NTK
CUTTING TOOLS

Cutting Tools

GENERAL CATALOG

Vol.6

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Available on the App Store
App for iOS

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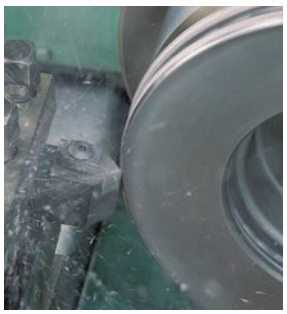
youtube.com/NTKCUTTINGTOOLS

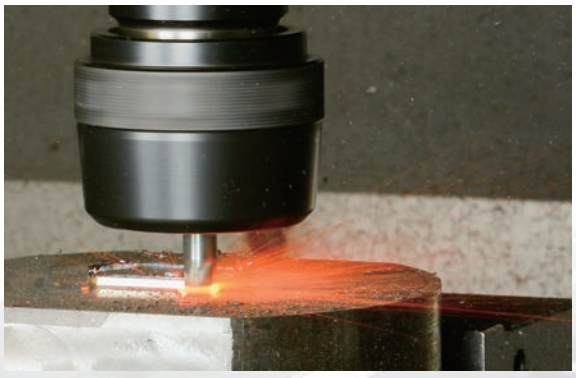
NTK Technology

Disc and Drum Brakes



Aerospace Components

Ceramic Endmill (HRSA Materials)

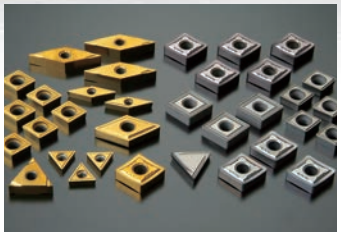


Ceramic Endmill (Cast iron)

Cylinder Liners

Hardened Materials

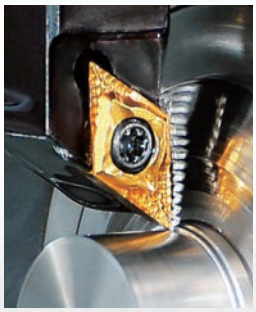
Steel Machining



Grooving

Poly – V Pulleys

Swiss Tools for Small Parts Machining



Mill Rolls

High Speed Machining of Aluminum

Safety instructions for using ultra hard cutting tools

1. Instructions for using ultra hard cutting tools

As required by the laws concerning Product Liability enforced on July 1, 1996, we place warning or caution labels on the packages of applicable NTK products. However, each tool body itself bears no detailed safety instructions. Therefore, you are requested to read and understand fully the "Safety instructions for the use of carbide cutting tools" before putting any ultra hard tool materials into use. In addition, we request all relevant staff and operators fully understand these safety instructions prior to use.

2. Basic characteristics of ultra hard tool materials

2−1. Meaning and classifications of terms used in this leaflet

Ultra hard tool materials: The collective name for materials used as cutting tools, including carbides, ceramics, CBN and diamond (PCD) sintered materials.

Carbide: Tool materials where the main component is WC (Tungsten Carbide)

Ultra hard materials: The collective name for materials used as ultra hard tools. Also used as a convenient way of referring to carbides under a narrower definition.

Ultra hard tools: The collective name for tools using ultra hard tool materials.

2−2. Physical properties

Appearance: Varies depending on the material. Example: gray, black or gold

Odour: No odour

Hardness: Cemented carbide: HV500 up to 3,000 kg/mm^2

Specific gravity: Carbide: 9 up to 19

2−3. Constituents

Carbide, nitride, carbo-nitride, or oxidized materials of W, Ti, Al, Ta, B or the like; some contain metallic components such as Co, Ni, Cr and/or Mo.

3. Precautions for handling ultra hard tool materials

- One of the properties specific to these materials is high hardness, another is brittleness. Therefore, shock loads or impacts, or excessive clamping of these materials may result in breakage or other damage.
- As the specific gravity (density) of these materials is very high, a large component made up of these materials or such products in large quantity should be handled with care.
- Ultra hard materials are different in their thermal expansion ratio from metals. These products are prone to thermal shock and subsequent breakage when subjected to sudden increase or decrease in temperature.
- As cutting oil, lubricant and general moisture may corrode ultra hard materials and affect their strength, pay extra attention to storing them in good conditions.

4. Precautions for processing ultra hard tools

- The strength of ultra hard tools may be significantly lowered depending on the surface condition. Always use diamond grinding wheels for finish machining.
- Dust is produced when ultra hard tools are ground. Install appropriate ventilation/disposal equipment and wear protective gear such as masks, as inhalation of such dust may be hazardous to health. If such dust contacts your skin or comes into contact with your eyes, flush well with flowing water.
- After the grinding of ultra hard tools or brazed tools, the waste coolant contains components of heavy metals. Be sure to dispose of such waste liquid properly.
- After re-grinding ultra hard tools, check that they are free of cracks or damage before use.
- When ultra hard material or products made of ultra hard material is marked with lasers or an electric pen, cracking may occur to the marked area. Do not mark in areas where stress is applied during use.
- Processing ultra hard material by electric discharge may cause residual cracks on the surface, resulting in lower strength. Thus, remove any cracks completely by grinding as required.
- Be careful when brazing ultra hard material. If the temperature is lower or higher than the melting point of the brazing material, the insert may not be permanently fixed.

Precautions for Safe Use of Cutting Tools

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 catalogue.
	◎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.
	◎Touching burrs and flashes on machined work may result in personal injury.	＊Use adequate hand protection.
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 a 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 the recommended conditions. Please refer to the instruction manual and catalogue.
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 eccentric 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 eccentric rotation and vibration due to worn bearings, regularly check the machine rotor/ rotating parts for the accuracy and balance and adjust as required.
Drills	◎Extra care should be taken when through hole drilling as chips may be ejected at high speed as the drill breaks through the workpiece.	＊Use protective equipment such as machine guards and/or protective glasses. Additional guarding around the chuck and drill may be advisable.
	◎Drill tips of a very small diameter are usually pointed and extremely sharp. Extra care and safety precautions should be taken when handling to avoid puncture wounds.	＊Always use precautions and secure safe handling methods. ＊Wear protective gloves and glasses.
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 repeatedly brazed inserts as the braze may progressively weaken.	＊Do not use repeatedly brazed inserts 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.

Guidelines for Catalog

- This catalog lists products as of May 2020.
- 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 weeks delivery
  ◉ : 3 weeks delivery
  ■ : While stock lasts
  No symbol : Not stocked

■ 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
Endmill	1 pc/case	CERAMATIC (Ceramic), S-MILL (Carbide)
CBN	1 pc/case	B16, B22, B23, B30, B36, B40, B52, B5K, B6K
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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2019-2020 NEW PRODUCTS

New Era in Aerospace Machining
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New SiAlON Grade for Machining Heat Resistant Super Alloys
SX3 ..... A18 ~ 19

Solid Ceramic Endmill
CERAMATIC Lineup Expansion ..... A20 ~ 24

PVD coated carbide grade for stainless steels
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Solid Carbide Endmill
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Unique swiss tooling / Front turning insert for large DOC
The Front Max ..... A40 ~ 44

Internal coolant type tool holders
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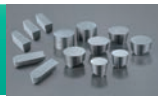
NEW

New Era in Aerospace Machining
BIDEMICS

WATCH ON YouTube

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.

