeDNB	2.4856	NiCr22Mo9Nb	N06625
—	5879	—	—	—	—	—
—	—	—	NK27CADT	—	NiCo29Cr15MoAlTi	—
—	5550	—	—	—	—	N07702
—	5702	—	—	—	—	N09707
—	5391	3146-3	NC12AD	LW2.4670	S-NiCr13Al6MoNb	—
5383	5589	HR8	NC19FeNB	LW24668	NiCr19Fe19NbMo	N07713
—	5596G	—	—	—	—	—
—	5541	—	NC16FeTi	—	NiCr16FeTi	N07722
—	—	—	—	—	—	N07751
—	—	—	—	—	—	—
—	5536	—	—	—	—	—
5542G	5582	—	NC16FeTNb	2.4669	NiCr16FeTi	N07750
—	—	—	—	—	—	—
—	—	—	—	—	NiCr20MoW	—
—	—	—	—	—	NiCr11AlWNb	—
—	—	—	—	—	NiCr20Co18Ti	—
—	5551	—	—	2.4916	S-NiCr19Co	N07252
—	—	—	—	—	NiW13Co10Cr9AlTi	—
—	—	—	—	2.4675	NiCo10W10Cr9AlTi	—
—	—	—	—	—	NiCr16Co10WAlTi	—
—	—	—	—	—	NiCo20Cr16WAlTi	—
4544	4574	3072-76	NU30	2.436	NiCu30Fe	N04400
4676	—	3072-76	—	2.4375	NiCu30Al	N05500

Ni-based Heat Resistant Alloys

Material Specifications Cross-Reference List-Aerospace Material Designation

Commercial designation	Hardness Brinell HB		Nominal composition Approximate content in %										
	Ann.	Aged	Ni	Cr	Co	Fe	Mo	C	Mn	Si	Al	Ti	Others
Monel R-405*	110	—	66.0	—	—	1.2	—	0.15	1.0	—	—	—	31.06
Multimet N155			21.0	22.5	21		3.5	0.16	2.0	1.0			4.50
Nickel 200			99.0			0.4		0.15	0.35	0.35			0.26
Nickel 201			99.0			0.4		0.02	0.35	0.35			0.26
Nimocast 80*	—	—	69.9	20.0	2.0	5.0	—	0.1	—	—	1.0	2.0	—
Nimocast 90*	—	—	52.9	20.0	18.0	5.0	—	0.1	—	—	1.5	2.5	—
Nimocast 713	—	—	72.6	13.4	—	—	4.5	0.12	—	—	6.2	1.0	2.3
Nimocast 842	—	—	57.7	22.0	10.0	—	10.0	0.3	—	—	—	—	—
Nimocast PD16	—	—	43.8	16.5	—	34.0	3.3	0.06	—	—	1.2	1.2	—
Nimocast PE10	—	—	56.4	20.0	—	—	6.0	—	—	—	—	—	9.0
Nimocast PK24	—	—	61.1	9.5	15.0	—	3.0	0.17	—	—	5.5	4.7	1.0
Nimonic 75*	170	—	75.0	19.5	—	4.0	—	0.12	—	—	—	0.4	—
Nimonic 80A*	—	350	75.0	19.5	—	—	—	0.08	—	—	1.4	2.4	—
Nimonic 86			65.0	25.0			10.0						
Nimonic 90*	—	346	59.0	19.5	16.5	—	—	0.08	—	—	1.5	2.5	—
Nimonic 95	—	—	49.9	19.5	—	5.0	—	0.11	—	1.0	2.0	3.5	—
Nimonic 101			48.0	24.2	19.7		1.5				1.4	3.0	
Nimonic 105*	—	320	53.0	15.0	20.0	—	5.0	0.12	—	—	4.7	1.2	—
Nimonic 115*	—	350	59.0	14.2	13.2	—	4.0	0.16	—	—	5.0	4.0	—
Nimonic 242	—	—	58.0	21.5	10.0	—	10.5	—	—	—	—	—	—
Nimonic 263/C263*	—	275	51.5	20.2	20.0	—	6.0	0.06	—	—	0.5	2.0	—
Nimonic 901*	—	350	44.0	12.5	—	35.0	5.7	0.04	—	—	0.3	2.9	—
Nimonic PE11			39.0	18.0		34.0	5.2				0.8	2.3	
Nimonic PE13	—	—	49.0	21.8	1.5	18.5	9.0	0.1	0.5	0.5	—	—	0.6
Nimonic PE16*	—	250	43.5	16.5	—	34.0	3.3	0.06	—	—	1.2	1.2	—
Nimonic PK25	—	—	49.9	19.0	19.5	—	4.0	0.08	0.8	0.8	2.9	2.9	—
Nimonic PK31	—	—	53.8	20.0	14.0	—	4.5	—	—	—	0.4	2.3	5.0
Nimonic PK33*	—	350	55.9	18.0	14.0	0.5	7.0	0.05	0.25	0.25	2.1	2.2	—
R-235*	—	—	63.3	15.0	1.2	10.0	5.5	0.12	0.1	0.3	2.0	2.5	—
Refractaloy 26	—	—	38.0	19.0	20.0	16.0	3.2	0.03	0.8	1.0	0.2	2.75	—
Rene 41	—	—	53.1	19.0	11.0	1.8	10.0	0.09	0.3	0.3	1.5	3.1	—
Rene 63	—	—	54.4	14.0	15.0	0.5	6.0	0.05	0.1	0.2	3.8	2.5	3.5
Rene 77	—	—	57.6	15.0	15.0	0.4	4.2	0.17	0.1	0.1	4.3	3.3	—
Rene 80	—	—	61.0	14.0	9.5	—	4.0	0.15	—	—	—	4.0	8.0
Rene 95	—	—	64.5	14.0	8.0	—	3.5	0.15	—	—	—	2.5	3.5
Rene 100	—	—	60.6	10.0	15.0	—	3.0	0.18	—	—	5.5	4.7	—
Rene 125	—	—	60.0	8.9	10.0	—	2.0	0.1	—	—	4.7	2.5	7.0
TRW 1800	—	—	70.0	13.0	—	—	—	0.1	—	—	6.0	0.06	10.5
TRW V1 A	—	—	70.5	6.0	7.5	—	2.0	0.13	—	—	5.4	1.0	6.3
Udimar 250			18.0		8.0	68.0	5.0				0.1	0.4	
Udimar 300			18.5		9.0	66.0	5.0				0.1	0.7	
Udimet 500*	—	—	51.7	19.0	19.0	—	4.0	0.1	0.1	0.1	3.0	3.0	—
Udimet 520			56.0	19.0	12.0		6.0				2.0	3.0	1.0
Udimet 630	—	—	51.0	17.0	—	17.5	3.0	0.04	—	—	0.6	1.1	4.1
Udimet 700	—	—	54.6	15.0	17.5	—	—	0.1	—	—	4.4	3.4	—
Udimet 710	—	—	55.0	18.0	15.0	0.5	1.5	0.07	—	—	2.5	5.0	1.5
Udimet 718*	180	380	52.5	18.0	—	18.0	3.0	0.05	—	—	0.6	0.1	5.2
Udimet 720			56.0	16.0	14.7		3.0				2.5	5.0	1.3
Udimet alloy D-979			45.0	15.0		27.0	4.0				1.0	3.0	4.0
Udimet L-605			10.0	20.5	50.0	3.0			1.5				15.0
Udimet alloy R41			55.0	19.0	11.0		10.0				1.5	3.1	
Waspaloy*	—	HRC35-42	56.9	19.8	13.5	0.8	4.45	0.07	0.1	0.1	1.4	3.0	—

* These alloys can be hardened by an aging process

USA		UK	France	Germany		Others
SAE	AMS	BS	AFNOR	Werkst.-Nr	DIN1706	
4674	7234	—	—	—	—	N04405
—	—	3146	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
5391A	—	HC203	NC13AD	2.467	S-NiCr13Al6MoNb	—
—	5397	HC204	NK15CAT	LW2.4674	—	—
—	—	—	—	—	NiFe33Cr17Mo	—
—	—	3146	—	—	—	—
—	—	HR5,203-4	NC20T	2.463	NiCr20Ti	—
—	—	Hr401,601	NC20TA	2.4631	NiCr20TiAk	N07080
—	—	Hr2,202	Nc20ATV	2.4632	NiCr20Co18Ti	N07090
—	—	—	—	—	—	—
—	—	HR3	NCKD20ATV	2.4634	NiCo20C15MoAlTi	—
—	—	HR4	NCK15ATD	2.4636	NiCo15Cr15MoAlTi	—
—	—	—	—	—	—	—
—	—	HR10	NCK20D	2.465	NiCr15Co19MoTi	—
5660C	5661A	—	ZSNCDT42	2.4662	NiCr15MoTi	—
5536E	5754E	HR6,204	NC22FeD	2.4665	NiCr22Fe18Mo	—
—	—	HR207	NW11AC	—	NiFe33Cr17Mo	—
5751A	5753	—	NKOD20ATU	2.4666	NiCr18CoMo	—
—	—	—	—	—	—	—
—	—	—	NC19KDUV	—	NiCr20Co16MoTi	—
—	—	—	—	—	—	—
—	—	—	Z6NKCDT38	—	—	—
—	5399	—	NC19KDT	2.4973	NiCr19Co11MoTi	N07041
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	NC14K8	—	—	—
—	—	—	—	—	NiCo15Cr10MoAlTi	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	NiTa9Co8W6CrAl	—
—	6512	—	—	—	—	—
—	5751	—	NCK19DAT	2.4983	NiCr18Co18MoTi	N07500
—	—	—	—	2.4668	NiCr19NbMo	—
—	—	—	NCKD20AT	2.4636	NiCo15CrMoAlTi	—
—	—	—	NC18TDA	—	—	—
5383	5589	HR8	NC19FeN	LW2.4668	NiCr19Fe19NbMo	N07718
—	—	—	—	—	—	—
—	5759	—	—	—	—	—
—	5544	—	NC20K14	LW2.4668	NiCr19Fe19NbMo	N07001

Co-based Heat Resistant Alloys

Material Specifications Cross-Reference List-Aerospace Material Designation

Commercial designation	Hardness Brinell HB		Nominal composition Approximate content in %										
	Ann.	Aged	Ni	Cr	Co	Fe	Mo	W	Mn	Si	Al	Ti	Others
Air Resist 13	—	—	1.0	—	79.6	2.5	—	11.0	—	—	3.5	—	4.12
Air Resist 213	—	—	—	19.0	65.8	—	—	4.7	—	—	3.5	—	6.68
Altemp S 816	—	—	20.0	20.0	47.6	—	4.0	4.0	—	—	—	—	0.4
FSX 414	—	—	10.0	29.0	52.8	1.0	—	7.0	—	—	—	—	0.25
Haynes 25*	—	—	10.0	20.0	49.0	3.0	—	15.0	1.5	0.5	—	—	0.1
Haynes 36	—	—	10.0	18.5	52.8	2.0	—	14.5	1.2	0.6	—	—	0.4
Haynes 151	—	—	—	20.0	65.6	—	—	12.8	0.5	0.5	—	0.15	0.47
Haynes 188*	—	—	22.0	22.0	38.0	2.5	—	14.0	1.0	0.4	—	—	0.1
HS 6*	—	—	2.5	28.0	60.5	3.0	—	5.0	—	—	—	—	1.0
HS 21*	—	—	3.0	27.0	62.6	2.0	5.0	—	0.6	0.6	—	—	0.25
HS 25	—	—	10.0	20.0	48.4	3.0	—	15.0	1.5	2.0	—	—	0.1
HS 30	—	—	16.0	24.0	51.4	1.0	6.0	—	0.6	0.6	—	—	0.4
HS 31	—	—	10.0	25.0	53.8	1.5	—	8.0	0.6	0.8	—	—	0.4
HS 36	—	—	10.0	18.0	53.1	2.0	—	15.0	1.5	—	—	—	0.4
Inconel 783	—	—	28.5	3.0	34.0	26.0	—	—	—	—	5.4	0.1	3.0
J 1570*	—	—	28.0	19.0	39.0	2.0	—	7.0	—	—	—	—	—
J 1650	—	—	27.0	19.0	38.0	—	—	12.0	—	—	—	—	0.2
Jessop 832	—	—	12.0	19.0	44.0	17.0	2.0	—	0.8	0.3	—	—	3.5
Jessop 834	—	—	12.0	19.0	42.0	20.0	2.0	—	—	—	—	—	6.5
Jessop 865	—	—	10.5	25.5	53.0	2.0	—	7.5	0.6	0.6	—	—	0.45
Jessop 875	—	—	—	21.0	66.0	—	—	11.0	—	—	—	—	2.45
Jessop 887	—	—	10.0	20.0	50.0	3.0	—	15.0	0.5	1.5	—	—	0.1
Jessop X-40	—	—	10.5	25.5	53.0	1.5	—	7.5	0.75	0.75	—	—	0.5
Jessop X-45	—	—	10.5	25.5	54.7	2.0	—	7.0	—	—	—	—	0.25
Jessop X-50	—	—	20.5	25.5	40.3	4.0	—	12.0	—	—	—	—	0.75
Jessop X-63	—	—	10.0	25.0	57.6	1.0	6.0	—	—	—	—	—	0.45
Jetalloy 209	—	—	10.0	20.0	52.0	1.0	—	15.0	—	—	—	2.0	0.02
L-251	—	—	10.0	19.0	56.0	1.0	—	14.0	—	—	—	—	0.4
L-605	—	—	10.0	20.0	51.0	1.6	—	15.0	1.5	0.6	—	—	0.1
M 203	—	—	25.0	20.0	38.0	1.6	—	12.0	0.8	1.0	0.7	2.0	1.67
M 204	—	—	25.0	18.0	42.0	1.6	—	12.0	—	—	—	—	1.27
M 205	—	—	25.0	18.0	40.0	1.6	—	12.0	—	—	2.7	—	1.67
ME16	—	—	—	15.0	23.0	2.0	5	—	—	—	5.0	—	22.25
MP35N	—	—	37.0	21.0	29.2	1.0	10.5	—	0.15	0.15	—	1.0	0.04
MAR-M 302	—	—	—	21.5	57.0	0.75	—	10.0	0.1	0.2	—	—	10.0
MAR-M 322	—	—	—	21.5	60.0	0.75	—	9.0	0.1	0.1	—	0.75	7.7
MAR-M 509	—	—	10.0	23.0	55.0	—	—	7.0	0.05	0.05	—	0.2	4.6
MAR-M 905	—	—	20.0	20.0	55.0	—	—	—	—	—	—	0.5	7.65
MAR-M 918	—	—	20.0	20.0	52.0	0.4	—	—	0.1	0.1	—	0.5	7.65
NF3	—	—	—	14.3	22.4	—	3.9	—	—	—	4.8	4.6	17.90
Refractaloy 70	—	—	20.0	21.0	46.0	0.5	8.0	4.0	—	—	—	—	0.08
STELLITE 6	—	—	—	26.0	72.0	—	—	5.0	—	—	—	—	—
UDIMET 188	—	—	22.0	22.0	38.0	3.0	—	14.0	1.25	—	—	—	—
V-36	—	—	20.0	25.0	43.2	2.4	4.0	2.0	0.6	0.5	—	—	2.29
WL-52	—	—	0.5	21.0	62.6	2.0	—	11.0	0.25	0.25	—	—	2.45

* These alloys can be hardened by an aging process

USA		UK	France	Germany		Others
SAE	AMS	BS	AFNOR	Werkst.-Nr	DIN1706	
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	(5534)	—	—	LW2.4989	CoCr20Ni20W	—
—	—	—	—	—	—	—
5537C	5759	—	KC20WN	LW2.4964	CoCr20W15Ni	—
—	—	—	—	—	CoCr19W14NiB	—
—	—	—	—	—	CoCr20W13	—
—	5772	—	KC22WN	—	CoCr22W14Ni	—
—	5373	—	—	—	—	R30006
—	5385	3531	—	—	CoCr29Mo	R30021
—	5759	—	KC20WN	LW2.4964	CoCr20W15Ni	—
5380	—	—	—	—	CoCr25NiW	R30030
5382	—	3146	—	LW2.4670	CoCr25NiW	R30031
—	—	—	—	—	CoCr19W14NiB	—
—	5940	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	CoCr19Fe16NiMoVNb	—
—	—	—	—	—	CoCr19Fe20NiMoVNb	—
—	—	—	—	—	CoCr25NiW	—
—	—	—	—	—	CoCr21W11Nb	—
—	—	—	—	—	CoCr20W15Ni	—
—	5382	3156-2	—	LW2.4670	CoCr25NiW	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	5759	—	—	2.4964	CoCr20W15Ni	R30605
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	5844	—	—	—	—	—
—	—	—	—	—	CoCrW10TaZrB	—
—	—	—	—	—	CoCr22W9TaZrNb	—
—	—	3146-3	—	—	CoCr24Ni10WTaZrB	—
—	—	—	—	—	—	—
—	—	—	—	—	CoCr20Ni20Ta	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	CoCr25NiMoWNb	—
—	—	—	—	—	CoCr12MoW	—