JX1/JX3 NEW
Semi-finishing & Finishing / Rough no scale



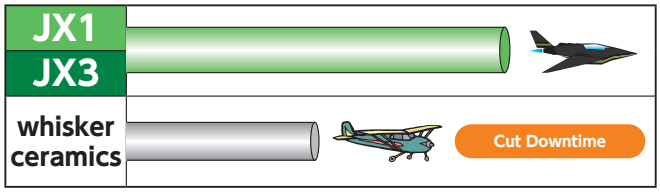
- Up to 480 m/min speed capability
- Much longer tool life at Whisker ceramics' speed range
- Better wear resistance and notching resistance than Whisker ceramics
- Superior surface finish vs. Whisker ceramics
- Newly added JX3 provides toughness to BIDEMICS family

JP2
Finishing

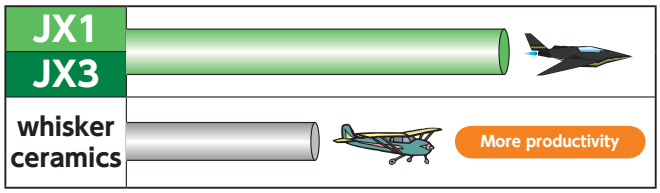
- 10 to 15x speed capability vs. carbide
- Better wear resistance and notching resistance than CBNs
- Superior surface finish to Carbide or CBN
- Strong brazing technology

Increase Productivity vs. Whisker ceramics

① Significantly extended tool life at same speed

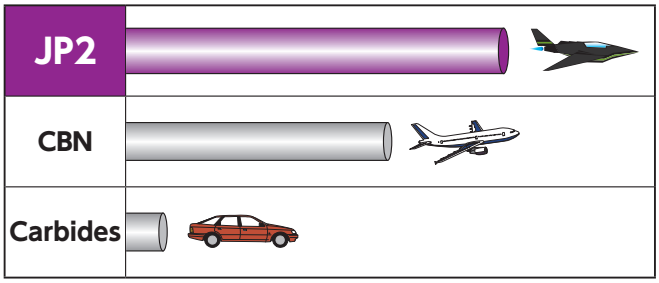


② Double speed capability



Increase Productivity vs. Carbides

① 10 to 15 times higher speed capability

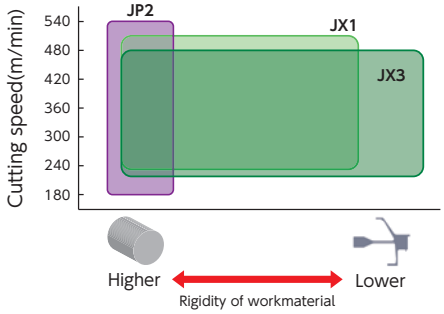


Application : JX1 & JX3

JX1
- *Higher speed, more productivity than ceramics.*
- *Suitable for turning in high rigid situation(External/ endface tuening) Turning in useing more toughness insert like RNGN type*
- *Offering excellent notch wear resistance*

JX3
- *Turning at the corner part, Grooving.*
- *Chipping occured when use JX1 grade*
- *Turning in low rigidity situation*

Grade

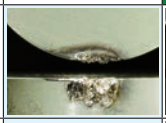
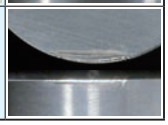


Grade	Workmaterial	Tooling	Applcations	Cutting speed (m/min)	Feed (mm/rev)	D.O.C (mm)	DRY	WET
JX1 / JX3	Heat resistant alloy	Turning	Rough no scale	180-**480**	0.15-0.30	1.00-2.50		●
			Semi-finish	180-**480**	0.10-0.25	0.50-2.00		●
JP2	Heat resistant alloy	Turning	Finish	180-**520**	0.10-0.25	0.20-1.00		●

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.

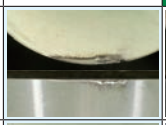
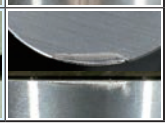
480 m/min	Competitor's Whisker	JX1
1st pass after 0.50 min		
2nd pass after 1.00 min	Impossible	

JX1

Whisker Ceramic

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.

330 m/min	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

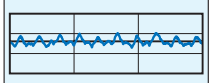
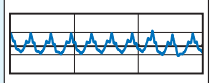
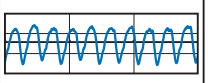
BIDEMICS has success on

Inconel 718
Inconel 625

- 718 Plus
- Rene41
- Rene88
- Rene104
- Waspaloy

etc.

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		240 m/min	←	35 m/min
Feed		0.15 mm/rev	←	←
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

5 Speed up grooving operations

VGW style Grooving inserts are now available

Machining HRSA Materials with BIDEMICS and Ceramics

Solutions for the Aerospace & Energy Industries

BIDEMICS - Game Changer

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

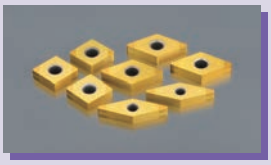
JX1

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

■Work Materials
- Inco 718 • 718 Plus
- Powdered metal
- Inco 625 • Rene

➡C2

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

➡C2

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

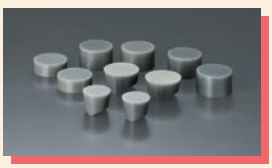
➡C15

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

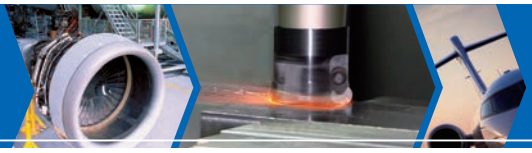
➡C14



SiAlON - Workhorse

- Durable for scale to semi-finish machining

WATCH ON YouTube



Application Guidance ➡L4
Milling Guidance ➡N4
Turning Guidance ➡L6
Grooving Guidance ➡A17

JX3

■Features
- Added toughness in BIDEMICS
- Same speed capability as JX1

■Work Materials
- Inco 718
- 718 Plus
- Powdered metal
- Inco 625
- Rene

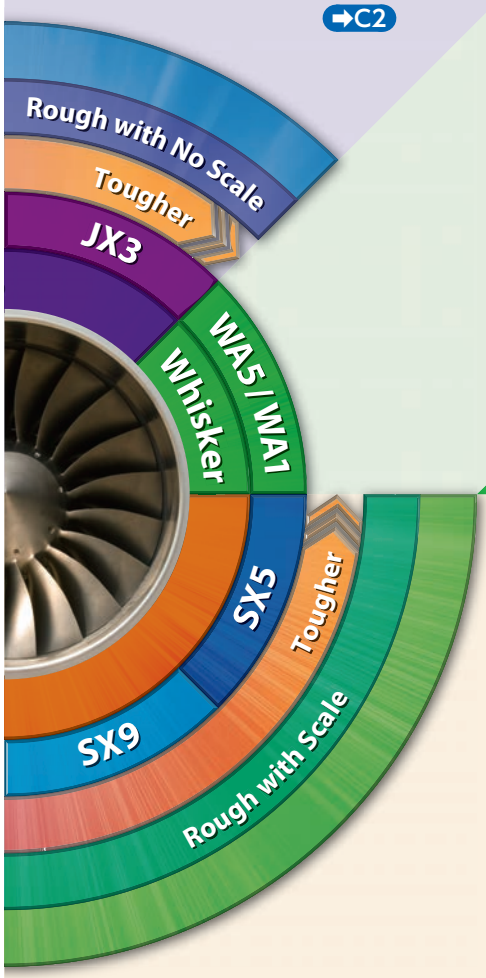
➡C2

WA5 / 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

➡C16



Whisker - Versatile Player

● Productivity and reliability

SX5

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

■Work Materials
- Waspaloy
- Udimet 720
- 718 Plus
- Rene 41

※ Production by order.

SX9

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

➡C15

■Work Materials
- Inco 718
- Inco 706
- Inco 713
- Rene

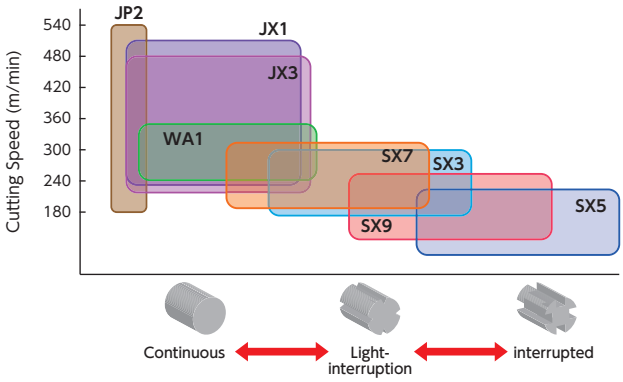
Guidelines for Machining HRSA Materials

Insert Grade

Category	Grade	Attributes	Applications: Scale	No scale	Profiling	Finishing	Grooving	Grooving	Endmilling
BIDEMICS	JX1	Special grade with higher speed and longer tool life potential		●	●	○	●		
BIDEMICS	JP2	Special grade for finish turning				●			
BIDEMICS	JX3	Added toughness in BIDEMICS		●	●	○	●		
Whisker	WA1	General versatile grade for turning		○	○		○		
SiAlON	SX3	Best balance of toughness and hardness	○	●	●		●	●	
SiAlON	SX5	Best grade for Waspaloy with scale	●				○		
SiAlON	SX7	Versatile grade for turning and milling	○	○	○		●	●	
SiAlON	SX9	Best grade for scale of Inco718	●	○	○			○	●