Swiss Machine List

Citizen/Cincom

Machine Model	Gang Station					Turret Station						Sleeve Station		Hand	Max cutting dia mm
	Inch		Metric		Number of tools	Inch		Metric		Number of tools		Inch	Metric		
	h×b	L	h×b	L		h×b	L	h×b	L	Turret	Station	"	mm		
A12	□3/8	4.75	□10	100	5			—	—	—	—	φ3/4	φ20	R	φ12
A16	□3/8	4.75	□10	100	5			—	—	—	—	φ3/4	φ20	R	φ16
A20	□1/2	4	□12(□13)	120	5-7			—	—	—	—	φ1		R	φ20
A25	□1/2	4	□12(□13)	120	5/6			—	—	—	—	φ1		R	φ25
A32	□5/8	4.75	□16	150	6			—	—	—	—	φ1		R	φ32
B12, B12E	□3/8	4.75	□10	100	5			—	—	—	—	φ3/4	φ20	R	φ12
B16E	□3/8	4.75	□10	10	5			—	—	—	—	φ3/4	φ20	R	φ16
B20	□1/2	4.75	□12(□13)	120	6			—	—	—	—	φ3/4	φ20	R	φ20
BL12	□3/8	4.75	□10	60-120	5			—	—	—	—	φ3/4	φ20	R	φ12
BL20			□12(□13)	120	7			—	—	—	—	φ3/4	φ20	R	φ20
BL25			□12(□13)	120	7			—	—	—	—	φ3/4	φ20	R	φ25
C12	□3/8	4.75	□10	120	6			—	—	—	—	φ3/4		R	φ12
C16	□3/8	4.75	□10	120	6			—	—	—	—	φ3/4		R	φ16
C32	□5/8	4.75	□16	130	5			—	—	—	—	φ1		R	φ32
D25 VIII	□5/8		□16	—	10							φ1		R	φ25
E32			—	—	—			□16(19×13)	90	2	10/Turret	φ1		R	φ32
F10			—	—	—			□10	60	1	10	φ3/4		R	φ10
F12			—	—	—			□10	60	1	10	φ3/4		R	φ12
F16			—	—	—			□10	60	1	10	φ3/4		R	φ16
F20			—	—	—			□16(19×13)	90	1	10	φ1		R	φ20
F25			—	—	—			□16(19×13)	90	1	10	φ1		R	φ25
FL25			—	—	—			□16	90	1	12		φ16	R	φ25
FL42			—	—	—			□16	90	1	12		φ16	R	φ42
G10			—	—	—			□10	60	1	8	—	—	R	φ10
G16			—	—	—			□10	60	1	8	—	—	R	φ16
G32			—	—	—			□16(19×13)	90	1	10	—	—	R	φ32
K12, K12E	□3/8		□10	100	7			—	—	—	—		φ20	R	φ12
K16, K16E	□3/8		□12	100	6			—	—	—	—		φ20	R	φ16
L10			□8	100-130	5			—	—	—	—	φ5/8		R	φ10
L12	□3/8	4	□10	100	6			—	—	—	—	φ3/4	φ20	R	φ12
L16, L16E			□12(□10)	130	7			—	—	—	—	φ3/4		R	φ16
L20, L20E, L20X	□1/2	4.75	□12	130	7			—	—	—	—	φ3/4		R	φ20
L25	□5/8	4.75	□16	130	5			—	—	—	—	φ1		R	φ25
L32	□5/8	4.75	□16	130	5			—	—	—	—	φ1		R	φ32
M ₂ 12, M ₃ 12	□3/8		□10	120	5			□10	60	1	10	φ3/4		R	φ12
M ₂ 16, M ₃ 16, M ₄ 16	□3/8		□10	120	5			□10	60	1	10	φ3/4		R	φ16
M ₂ 20, M ₃ 20	□5/8	4.75	□12	130	5	□3/4		□16	90	1	10	φ1		R	φ20
M ₂ 32, M ₃ 32, M ₄ 32	□5/8	4.75	□16	130	5	□3/4		□16	90	1	10	φ1		R	φ32
M20	□1/2	4	□13(□12)	150	5	□1/2		□10	60	1	10	φ3/4		R	φ20
MSL12			□10	120	—			—	—	—	—	—	—	R	φ12
R04			□8	120	7			—	—	—	—	φ5/8		R	φ4
R07			□8	120	5			—	—	—	—	φ5/8		R	φ7
RL02			□16	60-150	Max 6			—	—	—	—		φ16/φ20	L	φ20
RL21			□10(□12)	90	—			—	—	—	—	φ3/4		R	φ20

STAR

Machine Model	Gang Station					Turret Station						Sleeve Station		Hand	DS-Sleeve item number	Max cutting dia
	Inch		Metric		Number of tools	Inch		Metric		Number of tools		Inch	Metric			
	h×b	L	h×b	L		h×b	L	h×b	L	Turret	Station	"	mm			mm
ECAS-12			□10	95-150	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ13
ECAS-20			□12(16)	80-144	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
ECAS-20T								□12(16)	80	3	8/Turret		φ22	R	SS-DSU-B8D34	φ20
ECAS-32T			□16	80-120	4			□16	60-78	2	10/Turret		φ22/32	R	SS-DSU-SK	φ32
JNC-10								□8	65	1	6		-	L	—	φ10
JNC-16								□10	80	1	6		-	L	—	φ16
JNC-25/32								□16	78-120	1	10		φ22	R	—	φ25/φ32
KJR-16B/25B								□16	78	1	12/16		φ22	R	—	φ16/φ25
KNC-16/20								□16	68	1	16		φ22	R	—	φ16/φ20
KNC-25II/32II								□16	78	1	20		φ22/32	R	—	φ25/φ32
RNC-10/16			□10	80-120	5								φ22	R	—	φ10/φ16
RNC-16II/16BII			□10	80-120	5								φ22	R	—	φ16
SA-16R			□10	95-120	6								φ22	R	—	φ16
SB-12II/12R/16II	□1/2 (3/8)		□12(10)	95-130	6(7)								φ22	R	SS-DSU-L23 SS-DSU-SK	φ12/φ13/φ16
SB-16/16R	□1/2 (3/8)		□12(10)	95-130	6(7)								φ22	R	SS-DSU-L23 SS-DSU-SK	φ16
SB-20/20R	□1/2 (3/8)		□12(10)	95-130	6(7)								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
SC-20			□12	95-130	6								φ22	R	—	φ20
SE-12/12B, 16/16B			□10	95-120	5								φ22	R	—	φ13/φ16
SF-25								□16	73-98	1	10		φ22/32	R	—	φ25
SG-42								□16(20)	84-88	1	10		φ22/32	R	—	φ42
SH-12/16			□10	95-120	5								φ22	R	—	φ13/φ16
SH-7			□8	95-120	5								φ22	R	—	φ7
SI-12/12C			□10	80-130	6								φ22	R	—	φ13
SR-10J	□5/16		□8	67-110	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ10
SR-16/20			□12	95-120	5								φ22	R	—	φ16/φ20
SR-20J	□1/2		□12	100-135	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
SR-20R/20RII/20RIII			□12	100-135	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
SR-20RIV	□1/2		□12	100-130	7								φ22	R	SS-DSU-B8L23	φ20
SR-25J/32J	□5/8		□16	95-155	6								φ22/32	R	SS-DSU-L23 SS-DSU-SK	φ25/φ32
SR-32, SR-32J, SR-38			□16	100-135	6								φ22	R	—	φ32
SR32JII	□5/8		□16		6								φ22	R	SS-DSU-B8L23 SS-DSU-B8D34	φ32
SST-16			□12	95-115	5								φ22	R	—	φ16
ST-20								□12(16)	70-78	3	8/Turret		φ22	R	—	φ20
ST-38								□16(20)	85	3	10/Turret		φ22/32	R	—	φ38
SV-12/20			□12	95-135	4			□12	70-78	1	8		φ22	R	—	φ13/φ20
	□1/2		□12/□16	95-135	5			□16	65-70	1	8			R	—	
SV-32			□16	95-135	4			□16	80-88	1	10		φ22/32	R	—	φ32
SV-32J/32JII			□16	95-135	4			□16	65-70	1	8		φ22/32	R	—	φ32
SV-38R			□16+□20 (Cut off)	95-135	5			□16(20)	84-88	1	10		φ22/32	R	SS-DSU-B8D34	φ38
SW-12RII			□10	80-115	6								φ16	R	SS-DSU-B8L23	φ13
SW-20	□1/2 (5/8)		□12(16)	80-144	6								φ22	R	SS-DSU-B8L23	φ20
SW-7			□8	80-120	4								—	R	—	φ7