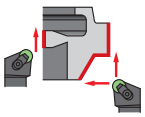
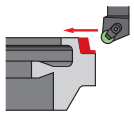
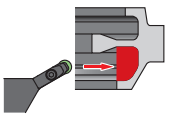
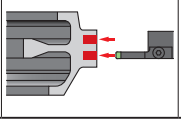
● 1st Choice ○ 2nd Choice

Grade Map

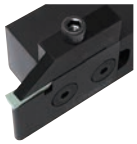


	Grade	Rough with Scale	Rough	Semi-Finishing	Finishing
BIDEMICS	JP2				
BIDEMICS	JX1				
BIDEMICS	JX3				
Whisker	WA1				
SiAlON	SX7				
SiAlON	SX3				
SiAlON	SX9				
SiAlON	SX5				

Applications

	Rough with scale	Rough&semi-finish	Profiling	Grooving	Milling	Endmilling
						

Applications

Application	Grade	Work material	Cutting speed (m/min) 180 240 300 360 420 480	Feed (mm/rev) 0.1 0.2 0.3 0.4 0.5	Depth of cut (mm) 0.5 1.0 1.5 2.0 2.5	Coolant
Rough with Scale	SX5	Waspaloy	200(180-240)	0.3(0.2-0.35)	2.0(1.0-5.0)	WET
	SX9	Inco718	200(180-240)	0.3(0.2-0.35)	2.0(1.0-5.0)	
	SX3	Overall	240(180-270)	0.2(0.1-0.22)	2.0(1.0-5.0)	
Rough no Scale	JX1 JX3	Overall	210-390(180-480)	0.2(0.13-0.28)	1.7(1.0-2.5)	WET
	SX9 SX3 SX7	Overall	210(180-270)	0.2(0.15-0.3)	2.0(1.0-2.5)	
	WA1	Overall	240(180-300)	0.2(0.12-0.25)	1.7(1.0-2.5)	
Profiling & Semi-Finish	JX1 JX3	Overall	210-450(180-480)	0.2(0.1-0.25)	1.5(1.0-2.0)	WET
	SX3 SX7	Overall	240(180-270)	0.2(0.12-0.25)	1.5(1.0-2.0)	
	WA1	Overall	240(180-330)	0.2(0.1-0.25)	1.5(1.0-2.0)	
Finishing	JP2	Overall	210-480(180-510)	0.1(0.05-0.18)	0.25(0.13-0.76)	WET
Grooving 	JX1 JX3	Overall	360(180-480)	0.07(0.05-0.1)	When using SX7/SX3/SX5, increase feed rates 100% vs. Whisker Ceramics	WET
	SX5	Waspaloy	210(180-240)	0.15(0.07-0.17)		
	SX3 SX7	Overall	230(180-270)	1.1(0.07-0.15)		
	WA1	Overall	240(180-330)	0.07(0.05-0.1)		

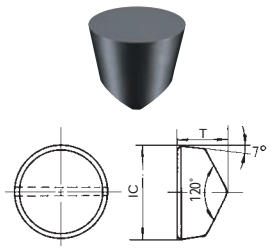
Application	Grade	Work material	Cutting speed (m/min) 450 600 750 900 1000 1200	Feed (mm/t) 0.05 0.07 0.1 0.12 0.15	Depth of cut (mm) 0.5 1.0 1.5 2.0 2.5	Coolant
Milling	SX3 SX7	Overall	810(600-1200)	0.1(0.07-0.12)	1.7(1.0-2.5)	DRY
	SX9	Overall	750(450-1000)	0.12(0.1-0.15)	2.0(1.0-2.5)	
Endmilling	SX9	Overall	600(300-1000)	0.02-0.03		DRY

Insert Item List

● : 1st Choice ● : 2nd Choice

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

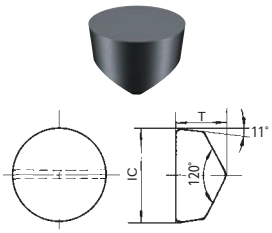
RCGX



P/N	Dimension(mm)		Stock						
			BIDEMICS		SiAlON ceramics			Whisker ceramics	
	IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
RCGX 060400 T00520	6.35	4.76						●	●
060400 T00820	6.35	4.76	●	●					
060700 T00520	6.35	7.94						●	
090700 E004	9.525	7.94	●	●					
090700 T00520	9.525	7.94				●	●	●	
090700 T01020	9.525	7.94						●	
090700 T00820	9.525	7.94	●	●					●
0908 TNB	9.525	7.86					●	●	
120700 E004	9.525	7.94	●	●					
120700 T00520	12.70	7.94				●	●	●	
120700 T00820	12.70	7.94	●	●					●
120700 T01020	12.70	7.94						●	
120700 Z01520	12.70	7.94						●	
1208 TNB	12.70	7.86					●		

●Toolholder→ L19-21

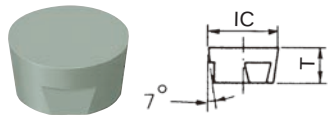
RPGX



P/N	Dimension(mm)		Stock						
			BIDEMICS		SiAlON ceramics			Whisker ceramics	
	IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
RPGX 060400 T00520	6.35	4.76						●	
090700 E004	6.35	7.94	●	●					
090700 T00520	9.525	7.94				●	●	●	
090700 T00820	9.525	7.94	●	●	●				●
0908 TNB	9.525	7.86					●		
120700 E004	9.525	7.94	●	●					
120700 T00520	12.70	7.94				●	●	●	
120700 T01020	12.70	7.94						●	
120700 T00820	12.70	7.94	●	●	●				●
1208 TNB	12.70	7.86					●		

●Toolholder→ L19-21

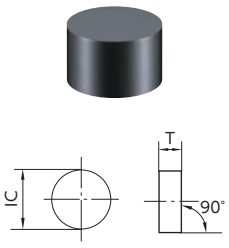
RCGY



P/N	Dimension(mm)		Stock						
			BIDEMICS		SiAlON ceramics			Whisker ceramics	
	IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
RCGY 090603 TNB	6.35	4.76						●	
120603 TNB	6.35	7.94						●	

●Toolholder→ L22

RNGN



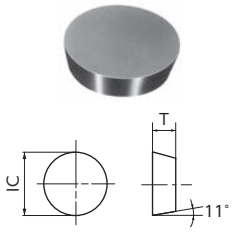
P/N	Dimension(mm)		Stock						
			BIDEMICS		SiAlON ceramics			Whisker ceramics	
	IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
RNGN 120400 T00520	12.70	4.76				●		●	
120400 T00820	12.70	4.76							●
120400 T00525	12.70	4.76					●	●	
120400 T01020	12.70	4.76					●	●	
120400 T02025	12.70	4.76					●		
120700 E002	12.70	7.94					●		
120700 E004	12.70	7.94	●	●	●	●			
120700 T00520	12.70	7.94				●	●	●	
120700 T00525	12.70	7.94					●	●	
120700 T00820	12.70	7.94	●	●	●				●
120700 T01020	12.70	7.94						●	
120700 Z01520	12.70	7.94						●	
150700 T00520	15.875	7.94					●		
150700 T00525	15.875	7.94					●	●	
150700 T00820	15.875	7.94							●
190700 T00520	19.05	7.94					●		
190700 T00525	19.05	7.94					●		
190700 T00820	19.05	7.94							●
190700 T01020	19.05	7.94						●	
250700 T00520	25.4	7.94					●	●	
250700 T00820	25.4	7.94							●

●Toolholder→ L23

● : 1st Choice ● : 2nd Choice

		JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5
Steel	P								
Stainless Steel	M								
Cast Iron	K				●	●	●	●	●
Non-Ferrous Material	N								
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●
Hardened Material	H							●	●

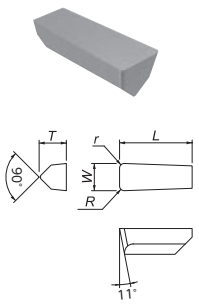
RPGN



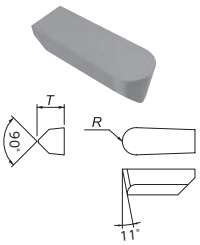
P/N	Dimension(mm) IC	T	JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5
RPGN 060200 T00520	6.35	2.38							●	
090300 T00520	9.525	3.18							●	
120400 E004	12.70	4.76				●				
120400 EX0004	12.70	4.76						●		
120400 T00520	12.70	4.76							●	
120400 T00525	12.70	4.76						●		
120400 T00820	12.70	4.76				●				
120400 T01020	12.70	4.76						●	●	

●Toolholder→ N8

VGW



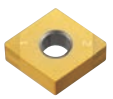
P/N	Dimension(mm) W	R	T	L	JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5
VGW 4125-1 E004	3.18	0.4	4.75	12.7	●	●						
4125-2 E004	3.18	0.8	4.75	12.7	●	●						
4125-2 EX0001	3.18	0.8	4.75	12.7							●	●
4156-1 E004	3.96	0.4	4.75	12.7	●	●						
4156-2 E004	3.96	0.8	4.75	12.7	●	●						
4156-2 EX0001	3.96	0.8	4.75	12.7							●	●
4187-1 E004	4.75	0.4	4.75	12.7	●	●						
4187-2 E004	4.75	0.8	4.75	12.7	●	●						
4187-2 EX0001	4.75	0.8	4.75	12.7							●	●
6250-1 E004	6.35	0.4	6.35	19.05	●	●						
6250-2 E004	6.35	0.8	6.35	19.05	●	●						
6250-2 EX001	6.35	0.8	6.35	19.05							●	●
6250-3 E004	6.35	1.2	6.35	19.05	●	●						
8375-2 EX0001	9.525	0.8	8.56	25.4							●	●

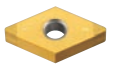


P/N	Dimension(mm) W	R	T	L	JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5
VGW 4125-R E004	3.18	1.59	4.75	12.7	●	●						
4125-R EX0001	3.18	1.59	4.75	12.7							●	●
4156-R E004	3.96	1.98	4.75	12.7	●	●						
4156-R EX0001	3.96	1.98	4.75	12.7							●	●
4187-R E004	4.75	2.38	4.75	12.7	●	●						
4187-R EX0001	4.75	2.38	4.75	12.7							●	●
6250-R EX0001	6.35	3.18	6.35	19.05							●	●
8375-R EX0001	9.525	4.76	8.56	25.4								●

●Toolholder→ A11-13

BIDEMICS : JP2





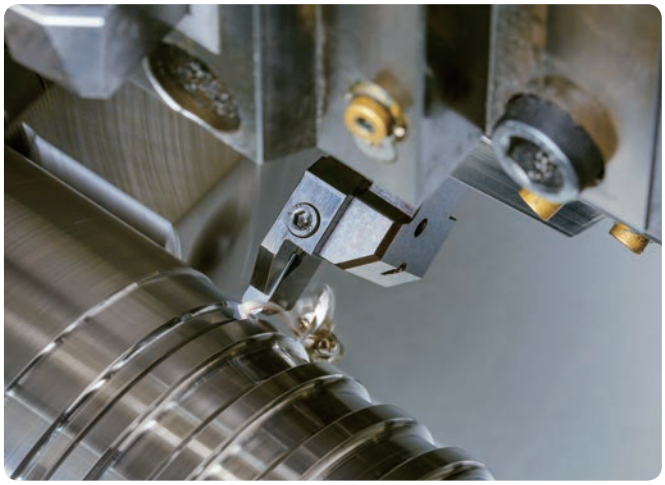
P/N	Dimension (mm) IC	T	Corner radius	Edge prep.	JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5
CNGA 120404 BQ	12.70	4.76	0.4	T00520			●					
120408 BQ	12.70	4.76	0.8	T00520			●					
120412 BQ	12.70	4.76	1.2	T00520			●					
DNGA 150404 BQ	12.70	4.76	0.4	T00520			●					
150408 BQ	12.70	4.76	0.8	T00520			●					
150412 BQ	12.70	4.76	1.2	T00520			●					
VNGA 160404 BQ	9.525	4.76	0.4	T00520			●					
160408 BQ	9.525	4.76	0.8	T00520			●					
160412 BQ	9.525	4.76	1.2	T00520			●					

※ NOTE : JP2 : 1pc/Case

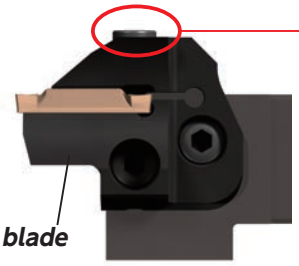
●Toolholder→ F8-11 · 12-15 · 26-27, G40-41, K34-35

New Modular Tooling

Available in 3 different styles



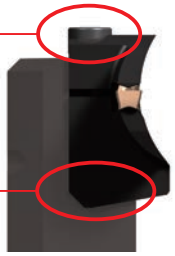
Most rigid blade system



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

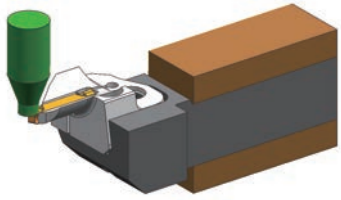
blade

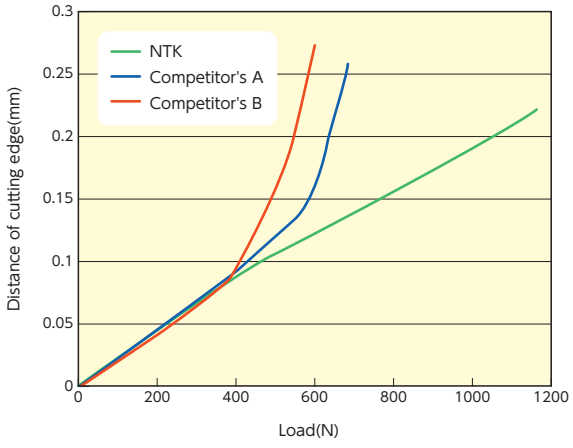
Strong clamping by directly fastening the blades



Wedge style design

Tool rigidity comparision





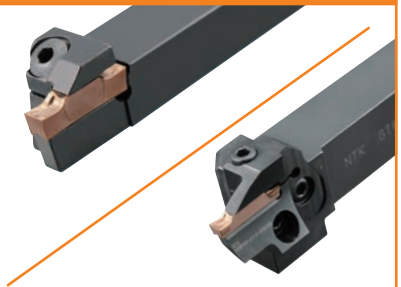
RCGX Style RPGX Style
for BIDEMICS, ceramics insert

➡ A14-15

VGW Style(Grooving)
for BIDEMICS, ceramics insert

➡ A12-13

Grooving/Face grooving
for PVD coated carbide insert

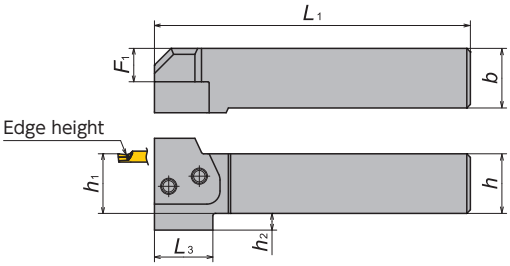


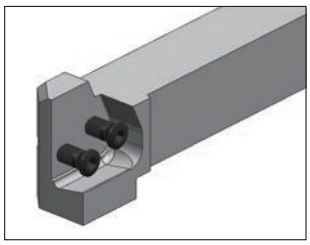
➡ H40

Modular Holder Body

GTWP-H

Straight style toolholder



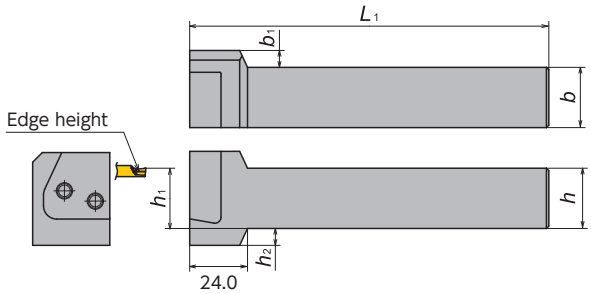


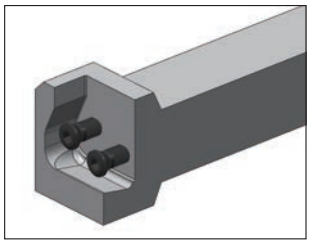
Right-Hand style shown

Toolholder	Stock		Dimensions(mm)							Parts	
	R	L	h	b	h_1	L_1	F_1	h_2	L_3	Screw	Wrench
GTWP[R/L] 2020-H	●	●	20.0	20.0	20.0	107.5	9	8	28.5	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	132.5	14	7	24.5	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	152.5	21	—	—	FSI28-6.0×18	LW-4