Machine Model	Gang Station					Turret Station						Sleeve Station		Hand	Max cutting dia
	Inch		Metric		Number of tools	Inch		Metric		Number of tools		Inch	Metric		
	h×b	L	h×b	L		h×b	L	h x b	L	Turret	Station	"	mm		mm
P013H/P014H			□8	100-120	6			—	—	—	—		φ16	R	φ1
P033H/P034H			□8	100-120	6			—	—	—	—		φ16	R	φ3
B007-III	—	—	□7(□8/□10)	85	8			—	—	—	—		φ25	R	φ7
B073-II	—	—	□8	85	9								φ20	R	φ7
B074/B07-V	—	—	□8	85	9			—	—	—	—		φ20	R	φ7
B074-II	—	—	□8	85	6			—	—	—	—		φ20	R	φ7
B0123/B0124/B0125/B0126	—	—	□12	85	9			—	—	—	—		φ20	R	φ12
B012F/B012-V/BE12-V	—	—	□12	85	9			—	—	—	—		φ20	R	φ12
B0123-II/B0124-II/B0125-II/B0126-II	—	—	□12	85	9			—	—	—	—		φ20	R	φ12
B016MF	—	—	□12	85	9			—	—	—	—		φ20	R	φ16
B018-III	—	—	□12	85	9			—	—	—	—		φ20	R	φ18
B0203/B0204/B0205/B025-II/B0205-III/B0206-II	—	—	□12	85	9			—	—	—	—		φ20	R	φ20
B0203-II/B0204-II/B0206-II	—	—	□12	85	9			—	—	—	—		φ20	R	φ20
B020F/B020-V/BE20-V	—	—	□12	85	9			—	—	—	—		φ20	R	φ20
B026-V	—	—	□12(□16)	85	6			—	—	—	—		φ25	R	φ26
B0265-II/B0266-II	—	—	□16	100	12								φ25	R	φ26
B0325-II/B0326-II	—	—	□16	100	12								φ25	R	φ32
B0385/B0385L	—	—	□16	125	8			—	—	—	—		φ32	R	φ38
B038T	—	—	□16	125	3			□20	125	1	8		φ25/φ32	R	φ38
BA20-III			□12	85	6			—	—	—	—		φ25	R	φ20
BA26-III			□12(□16)	85	6			—	—	—	—		φ25	R	φ26
BC18	□1/2		□12	85	10			—	—	—	—		φ25	R	φ18
BC25	□1/2		□12	85	10			—	—	—	—		φ10/φ25	R	φ25
BE18	□1/2		□12	85	9			—	—	—	—		φ20	R	φ18
BH20/BH20Z	□1/2		□12	85	4			□12	85	1	12		φ25/φ32	R	φ20
BH38	□5/8		□16	125	7			□20	125	1	12		φ25/φ32	R	φ38
BM07			□8	85	9			—	—	—	—		φ20	R	φ7
BM163/BM164/BM165	□1/2		□12	85	9			—	—	—	—		φ20	R	φ16
BM20-V	□1/2		□12	85	9			—	—	—	—		φ20	R	φ20
BN12-III			□12	85	7			—	—	—	—		φ20	R	φ12
BN20-III			□12(□16)	85	7			—	—	—	—		φ20	R	φ20
BS12-V	□1/2		□12	85	8(12)			—	—	—	—		φ20/φ25	R	φ12
BS18-III	□1/2		□12	85	7(10)			—	—	—	—		φ14/φ25	R	φ18
BS20-V	□1/2		□12	85	8(12)			—	—	—	—		φ20/φ25	R	φ20
BS26(ABC)-V	□5/8		□16	100	7(10)			—	—	—	—		φ16/φ25	R	φ26
BS32C-V	□5/8		□16	100	6			—	—	—	—		φ16/φ25	R	φ32
BU12			□12	85	4			□12	80	1	8		φ20	R	φ51
BU20			□12	85	4			□12	80	1	8		φ20	R	φ20
BU26			□16	100	7			□20	80	1	8		φ20/φ32	R	φ26
BU38	□1/2		□16	100	7			□20	80	1	8		φ20/φ32	R	φ38
BW07-III	□1/2		□12	85	7			—	—	—	—		φ20	R	φ7
BW12-III/BW129Z	□1/2		□12	85	7			—	—	—	—		φ20	R	φ12
BW20-III/BW209Z	□1/2		□12(□16)	85	7			—	—	—	—		φ20	R	φ20
C004-III			□13	60-100	6-8			—	—	—	—		-φ10	R/L	φ120
C150	—	—	□10	60-100	4-6			—	—	—	—		-φ8	R/L	φ80
C180	—	—	□12	60-100	4-6			—	—	—	—		-φ10	R/L	φ120
C220	—	—	□13	60-100	6-8			—	—	—	—		-φ10	R/L	φ120
C300-III	—	—	□16	100-130	6-10			—	—	—	—		-φ14	R/L	φ170
CH154			□12	60-100	-16			—	—	—	—		-φ10	R/L	φ15
M34J			—	—	—			□20	125	1	12		φ20/φ32	R	φ34

Machine Model	Gang Station					Turret Station						Sleeve Station		Hand	Max cutting dia
	Inch		Metric		Number of tools	Inch		Metric		Number of tools		Inch	Metric		mm
	h×b	L	h×b	L		h×b	L	h x b	L	Turret	Station	"			
M42J/M42D/M42SD			—	—	—			□20	125	1	12		φ 25/ φ 32	R	φ 42
M50SY-III			—	—	—			□20	100	1	12		φ 32	R	φ 51
M50J			—	—	—			□20	100	1	12		φ 20/ φ 32	R	φ 51
MB25			—	—	—			□20	80	2	8/Turret		φ 20/ φ 32	R	φ 25
MB35-III			—	—	—			□20	80	2	8/Turret		φ 20/ φ 32	R	φ 35
MB38-III			—	—	—			□20	80	2	8/Turret		φ 20/ φ 32	R*	φ 38
MB50-III			—	—	—			□20	80	2	8/Turret		φ 20/ φ 32	R	φ 50
MU26			—	—	—			□20	80	2	8/Turret		φ 20/ φ 32	R	φ 26
MU38			—	—	—			□20	80	2	8/Turret		φ 20/ φ 32	R	φ 38
NU50-III			—	—	—			□20	100	1	12		φ 20/ φ 32	R	φ 51
B020M-II/SS20M/SS20M-5AX			□10*	46	—			BT15 spindle			24		φ 20	R	φ 20
S205/S206	□1/2		□12(□16)	100	8			—	—	—	—		φ 20/ φ 22	R	φ 20
SS20	□1/2		□16	100	8			—	—	—	—		φ 20/ φ 22	R	φ 20
SS207/SS207-5AX	□1/2		□12(□16)	100	8			—	—	—	—		φ 20/ φ 22	R	φ 20
SS26	□5/8		□16	100	7			—	—	—	—		φ 20/ φ 22	R	φ 26
SS267/SS267-5AX	□5/8		□16	100	8								φ 25	R	φ 26
SS32/SS32L	□5/8		□16	100	7			—	—	—	—		φ 20/ φ 22	R	φ 32
SS327/SS327-5AX	□5/8		□16	100	8								φ 25	R	φ 32
TMB2			—	—	—			□20	125	1	16		φ 32	R	φ 51
TMU1			—	—	—			□20	125	1	16		φ 32	R	φ 38
TMA8-IV/TMA8J			□20*	100				KM40 spindle			30			R	φ 220
M06J								□25	150	1	8		φ 32/ φ 40	R	φ 260
M06SY								□25	150	1	12		φ 32/ φ 40	R	φ 260
M06JC								□20	125	1	8		φ 32/ φ 40	R	φ 260
M08J								□25	150	1	8		φ 32/ φ 40	R	φ 280
M08SY/M08D/M08SD								□25	150	1	12		φ 32/ φ 40	R	φ 280

DMG MORI

Machine Model	Gang Station					Sleeve Station		Hand	Max cutting dia
	Inch		Metric		Number of tools	Inch	Metric		mm
	h×b	L	h×b	L		"	mm		
Sprint 20/5			□12		6		φ 20	R	φ 20
Sprint 20/8			□12		6		φ 20	R	φ 20
Sprint 32/5			□16		6		φ 20	R	φ 32
Sprint 32/8			□16		6		φ 20	R	φ 32

Machine Model	Gang Station					Sleeve Station		Hand	Max cutting dia
	Inch		Metric		Number of tools	Inch	Metric		mm
	h×b	L	h×b	L		"	mm		mm
NS-P1053A			□9.5	130	5	—	—	R	φ 10
NN-10C			□10	130	6		φ 17	R	φ 10
NN-10E			□10	130	6		φ 16	R	φ 10
NN-10C2			□10	130	6		φ 17	R	φ 10
NN-10CS			□10	130	6		φ 17	R	φ 10
NN-10CS(No live tools)			□10	130	5		φ 17	R	φ 10
NN-10SII			□10	130	5		φ 23	R	φ 10
NN-10T			□10	130	7		φ 23	R	φ 10
NN-10SB5			□10	130	5		φ 23	R	φ 16
NN-16SB5			□10	130	5		φ 23	R	φ 16
NN-16SB6 Type1	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16SB6 Type2	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16SB6 Type2.5	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16SB6 Type3	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16SB7	□1/2	5.12	□12.7		5(7)		φ 16	R	φ 16
NN-16HIII			□12	130	6		φ 23	R	φ 16
NN-20HIII			□12	130	6		φ 23	R	φ 20
NN-16UIII			□12	130	5		φ 23	R	φ 16
NN-20UIII			□12	130	5		φ 23	R	φ 20
NN-20CS	□1/2	5.12	□12.7	130	5(6)		φ 22	R	φ 20(φ 25)
NN-20U5	□1/2	5.12	□12.7	130	5(6)		φ 22	R	φ 20(φ 25)
NN-16UB5			□12	130	5		φ 23	R	φ 16
NN-20UB5			□12	130	5		φ 23	R	φ 20
NN-20UB7			□12	130	6		φ 23	R	φ 20
NN-20UB8	□1/2	5.12	□12.7	130	5(6)		φ 22	R	φ 20(φ 25)
NN-20YB			□12	130	8		φ 23	R	φ 20
NN-25UB8	□1/2	5.12	□12		5		φ 22	R	φ 25
NN-32UB8	□1/2	5.12	□16		5		φ 22	R	φ 32
NN-38UB8	□3/4		□20		5		φ 22/φ 32	R	φ 38
NN-25YB/32YB			□16	130	8		φ 22/φ 32	R	φ 25
NN-32YB2			□16	130	5		φ 23/φ 32	R	φ 32
NN-32YB3	□5/8		□16		5		φ 22/φ 32	R	φ 32
NN-32YB3XB	□5/8		□16		6		φ 22/φ 32	R	φ 32
NN-16J	□1/2	5.12	□12.7	130	6		φ 23	R	φ 16
NN-20J	□1/2	5.12	□12.7	130	6		φ 23	R	φ 20
NN-20J2	□1/2	5.12	□12.7	130	6		φ 22	R	φ 20
NN-20J3	□1/2	5.12	□12.7		6		φ 23	R	φ 20
NN-20J3XB	□1/2	5.12	□12.7		5		φ 23	R	φ 20

TORNOS

Machine Model	Gang Station					Turret Station					Sleeve Station		Hand	Max cutting dia
	Inch		Metric		Number of tools	Inch		Metric		Number of tools	Inch	Metric		
	h×b	L	h×b	L		h×b	L	h x b	L		"	mm		mm
EvoDECO 10/10	□5/16		□8		8							φ20/φ25	R	φ10
EvoDECO 10/8	□5/16		□8		8							φ20/φ25	R	φ10
EvoDECO 16/10	□1/2		□12		10							φ20/φ25	R	φ16
EvoDECO 16/8	□1/2		□12		10							φ20/φ25	R	φ16
EvoDECO 20	□5/8		□16		10							φ20/φ25	R	φ25.4
EvoDECO 32	□5/8		□16		10							φ20/φ25	R	φ32
Swiss ST 26	□1/2		□12		17							φ20/φ22/φ25	R	φ25.4
Sigma 20/6	□5/8		□16		14						φ1	φ20	R	φ25.4
Sigma 32/6	□5/8		□16		14						φ1.26	φ32	R	φ32
SwissNano	□5/16		□8		7							φ12/φ16	R	φ4
Delta 12/4	□1/2*		□12	85	5							φ20	R	φ12
Delta 12/5	□1/2*		□12	85	5							φ20	R	φ12
Delta 20/4	□1/2*		□12	85	5							φ20	R	φ20
Delta 20/5	□1/2*		□12	85	5							φ20	R	φ20
Delta 38/5B			□20	125	8							φ25/φ32	R	φ38
Delta 38/5BL			□20	125	8							φ25/φ32	R	φ38
Gamma 20/5			□16	100	8							φ20/φ22	R	φ20
Gamma 20/6			□16	100	8							φ20/φ22	R	φ20
CT20	□1/2		□12	100	5								R	φ20
MultiSwiss 6X16								□16		6		φ25		
MultiSwiss 8X26								□16		8		φ25		
MultiSwiss 6X32								□16		8		φ25		
Swiss GT13			□12		8							φ20/φ22		13
Swiss GT26			□16		9							φ20/φ22		26
Swiss GT26B			□16		8							φ20/φ22		26
Swiss GT32			□16		9							φ20/φ22		32
Swiss GT32B			□16		8							φ20/φ22		32
SwissDeco 26-G			□16		8							φ20/φ25		26
SwissDeco 26-T			□16					□16		8		φ20/φ25		26
SwissDeco 26-TB			□16					□16		8		φ20/φ25		26
SwissDeco 32-G			□16		8							φ20/φ25		32
SwissDeco 26-T			□16					□16		8		φ20/φ25		32
SwissDeco 26-TB			□16					□16		8		φ20/φ25		32

*Except cut off must be 12mm

Hanwha Machinery

Machine Model	Gang Station					Turret Station					Sleeve Station		Hand	Max cutting dia
	Inch		Metric		Number of tools	Inch		Metric		Number of tools	Inch	Metric		
	h×b	L	h×b	L		h×b	L	h x b	L		"	mm		mm
XD 03			□8		6							φ15.87	R	φ3
XD 07			□8		6							φ15.87	R	φ7
XD 12			□12		5							φ20	R	φ12
XD 16			□12		5							φ20	R	φ16
XD 20 / 20V			□12		6							φ25	R	φ20
XDI20			□12		6							φ25	R	φ20
XD 26			□16		5							φ25	R	φ26
XD32			□16		5							φ32	R	φ32
XD 38			□16		5							φ32	R	φ38
XD 42			□20		5							φ32	R	φ42
XE 12			□12		6							φ20	R	φ12
XE 16			□12		6							φ20	R	φ16
XE 20			□12		6							φ25	R	φ20
XE 26			□16		5							φ25	R	φ26
XE 35			□16		5							φ32	R	φ35
XP 12 /12S			□12		6							φ20	R	φ12
XP 16 /16S			□12		6							φ20	R	φ16
XP 20			□12		6							φ25	R	φ20
XP 26 / 26S			□16		5							φ25	R	φ26
STL38H			□16		5			□16				φ32	R	φ38