GKWP-H

L-style toolholder





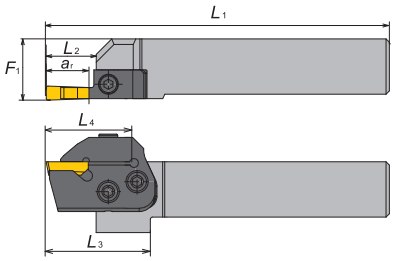
Right-Hand style shown
＊Use oppsoite hand blade

Toolholder	Stock		Dimensions(mm)						Parts	
	R	L	h	b	h_1	L_1	b_1	h_2	Screw	Wrench
GKWP[R/L] 2020-H	●	●	20.0	20.0	20.0	124	12	8	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	149	7	7	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	169	—	—	FSI28-6.0×18	LW-4

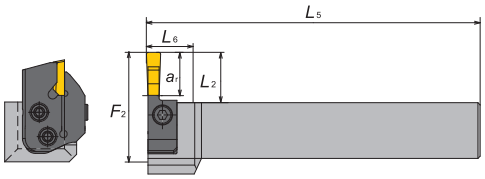
VGW..Series - Blades

GBVR

For GTWP-H



For GKWP-H



● Right hand

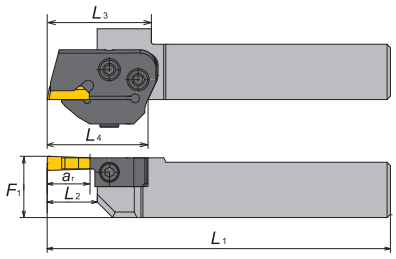
Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Right	GBVR-VGW4-3T09	●	GTWPR2020-H	VGW4125	118.7	11.2	39.7	34.1	124.3	24.3	22.3	31.2	9.5
			GKWPL2020-H	VGW4156	118.7	11.2	39.7	34.1	124.7	24.7	22.7	31.2	9.5
			GTWPR2525-H	VGW4125	143.7	11.2	35.7	34.1	149.3	24.3	27.3	36.2	9.5
			GKWPL2525-H	VGW4156	143.7	11.2	35.7	34.1	149.7	24.7	27.7	36.2	9.5
			GTWPR3232-H	VGW4125	163.7	11.2	—	34.1	169.3	24.3	34.3	43.2	9.5
			GKWPL3232-H	VGW4156	163.7	11.2	—	34.1	169.7	24.7	34.7	43.2	9.5
	GBVR-VGW4-4T14	●	GTWPR2020-H	VGW4156	125.0	17.5	46.0	40.5	124.4	24.4	22.4	37.5	14.2
			GKWPL2020-H	VGW4187	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GTWPR2525-H	VGW4156	150.0	17.5	42.0	40.5	149.4	24.4	27.4	42.5	14.2
			GKWPL2525-H	VGW4187	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GTWPR3232-H	VGW4156	170.0	17.5	—	40.5	169.4	24.4	34.4	49.5	14.2
			GKWPL3232-H	VGW4187	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
	GBVR-VGW6-6T14	●	GTWPR2020-H	VGW6218	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GKWPL2020-H	VGW6250	125.0	17.5	46.0	40.5	125.2	25.2	23.2	37.5	14.2
			GTWPR2525-H	VGW6218	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GKWPL2525-H	VGW6250	150.0	17.5	42.0	40.5	150.2	25.2	28.2	42.5	14.2
			GTWPR3232-H	VGW6218	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
			GKWPL3232-H	VGW6250	170.0	17.5	—	40.5	170.2	25.2	35.2	49.5	14.2
	GBVR-VGW6-6T19	●	GTWPR2020-H	VGW6250	130.1	22.6	51.1	45.6	124.7	24.7	22.7	42.6	19.0
			GKWPL2020-H	VGW6281	130.1	22.6	51.1	45.6	125.1	25.1	23.1	42.6	19.0
			GTWPR2525-H	VGW6250	155.1	22.6	47.1	45.6	149.7	24.7	27.7	47.6	19.0
			GKWPL2525-H	VGW6281	155.1	22.6	47.1	45.6	150.1	25.1	28.1	47.6	19.0
			GTWPR3232-H	VGW6250	175.1	22.6	—	45.6	169.7	24.7	34.7	54.6	19.0
			GKWPL3232-H	VGW6281	175.1	22.6	—	45.6	170.1	25.1	35.1	54.6	19.0
	GBVR-VGW8-8T19		GTWPR2020-H	VGW8312	135.2	27.7	56.2	50.7	125.5	25.5	23.5	47.7	19.0
			GKWPL2020-H	VGW8344	135.2	27.7	56.2	50.7	125.9	25.9	23.9	47.7	19.0
			GTWPR2525-H	VGW8312	160.2	27.7	52.2	50.7	150.5	25.5	28.5	52.7	19.0
			GKWPL2525-H	VGW8344	160.2	27.7	52.2	50.7	150.9	25.9	28.9	52.7	19.0
			GTWPR3232-H	VGW8312	180.2	27.7	—	50.7	170.5	25.5	35.5	59.7	19.0
			GKWPL3232-H	VGW8344	180.2	27.7	—	50.7	170.9	25.9	35.9	59.7	19.0
	GBVR-VGW8-8T28	●	GTWPR2020-H	VGW8344	137.7	30.2	58.7	53.2	125.3	25.3	23.3	50.2	28.5
			GKWPL2020-H	VGW8375	137.7	30.2	58.7	53.2	125.8	25.8	23.8	50.2	28.5
			GTWPR2525-H	VGW8344	162.7	30.2	54.7	53.2	150.3	25.3	28.3	55.2	28.5
			GKWPL2525-H	VGW8375	162.7	30.2	54.7	53.2	150.8	25.8	28.8	55.2	28.5
			GTWPR3232-H	VGW8344	182.7	30.2	—	53.2	170.3	25.3	35.3	62.2	28.5
			GKWPL3232-H	VGW8375	182.7	30.2	—	53.2	170.8	25.8	35.8	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

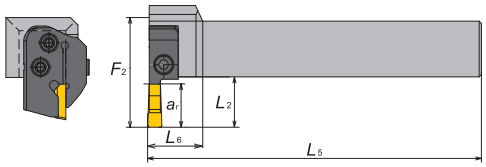
VGW..Series - Blades

GBVL

For GTWP-H



For GKWP-H



● Left hand

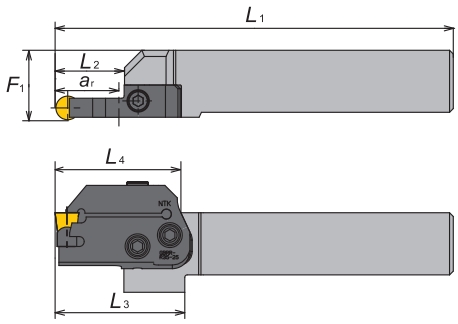
Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Left	GBVL-VGW4-3T09	●	GTWPL2020-H	VGW4125	118.7	11.2	39.7	34.1	124.3	24.3	22.3	31.2	9.5
			GKWPR2020-H	VGW4156	118.7	11.2	39.7	34.1	124.7	24.7	22.7	31.2	9.5
			GTWPL2525-H	VGW4125	143.7	11.2	35.7	34.1	149.3	24.3	27.3	36.2	9.5
			GKWPR2525-H	VGW4156	143.7	11.2	35.7	34.1	149.7	24.7	27.7	36.2	9.5
			GTWPL3232-H	VGW4125	163.7	11.2	—	34.1	169.3	24.3	34.3	43.2	9.5
			GKWPR3232-H	VGW4156	163.7	11.2	—	34.1	169.7	24.7	34.7	43.2	9.5
	GBVL-VGW4-4T14	●	GTWPL2020-H	VGW4156	125.0	17.5	46.0	40.5	124.4	24.4	22.4	37.5	14.2
			GKWPR2020-H	VGW4187	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GTWPL2525-H	VGW4156	150.0	17.5	42.0	40.5	149.4	24.4	27.4	42.5	14.2
			GKWPR2525-H	VGW4187	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GTWPL3232-H	VGW4156	170.0	17.5	—	40.5	169.4	24.4	34.4	49.5	14.2
			GKWPR3232-H	VGW4187	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
	GBVL-VGW6-6T14	●	GTWPL2020-H	VGW6218	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GKWPR2020-H	VGW6250	125.0	17.5	46.0	40.5	125.2	25.2	23.2	37.5	14.2
			GTWPL2525-H	VGW6218	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GKWPR2525-H	VGW6250	150.0	17.5	42.0	40.5	150.2	25.2	28.2	42.5	14.2
			GTWPL3232-H	VGW6218	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
			GKWPR3232-H	VGW6250	170.0	17.5	—	40.5	170.2	25.2	35.2	49.5	14.2
	GBVL-VGW6-6T19	●	GTWPL2020-H	VGW6250	130.1	22.6	51.1	45.6	124.7	24.7	22.7	42.6	19.0
			GKWPR2020-H	VGW6281	130.1	22.6	51.1	45.6	125.1	25.1	23.1	42.6	19.0
			GTWPL2525-H	VGW6250	155.1	22.6	47.1	45.6	149.7	24.7	27.1	47.6	19.0
			GKWPR2525-H	VGW6281	155.1	22.6	47.1	45.6	150.1	25.1	28.1	47.6	19.0
			GTWPL3232-H	VGW6250	175.1	22.6	—	45.6	169.7	24.7	34.7	54.6	19.0
			GKWPR3232-H	VGW6281	175.1	22.6	—	45.6	170.1	25.1	35.1	54.6	19.0
	GBVL-VGW8-8T19		GTWPL2020-H	VGW8312	135.2	27.7	56.2	50.7	125.5	25.5	23.5	47.7	19.0
			GKWPR2020-H	VGW8344	135.2	27.7	56.2	50.7	125.9	25.9	23.9	47.7	19.0
			GTWPL2525-H	VGW8312	160.2	27.7	52.2	50.7	150.5	25.5	28.5	52.7	19.0
			GKWPR2525-H	VGW8344	160.2	27.7	52.2	50.7	150.9	25.9	28.9	52.7	19.0
			GTWPL3232-H	VGW8312	180.2	27.7	—	50.7	170.5	25.5	35.5	59.7	19.0
			GKWPR3232-H	VGW8344	180.2	27.7	—	50.7	170.9	25.9	35.9	59.7	19.0
	GBVL-VGW8-8T28	●	GTWPL2020-H	VGW8344	137.7	30.2	58.7	53.2	125.3	25.3	23.3	50.2	28.5
			GKWPR2020-H	VGW8375	137.7	30.2	58.7	53.2	125.8	25.8	23.8	50.2	28.5
			GTWPL2525-H	VGW8344	162.7	30.2	54.7	53.2	150.3	25.3	23.3	55.2	28.5
			GKWPR2525-H	VGW8375	162.7	30.2	54.7	53.2	150.8	25.8	28.8	55.2	28.5
			GTWPL3232-H	VGW8344	182.7	30.2	—	53.2	170.3	25.3	35.3	62.2	28.5
			GKWPR3232-H	VGW8375	182.7	30.2	—	53.2	170.8	25.8	35.8	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

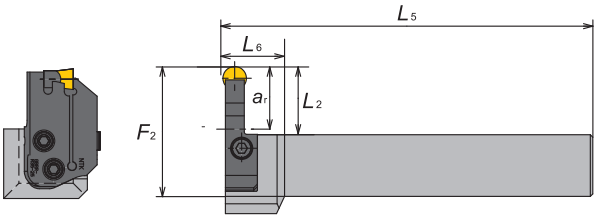
RCGX/RPGX..Series - Blades

GBRR

For GTWP-H



For GKWP-H



● Right hand

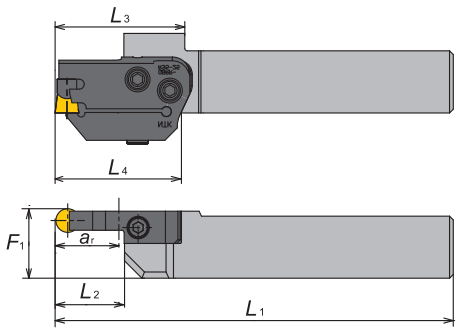
Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Right	GBRR-R23-19	●	GTWPR2020-H	RCGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GKWPL2020-H	RPGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GTWPR2525-H	RCGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GKWPL2525-H	RPGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GTWPR3232-H	RCGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
			GKWPL3232-H	RPGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
	GBRR-R35-25	●	GTWPR2020-H	RCGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GKWPL2020-H	RPGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GTWPR2525-H	RCGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GKWPL2525-H	RPGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GTWPR3232-H	RCGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
			GKWPL3232-H	RPGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
	GBRR-R45-28	●	GTWPR2020-H	RCGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GKWPL2020-H	RPGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GTWPR2525-H	RCGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GKWPL2525-H	RPGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GTWPR3232-H	RCGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5
			GKWPL3232-H	RPGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

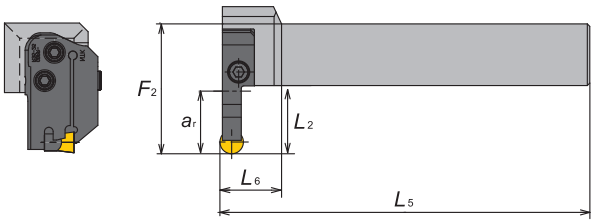
RCGX/RPGX..Series - Blades

GBRL

For GTWP-H



For GKWP-H



● Left hand

Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Left	GBRL-R23-19	●	GTWPL2020-H	RCGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GKWPR2020-H	RPGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GTWPL2525-H	RCGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GKWPR2525-H	RPGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GTWPL3232-H	RCGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
			GKWPR3232-H	RPGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
	GBRL-R35-25	●	GTWPL2020-H	RCGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GKWPR2020-H	RPGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GTWPL2525-H	RCGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GKWPR2525-H	RPGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GTWPL3232-H	RCGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
			GKWPR3232-H	RPGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
	GBRL-R45-28	●	GTWPL2020-H	RCGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GKWPR2020-H	RPGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GTWPL2525-H	RCGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GKWPR2525-H	RPGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GTWPL3232-H	RCGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5
			GKWPR3232-H	RPGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

Case study

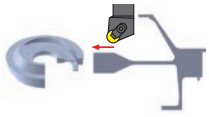
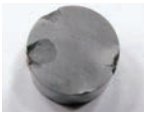
● BIDEMICS

JX1 — 4 times longer tool life

Turbine disc (Rene104 rough/semi-finish)

RNGN120700T00820,
v_c=210m/min, f =0.18mm/rev, a_p=1.00mm, Wet

Rene104	Competitor's whisker ceramic	JX1
Cutting speed (m/min)	210	←
Tool life (pass)	1	4

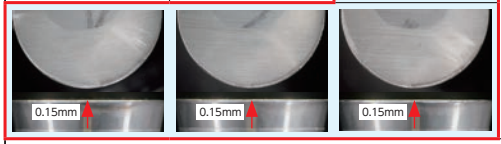
- Rene 104 is a difficult material to cut.
- JX1 cut 4 times longer tool life than whisker ceramics.