Hardness Comparison Chart

Vickers Hardness (HV)	Rockwell hardness			Brinell hardness, 10 mm balls, 3000 kgf load	Tungsten carbide ball	Shore hardness	Tensile strength Kgf/mm ² [N/m ²] Approximate value MPa (1)
	Scale A Load: 60 kgf brale indenter (HRA)	Scale C Load: 150 kgf brale indenter (HRC)	Scale B Load: 100 kgf Diameter 1/16" indenter (HRB)				
2200	(95.1)	—	—	—	—	—	
2100	(94.6)	—	—	—	—	—	
2000	94.2	—	—	—	—	—	
1900	93.7	(80.5)	—	—	—	—	
1800	93.2	(79.2)	—	—	—	—	
1700	92.7	(77.9)	—	—	—	—	
1600	91.8	(76.6)	—	—	—	—	
1500	91.0	(75.3)	—	—	—	—	
1450	90.4	(74.6)	—	—	—	—	
1400	90.0	74.0	—	—	—	—	
1350	89.6	73.4	—	—	—	—	
1300	89.1	72.7	—	—	—	—	
1250	88.6	72.1	—	—	—	—	
1200	88.1	71.5	—	—	—	—	
1150	87.6	70.9	—	—	—	—	
1100	87.1	70.3	—	—	—	—	
1050	86.6	69.6	—	—	—	—	
1000	86.2	68.9	—	—	—	—	
940	85.6	68.0	—	—	97	—	
920	85.3	67.5	—	—	96	—	
900	85.0	67.0	—	—	95	—	
880	84.7	66.4	—	(767)	93	—	
860	84.4	65.9	—	(757)	92	—	
840	84.1	65.3	—	(745)	91	—	
820	83.8	64.7	—	(733)	90	—	
800	83.4	64.0	—	(722)	88	—	
780	83.0	63.3	—	(710)	87	—	
760	82.6	62.5	—	(698)	86	—	
740	82.2	61.8	—	(684)	84	—	
720	81.8	61.0	—	(670)	83	—	
700	81.3	60.1	—	(656)	81	—	
690	81.1	59.7	—	(647)	—	—	
680	80.8	59.2	—	(638)	80	—	
670	80.6	58.8	—	630	—	—	
660	80.3	58.3	—	620	79	—	
650	80.0	57.8	—	611	—	—	
640	79.8	57.3	—	601	77	—	
630	79.5	56.8	—	591	—	—	
620	79.2	56.3	—	582	75	—	
610	78.9	55.7	—	573	—	—	
600	78.6	55.2	—	564	74	—	
590	78.4	54.7	—	554	—	—	
580	78.0	54.1	—	545	72	—	
570	77.8	53.6	—	535	—	—	
560	77.4	53.0	—	525	71	—	
550	77.0	52.3	—	517	—	—	
540	76.7	51.7	—	507	69	—	
530	76.4	51.1	—	497	—	—	
520	76.1	50.5	—	488	67	—	
510	75.7	49.8	—	479	—	—	
500	75.3	49.1	—	471	66	—	

Vickers Hardness (HV)	Rockwell hardness			Brinell hardness, 10 mm balls, 3000 kgf load	Tungsten carbide ball	Shore hardness	Tensile strength Kgf/mm ² [N/m ²] Approximate value MPa (1)
	Scale A Load: 60 kgf brale indenter (HRA)	Scale C Load: 150 kgf brale indenter (HRC)	Scale B Load: 100 kgf Diameter 1/16" indenter (HRB)				
490	74.9	48.4	—	460	—	—	
480	74.5	47.7	—	452	64	—	
470	74.1	46.9	—	442	—	—	
460	73.6	46.1	—	433	62	—	
450	73.3	45.3	—	425	—	—	
440	72.8	44.5	—	415	59	—	
430	72.3	43.6	—	405	—	—	
420	71.8	42.7	—	397	57	—	
410	71.4	41.8	—	388	—	—	
400	70.8	40.8	—	379	55	—	
390	70.3	39.8	—	369	—	—	
380	69.8	38.8	(110.0)	360	52	—	
370	69.2	37.7	—	350	—	—	
360	68.7	36.6	(109.0)	341	50	—	
350	68.1	35.5	—	331	—	—	
340	67.6	34.4	(108.0)	322	47	—	
330	67.0	33.3	—	313	—	—	
320	66.4	32.2	(107.0)	303	45	—	
310	65.8	31.0	—	294	—	—	
300	65.2	29.8	(105.5)	284	42	—	
295	64.8	29.2	—	280	—	—	
290	64.5	28.5	104.5	275	41	—	
285	64.2	27.8	—	270	—	—	
280	63.8	27.0	103.5	265	40	—	
275	63.5	26.4	—	261	—	—	
270	63.1	25.6	102.0	256	38	—	
265	62.7	24.8	—	252	—	—	
260	62.4	24.0	101.0	247	37	825	
255	62.0	23.1	—	243	—	805	
250	61.6	22.2	99.5	238	36	795	
245	61.2	21.3	—	233	—	780	
240	60.7	20.3	98.1	228	34	765	
230	—	18.0	96.7	219	33	730	
220	—	15.7	95.0	209	32	695	
210	—	13.4	93.4	200	30	670	
200	—	(11.0)	91.5	190	29	635	
190	—	(8.5)	89.5	181	28	605	
180	—	(6.0)	87.1	171	26	580	
170	—	(3.0)	85.0	162	25	545	
160	—	(0.0)	81.7	152	24	515	
150	—	—	78.7	143	22	490	
140	—	—	75.0	133	21	455	
130	—	—	71.2	124	20	425	
120	—	—	66.7	114	—	390	
110	—	—	52.3	105	—	—	
100	—	—	56.2	95	—	—	
95	—	—	52.0	90	—	—	
90	—	—	48.0	86	—	—	
85	—	—	41.0	81	—	—	

(1) 1 MPa = 1 N/mm²

(2) This table is an excerpt from the JIS Iron and Steel Handbook

(3) Values in parentheses in the above table are not usually used

Z

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2415	Parts	F6, F10, F11
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5104	Wrench	G4
5124	Wrench	G4
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DC6DN	Parts	F8, F9, G5
DC6VN	Parts	F12, F13
DCET	Insert	E37, Q21
DCGT	Insert	E36, E37, O58, Q20, Q21
DCGW	Insert	E24, E37, O25, O58, Q21, Q22
DCMT	Insert	E24, E38, Q20, Q22,
DCMW	Insert	E24, Q22
DNG	Insert	B20, E6
DNGA	Insert	B20, E7, E25, Q41
DNGG	Insert	E7, E38, Q40
DNGX	Insert	E8
DNMA	Insert	E25, Q41
DNMG	Insert	E38
DNMX	Insert	E25, Q41
DS-CSV	Toolholder	O45, O52, Q8, Q9, R6, T6, U6
DS-FGV	Toolholder	O44, T20
DS-GTT	Toolholder	O44, R20, T11
DS-LBMB	Toolholder	O56, V6
DS-PTX	Toolholder	O43, Q35
DS-SCL	Toolholder	O7, O40, Q12
DS-SDU	Toolholder	O41, Q19

Item number	Description	Page number
DS-SDX	Toolholder	O8, O41, Q19
DS-STT	Toolholder	O45, U14
DS-SVVP	Toolholder	O42, Q30
DS-SVX	Toolholder	O42, Q26
DS-SVXP	Toolholder	Q29
DS-TBP	Toolholder	O43
DS-TTP	Toolholder	O45, U10
E250R	Cutter	I25
E300R	Cutter	I25
E400R	Cutter	I25
E500R	Cutter	I25
ERGP	Insert	E39, V23
FBV	Insert	T21
FDX	Insert	I19, I21, I23
FGV	Toolholder	T20
FGV	Insert	T21
FSI0306A	Parts	I33
FSI0307A	Parts	I33
FSI035104A	Parts	I33
FSS15-3.0*12	Parts	F6, F7, F8, F9, F11, F12, F13,
FSS16-3.0*8	Parts	G5, G6
FSI17-2.2*6.0	Parts	U19
FSI21-5.0*12.45	Parts	I25, I26, I27
FSI24-2.2*7.9	Parts	U19
FSI-22-4.0*11	Parts	I17
FSI-23-4.0*7	Parts	I17
FSI26-4.0*12-LH	Parts	I24
FSI28-6.0*18	Parts	B18, F18, H23
GBI	Blade	H10, H12
GBO	Blade	H11, H12
GBR	Blade	B19, F18, F19, F20, H7
GBV	Blade	H8, H9
GBWPF	Blade	H23, H25, H26, H27, H28
GKN	Insert	H19
GKP	Insert	H19
GKWP	Toolholder	B18, B19, H20
GKWP-H	Holder Shank	B18, F18, F19, F20, H7, H8, H9, H10, H11, H12, H13, H23, H27, H28
GTG	Insert	V19
GTMA	Insert	T17
GTMH	Insert	O25, T12, T13, T14, T15
GTMT	Insert	T17
GTMX	Insert	T13, T15
GTPA	Toolholder	O15, O25, T22
GTPA	Insert	T22
GTPS	Insert	T8
GTT	Toolholder	O14, R18, T10
GTWP	Toolholder	B18, B19, H20, H21, H25, T9
GTWP-H	Holder Shank	B18, B19, F18, F19, F20, H7, H8, H9, H10, H11, H12, H13, H23, H25, H26
GWPFM	Insert	H23, H24, S19
GWPG	Insert	H21, T9
GWPM	Insert	H21, T9
HACDH	Parts	B16, F17
HAL	Insert	I33
HAN	Insert	I33