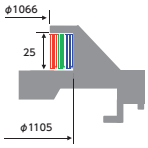
JX1 — 1.7 times higer speed

Turbine disc (Inconel718 rough/semi-finish)

RPGX120700T00820,
v_c=210m/min, f =0.16mm/rev, a_p= ~ 1.50mm, Wet

	Competitor's whisker ceramic	JX1
Cutting speed (m/min)	210	350
Chip removal (cc/min)	50	84
Cycle time (min)	15	9



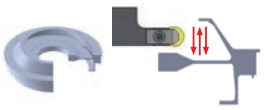


- JX1 cut 1.7 times faster than Competitor's Whisker and kept good edge.
- Reducing cycle time dramatically.

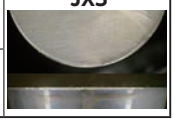
JX3

Turbine disc (Inconel718)

Grade	Competitor's whisker ceramic	JX3
Insert Shape	RPGX120700	←
Cutting speed (m/min)	210	350
Feed (mm/rev)	0.15	←
D.O.C (mm)	1.5	←
	WET	←



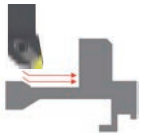
NTK : JX3 — 82 cc/min
Competitor's whisker ceramic — 48 cc/min



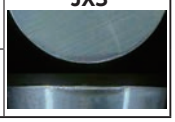
JX3

Turbine disc (Inconel718)

Grade	Competitor's whisker ceramic	JX3
Insert Shape	RPGX120700	←
Cutting speed (m/min)	210	360
Feed (mm/rev)	0.15	←
D.O.C (mm)	1.8	←
	WET	←



NTK : JX3 — 100 cc/min
Competitor's whisker ceramic — 60 cc/min

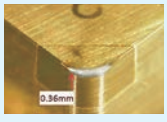


JP2 — 12 times higher productivty

Turbine disc (Inconel718 finishing)

CNGA120408,
v_c=240m/min, f =0.08mm/rev, a_p=0.25mm, Wet

Inco718	Competitor's coated carbide	JP2
Cutting speed (m/min)	20	240
Chip removal per minutes (cc/min)	0.4	4.8
Tool life (pass)	1	1



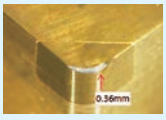
- JP2 cut 12 times faster than carbide insert, reducing cycle time dramatically

JP2 — 4 times higher productivty

Turbine disc (Inconel718 no scale, semi-finishing)

CNGA120408,
v_c=180m/min, f =0.10mm/rev, a_p=0.4mm, Wet

Inco718	Competitor's coated carbide	JP2
Cutting speed (m/min)	45	180
Chip removal per minutes (cc/min)	1.8	7.2
Tool life (pass)	1	4



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

● SiAlON ceramics

Turning(semi-finishing) : Turbine disc ●Inconel718

	current tool	NTK
Grade	Whisker ceramic	SX7
Insert Shape	RPGX120700	←
Cutting speed (m/min)	240	←
Feed (mm/rev)	0.15	←
D.O.C (mm)	1.50	←
Coolant	WET	←
Tool life (min)	7.0	←

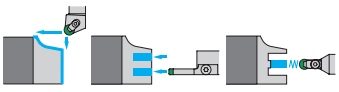
Competitor's whisker ceramic

SX7

● Whisker ceramics

Turbine disc

Inconel718

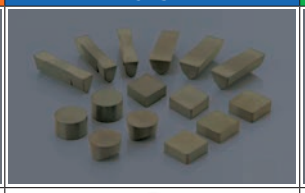


	External turning	Grroving	Ramping
	WA1	WA1	WA1
Cutting speed (m/min)	300	300	300
Feed (mm/rev)	0.15	0.1	0.06
D.O.C (mm)	3 - 4	-	2 - 3
Coolant	WET	WET	WET
Tool life (min)	20	20	20

Whisker ceramics WA1 achieved stable machining.

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.

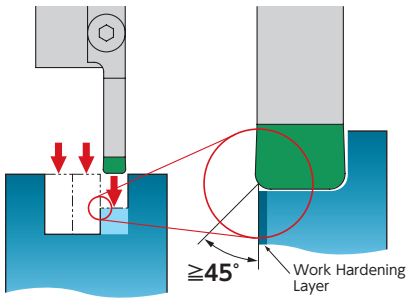
	JX1 / JX3	SX3 / SX7	SX5	WA1 / WA5
				
Speed	●	●	●	●
Feed		●	●	
Versatility	●	●		●
Toughness		●	●	
	Can run at up to 480 m/min. Double the speed of whisker	Double the feed of whisker	Best for Scale and interruption	Versatile grade

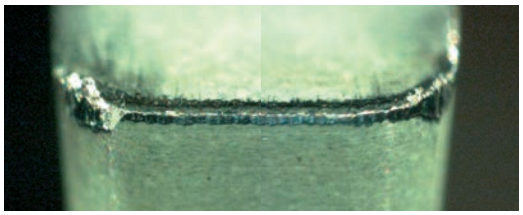
● : 1st choice ● : 2nd choice

Application	Grade	Work material	Cutting speed (m/min) 180 240 300 360 420 480	Feed (mm/rev) 0.1 0.2 0.3 0.4 0.5	Depth of cut (mm) 0.5 1.0 1.5 2.0 2.5	Coolant
Grooving	JX1 JX3	Overall	360(180-480)	0.07(0.05-0.1)	When using SX7 / SX5, increase feed rates 100% vs. Whisker Ceramics	WET
	SX5	Waspaloy	210(180-240)	0.15(0.07-0.17)		
	SX3 SX7	Overall	230(180-270)	1.1(0.07-0.15)		
	WA1	Overall	240(180-330)	0.07(0.05-0.1)		

When applying JX1 / JX3, increase speed to over 300 m/min
When applying SX3 / SX7 / SX5, increase feed rates 100% vs. Whisker Ceramics

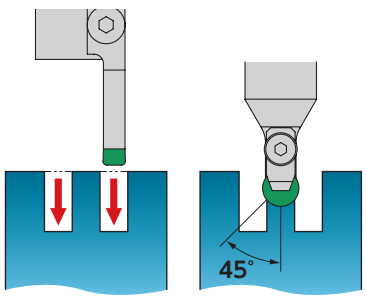
Application Information

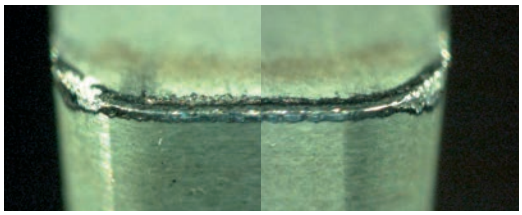




When machining a grooved area with multiple passes, the insert radius engages a potentially work hardened area during the last remaining plunge. This programming procedure sets up the potential of corner radius chipping or notching.

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.

NEW

New SiAlON Grade for Machining HRSA materials

SX3

NTK's versatile SX3 grade has been developed to achieve a SiAlON material composition with the ideal blend of excellent wear resistance and toughness to successfully machine a wide variety of HRSA materials

Machined surface · semi-finishing *HRSA materials*
(Wear resistance of SX7)

Forged surface *HRSA materials*
(Toughness of SX9 / SX5)

WATCH ON YouTube

Features

- ***Consistent in excellent wear resistance and toughness. Able to machine HRSA materials widely: Rough turning with scale ~ semi-finish turning.***
- ***Able to machine even the newest generation of HRSA materials (like Rene material) as well as today's most common HRSA materials; such as Inconel 718.***
- ***Able to machine milling with high efficiency.***

Stock list

Code	Std. Edge preparstion	
T00520	Chamfer	0.05mm×20°
E004	Round horning	R0.04

※Please order 10 each.