Item number	Description	Page number
HAT	Insert	I33
HC6CN	Parts	F6, G5, G6
HC6DN	Parts	F8, F9, G5
HC6SN	Parts	F11
HC6VN	Parts	F12, F13
HDA	Insert	I33
HFT	Insert	I28
HLA	Insert	I33
HLR	Wrench	I16, Y16
HLW175	Parts	I18, I20, I22
HLW177	Parts	I16, I18, I20
HLW179	Parts	I29
HN59Z	Toolholder	V33
HOSE-	Hose	O6
HRCDD	Toolholder	B16, F17
HRL	Insert	I33
HRT	Insert	I33
HY-NBH	Toolholder	O18, V9, V11, W8, W9
ICSN	Parts	F6
IRSN	Parts	B16, G4
ISSN	Parts	F10, F11
JHF	Cutter	B25, I28, I29
JFDX	Cutter	I18, I20, I22
JQTE	Cutter	I17
JQTS	Cutter	I17
JRNMW	Cutter	I14
JRPMW	Cutter	I12
JSDW	Cutter	I25, I27
JWNXM	Cutter	I24
JXTM	Cutter	I16
K3-C	Parts	H31
K4-C	Parts	H31
K5-C	Parts	H32
K6-C	Parts	H34
L1E	Parts	H16
L2E	Parts	H16
LBM	Insert	V7
LBMA	Toolholder	V6
LBMC	Insert	V7
LBMD	Insert	V7
LBME	Insert	V7
LCS33	Parts	Q35
LLR-25S	Wrench	I16, Y16
LLR-13S	Wrench	O35, Y16
LLR-15S	Wrench	O35, Y16
LLR-20S	Wrench	O35, Y16
LLR-28S	Wrench	O35, Y16
LLR-25S-20*65	Parts	O7, Y16
LLR-T10	Wrench	F6, F7, F8, F9, F11, F12, F13, F14, F15, G5, G6
LLR-T15	Wrench	F14, I24
LLR-T20	Wrench	F6, F7, F8, F9, F11, F12, F13, F15, G5, G6
LLR-T25	Wrench	I18
LNJ	Insert	B20, E8
LNM	Insert	B20, E8

Item number	Description	Page number
LNK	Insert	I16
LRIS	Parts	I16, O7, Y17
LR-S	Parts	Y17
LW-2	Wrench	Q35
LW-2.5	Wrench	B16, I29, Q35
LW-3	Wrench	Q38, Q40
LW-3S	Wrench	H21, T9
LW-4	Wrench	F6, F10, F11, F16, F18, H7, H20, H23
LW-5	Wrench	B16, F17, H20
LWU-4	Wrench	B16, F17
LWU-5	Wrench	B16, F17
M3*8	Parts	I12, I18, I20, I22
MBC	Parts	I29, I33
MBL	Insert	V22
NBH	Toolholder	V14, V15, W10, W11
NGTB	Toolholder	T17
NGTN	Toolholder	T17
NSR	Toolholder	H19
NTTB	Toolholder	U14
P250R	Cutter	I26
P300R	Cutter	I26
P400R	Cutter	I26
P500R	Cutter	I26
PCLN	Toolholder	Q38
PDJN	Toolholder	Q40
POLY-V	Toolholder	H31, H32, H33, H34
PTAN	Toolholder	Q35
PTLN	Toolholder	Q35
PTM	Insert	H31, H32, H33, H34
PTXN	Toolholder	Q35
R1E	Parts	H16
R2E	Parts	H16
RA	Cutter	I32
RA06P03NC	Parts	I33
RCEI	Endmill	I10
RCEM	Endmill	I10
RCGX	Insert	B17, E9, E26
RCSI	Endmill	I11
RD	Cutter	I32
REZ	Cutter	X6
RKN	Insert	H19
RLR-20S	Wrench	Y16
RNG	Insert	B21, E10, E26, I15
RNIW	Cutter	I14
RPG	Insert	E11, I13
RPGX	Insert	E11
RPIW	Cutter	I12
RWEM	Endmill	X3
S06F-MBR	Toolholder	V22
S06F-SCLP	Toolholder	V24
S07G-SCLP	Toolholder	V24
S07G-STUC	Toolholder	V25
S08G-SEXR	Toolholder	V23
S08H-BG	Toolholder	V19

Item number	Description	Page number
S08H-SCLC	Toolholder	V30
S08H-SCLP	Toolholder	V24
S08H-STUP	Toolholder	V26
S10K-BG	Toolholder	V19
S10K-SCLC	Toolholder	V30
S10K-STUP	Toolholder	V28
S12-CRGP	Toolholder	G4
S12M-SCLC	Toolholder	V30
S12M-STUP	Toolholder	V28
S16Q-SCLC	Toolholder	V30
S16Q-STUP	Toolholder	V28
S20Q-STUP	Toolholder	V28
S25R-WCLN	Toolholder	G5
S25R-WWLN	Toolholder	G6
S32S-WCLN	Toolholder	G5
S32S-WWLN	Toolholder	G6
S32S-WDUN	Toolholder	G5
S40T-WCLN	Toolholder	G5
S40T-WDUN	Toolholder	G5
S40T-WSKN	Toolholder	G6
S40T-WWLN	Toolholder	G6
S-412	Parts	H19
S50-CRGN	Toolholder	G4
S50U-WCLN	Toolholder	G5
SBB	Insert	V17
SBFB	Insert	V16
SBFS	Insert	V16, V17
SBG	Insert	V18
SBT	Insert	V20
SC02C	Parts	B17, B18, F21, F22
SC05C	Parts	B17, B18, F21, F22
SC06C	Parts	B17, B18, F21, F22
SC08C	Parts	B18, F22
SC10C	Parts	B18, F22
SC10F	Parts	B17, B18, F21, F22
SC40C	Parts	B18, F22
SC40F	Parts	B17, B18, F21, F22, H16, H17
SC50F	Parts	B18, F22
SC60F	Parts	B18, F22
SCAC	Toolholder	Q11
SCGW	Insert	E12, E26
SCJ-	Parts	O6
SCLC	Toolholder	O7, Q11
SDCW	Insert	E12, I25, I26, I27
SDJC	Toolholder	O7, Q17
SDNCN	Toolholder	Q17
SDQC	Toolholder	Q17
SDW	Insert	I25, I27
SDXC	Toolholder	Q17
SFG	Insert	V18
SHFB	Insert	V12
SHFS	Insert	V12, V13
SM2RV	Parts	B17, B18, F21, F22
SM2RVS	Parts	B17, B18, F21, F22

Item number	Description	Page number
SM3RV	Parts	B17, B18, F21, F22
SM4RV	Parts	B17, B18, F21, F22
SM5RV	Parts	B18, F22
SM6RV	Parts	B18, F22
SM8RV	Parts	B18, F22
SNEN	Insert	I21
SNG	Insert	E13, E14, I19, I20, I23
SNGA	Insert	E14, E27
SNGF	Insert	I19, I21, I23
SNGX	Insert	E15
SNMG	Insert	E39
SPG	Insert	E15, E27
SSO	Parts	V9, V11, W8, W9, W10, W11
SS-DSU	DS Sleeve	O47
SSP	Insert	O23, W3, W4
STAC	Toolholder	Q31
STTN	Toolholder	U14
STXN	Toolholder	Q35
SVAC	Toolholder	Q25, Q28
SVJB	Toolholder	O9, Q23
SVJC	Toolholder	O10, Q25
SVQC	Toolholder	Q25
SVQP	Toolholder	Q29
SVVC	Toolholder	Q25
SVXC	Toolholder	Q25
SVXP	Toolholder	Q30
T-07	Wrench	U19
T-15A	Wrench	I17, I18, I20, I22
T-20	Wrench	I25, I26, I27
TB	Toolholder	R16
TB	Insert	R17
TBDP	Toolholder	R12
TBDP	Insert	R13
TBGE	Insert	E16
TBMH	Insert	R20
TBP	Toolholder	O12, R9
TBP	Insert	O25, R9
TBPA	Toolholder	O13, R11
TBPA	Insert	R11
TBPS	Insert	R7
TBT	Toolholder	R16
TBVC	Toolholder	R14
TBVC	Insert	R14
TC5TN	Parts	F14
TC6CN	Parts	F6, F7, F11, G5, G6
TCGH	Insert	E40, V25
TCGP	Insert	E40, V25
TCGT	Insert	E40, O58, Q31
TCGW	Insert	E40, Q31
TF	Insert	Q33
TFT	Toolholder	O11, Q33
TGC	Toolholder	V33
TMG	Insert	T15
TMN	Insert	V33

Item number	Description	Page number
TNEG	Insert	E41, Q36
TNG	Insert	E16, E17
TNGA	Insert	E18, E28, Q37
TNGG	Insert	E18, E41, Q36
TNMG	Insert	E28, E41, Q37
TNMX	Insert	E28, Q37
TP	Insert	E19
TPG	Insert	E19, E29,
TPGD	Insert	E30, V27
TPGE	Insert	E19
TPGH	Insert	E42, V27, V29
TPGP	Insert	E42, V27
TPGW	Insert	E30, V29
TPM	Insert	E42, V29
TPMT	Insert	E30, V27, V29
TTMH	Insert	E30
TTP	Toolholder	U10, U40
TTP	Insert	O25, U11
TTPS	Insert	U8
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TW9268	Insert	U20
TWC	TW CUTTER	U18, U19
TWG	Toolholder	T16
TWG	Insert	T16
U104-40	Wrench	I33
U107T10	Wrench	I33
VBGT	Insert	E42, Q23
VBGW	Insert	E31, Q23
VCET	Insert	E43
VCGT	Insert	E43, O58, Q27, Q28, R15
VCGW	Insert	E31, E43, O25, Q27, R15
VCMT	Insert	E43, Q27, R15
VCMW	Insert	E31, Q29, R15
VDB	Insert	H15, H17, H18
VGW	Insert	H8, H9, H10, H11, H12, H13, H14
VNG	Insert	E20
VNGA	Insert	B21, E20, E32
VNGG	Insert	E44
VNMG	Insert	E44
VPET	Insert	E44, Q29, Q30
VPGT	Insert	E44, Q30
VRAO	Toolholder	B17, B18, F21, F22
W106	Parts	B16
W107	Parts	B16
W110	Parts	B16
W120	Parts	B16, F17
WCBN	Toolholder	F7
WCLN	Toolholder	F6
WDHN	Toolholder	F8
WDJN	Toolholder	F8
WDNNN	Toolholder	F9
WNGA	Insert	E21
WNGG	Insert	E44
WNMG	Insert	E44

Item number	Description	Page number
WNX	Insert	I24
WS0512	Parts	I29
WS0616-T15	Parts	I18, I20, I22
WS0816-T25	Parts	I18
WSDNN	Toolholder	F11
WSSN	Toolholder	F11
WTFN	Toolholder	F14
WTGN	Toolholder	F14
WVJN	Toolholder	F12
WVPN	Toolholder	F12
WVVNN	Toolholder	F13
WWLN	Toolholder	F15
XNS-36	Parts	G4
XX2815	Wrench	I16, Y16
Y-CTPA	Toolholder	O34, R11
Y-GTPA	Toolholder	O15, O35
Y-GTT	Toolholder	O14, O35, R19, T11
Y-SDJC	Toolholder	O8, O31, Q18
Y-SDNC	Toolholder	O31, Q18
Y-SVJC	Toolholder	O10, O32, Q26
Y-TBDP	Toolholder	O34, R12
Y-TBP	Toolholder	O12, O33, R9
ZT1130	Insert	B20, E21

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■ Metalcutting Safety

Applicable Products	Possible Risks	Safety Measures
General Cutting Tools	⊙Contact with a sharp cutting edge with bare hands may result in injury.	*Use protective gear such as protective gloves when taking the tool out of packaging and installing into the machine.
	⊙Misuse or using under inappropriate conditions may cause the cutting tool to break and/or shatter into pieces, resulting in personal injury.	*Use protective equipment, machine guarding and/or protective glasses. *Use within the range of recommended conditions. Please refer to the instruction manual and catalog.
	⊙Sudden increase in cutting resistance due to sudden impact load or excessive wear may cause the cutting tool to break and/or shatter into pieces, resulting in personal injury.	*Use protective gear such as protective gloves when taking the tool out of packaging and installing into the machine.
	⊙High-temperature chips may be produced and long chips may be ejected, resulting in injury and/or burns.	*Use protective equipment, machine guarding and/or protective glasses. *Before removing chips, always stop the machine. Wear protective gloves and use proper equipment for chip removal.
	⊙The tool and material/work being cut can become very hot. Touching them immediately after use may cause burns.	*Use protective gear such as protective gloves.
	⊙Sparks, heat generation due to breakage and/or chips during cutting may cause fire.	*Do not use the machine and tools in locations where there are risks of ignition or explosion. *When using water-insoluble cutting oil, fire prevention measures must be implemented.
	⊙Out of balance machine set ups when used at a high-speed, may cause insert breakage due to excess vibration or chatter, resulting in injury.	*Use protective equipment, machine guarding and/or protective glasses. *Perform a trial-run beforehand to make sure the setup is stable, free of chatter, vibration and abnormal noise.
Throw-Away Type Tools (With indexable insert)	⊙Inappropriately clamped inserts and/or components may become detached from the machine during cutting, resulting in injury.	*Before installing the insert, clean the seating surface and clamping components so that they are free of debris. *Use the wrench supplied to install the insert and check that the insert and components are securely clamped. Do not use any inserts or components other than the items specified.
	⊙Excessively tightening with a device such as a pipe extension may cause the insert and/or components to break or detach due to over clamping.	*Do not use tightening devices such as pipe extensions to obtain further torque. Always use the supplied wrench.
	⊙At high speeds, inserts and/or components may lose clamping pressure due to the loosening effect of centrifugal force. This is very dangerous. Always ensure secure clamping systems and check regularly.	*Use within the range of recommended conditions. Please refer to the instruction manual and catalog.
Cutters and Rotational Tools	⊙As cutters have sharp cutting edges, contact with bare hands may result in injury.	*Use protective equipment such as protective gloves.
	⊙Imbalance or excessive rotation may cause the tool to break due to vibration or chatter, resulting in potential injury.	*Use at a rotational speed within the recommended conditions. *To prevent excessive rotation and vibration due to worn bearings, regularly check the machine rotor/rotating parts for the accuracy and balance and adjust as required.
Brazed Inserts / Tools	⊙Inserts may break or become, detached due to incorrect brazing.	*Use protective equipment such as machine guards and/or protective glasses. Additional guarding around the chuck and drill may be advisable.
Others	⊙It is not advisable to use brazed inserts repeatedly as the braze may progressively weaken.	*Do not use brazed inserts repeatedly as the strength of such inserts is lowered.
	⊙Use only for the original and intended purpose. Using outside recommended parameters is very dangerous, causing damages to machines and/or tools.	*Always use and operate as specified, observing the required safety rules and conditions.

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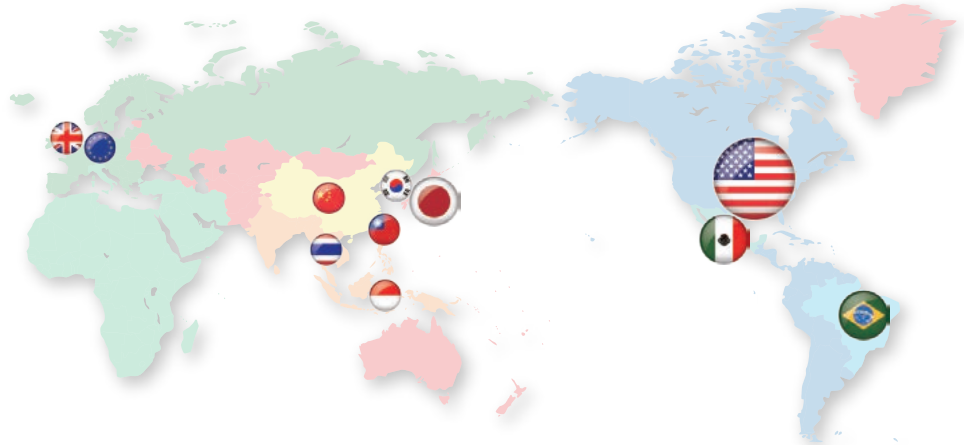
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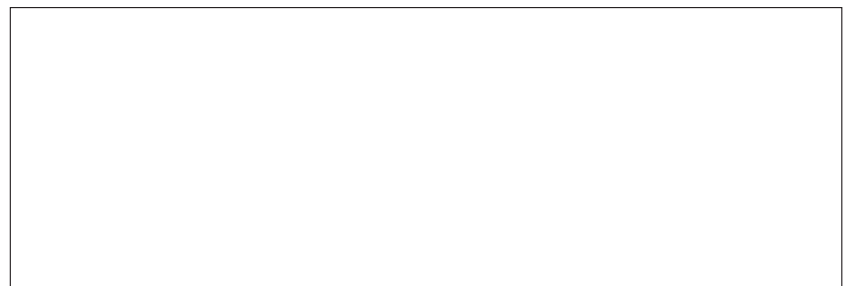
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