Shape	Part number		Dimensions (mm)		SiAlON ceramic	
	ISO	Inch	I.C.	Thickness	SX3	Stock
	RNGN120400T00520	RNG43T0220	12.7	4.76	5997929	●
	RNGN120700T00520	RNG45T0220	12.7	7.94	5997945	●
	RNGN120700E004	RNG45E02	12.7	7.94	5997952	●
	RCGX090700T00520	RCGX35T0220	9.525	7.94	5998042	●
	RCGX120700T00520	RCGX45T0220	12.7	7.94	5998059	●
	RPGX090700T00520	RPGX35T0220	9.525	7.94	5998075	●
	RPGX120700T00520	RPGX45T0220	12.7	7.94	5998083	●

Recommended machined parts

Waspaloy *Turbine Disk* *Turbine Case* *Cover Shield etc.*

Recommended work-materials

Inconel 718 *Hastelloy*

Waspaloy *Rene(Rene65, Rene88, Rene130 etc..)*

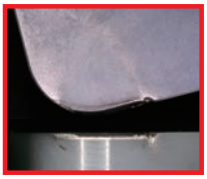
Case study

Work material : Rene130 Rough turning (eliminating scale)

	Conventional	NTK
Grade	SiAlON Ceramic	SX3
Shape	SNGN190724	←
Cutting speed (m/min)	115	←
Feed (mm/rev)	0.15	←
Coolant	WET	←
Tool life (min)	10.0	←

Competitor's SiAlON Ceramic

SX3



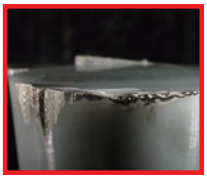
In turning rough surface, compared to competitor's SiAlON, SX3 had no fracture and good condition.

Work material : Rene130 Semi finish turning (machined surface)

	Conventional	NTK
Grade	SiAlON Ceramic	SX3
Shape	RCGX120700	←
Cutting speed (m/min)	100	←
Feed (mm/rev)	0.25	←
Coolant	WET	←
Tool life (min)	10.0	←

Competitor's SiAlON Ceramic

SX3



Competitor's SiAlON fractured frequently, however SX3 and SX9 had good edge damage.

Solid Ceramic Endmill

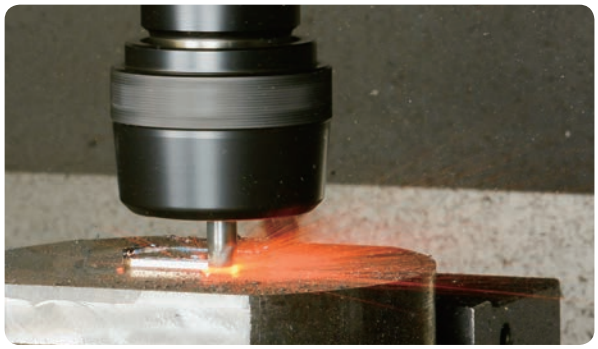
CERAMATIC Lineup Expansion

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

WATCH ON YouTube

RCE for HRSA materials ➡A22



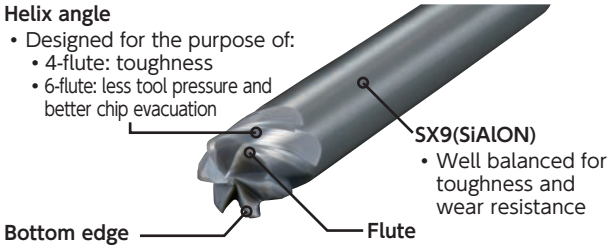
Ceramic specialist's design

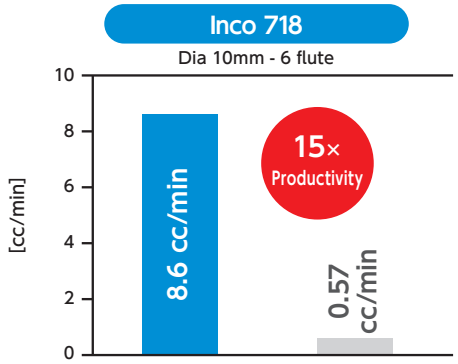
Helix angle
- Designed for the purpose of:
  - 4-flute: toughness
  - 6-flute: less tool pressure and better chip evacuation

SX9(SiAlON)
- Well balanced for toughness and wear resistance

Bottom edge
- Unique shape provides toughness

Flute
- Optimized for HRSA materials
- Excellent toughness





	SX9	Carbide
Cutting Speed (m/min)	600	40
Feed (mm/t)	0.03	⬅
DOC (mm)	3.0	⬅

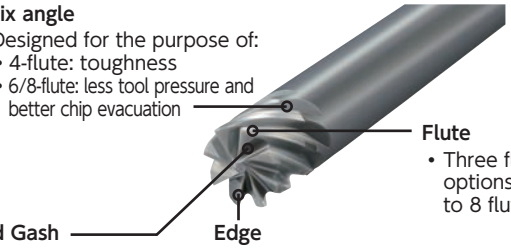
RCS for Cast iron / HRSA materials ➡A23

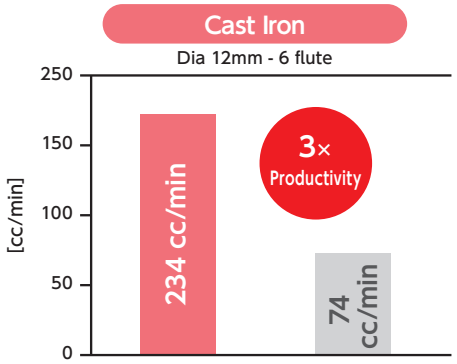
Helix angle
- Designed for the purpose of:
  - 4-flute: toughness
  - 6/8-flute: less tool pressure and better chip evacuation

Flute
- Three flute options up to 8 flute

End Gash
- Bigger end gash brings toughness

Edge
- Added chamfer provides toughness for cast iron machining

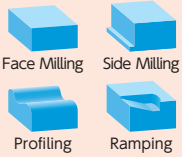




	SX9	Carbide
Cutting Speed (m/min)	700	110
Feed (mm/t)	0.05	⬅
DOC (mm)	3.5	7.0

4-flute

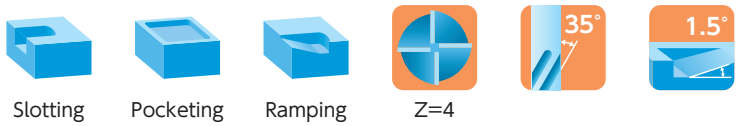
6-flute **8-flute**



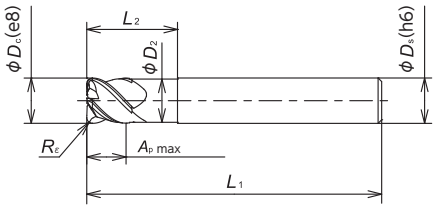
RCE for HRSA Materials

RCE-H4 (4-flute with Neck)

○No center cutting edge



Slotting　Pocketing　Ramping　Z=4



Tolerances

φDc / φDs	e8	h6
8mm, 10mm, 3/8"	-0.024/-0.047	+0/-0.009
12mm, 1/2"	-0.032/-0.059	+0/-0.011

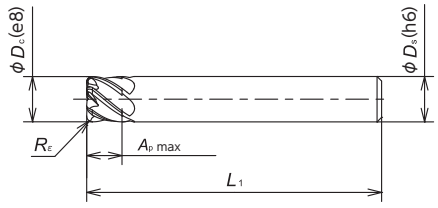
Heat Resistant Alloy | S | ●　● : 1st Choice　● : 2nd choice

Item Number		Grade SX9	Flute	φDc (mm)	φDc (Inch)	φDs (mm)	φDs (Inch)	φD2 (mm)	φD2 (Inch)	Rε (mm)	Rε (Inch)	Ap max (mm)	Ap max (Inch)	L1 (mm)	L1 (Inch)	L2 (mm)	L2 (Inch)
RCEM	080H4R100S	●	4	**8.0**	—	8.0	—	7.6	—	1.0	—	6.0	—	60	—	16	—
	100H4R125S	●		**10.0**	—	10.0	—	9.6	—	1.25	—	7.5	—	65	—	20	—
	120H4R150S	●		**12.0**	—	12.0	—	11.6	—	1.5	—	9.0	—	70	—	24	—
RCEI	375H4R047S	●		**9.525**	3/8	9.525	3/8	9.125	.359	1.19	.047	7.14	9/32	63.5	2.5	19.05	3/4
	500H4R068S	●		**12.7**	1/2	12.7	1/2	12.3	.484	1.73	.068	9.525	3/8	69.9	2.75	25.4	1

RCE-J6 (6-flute)

○No center cutting edge

Face Milling　Side Milling　Profiling　Ramping　Z=6



Tolerances

φDc / φDs	e8	h6
8mm, 10mm, 3/8"	-0.024/-0.047	+0/-0.009
12mm, 1/2"	-0.032/-0.059	+0/-0.011

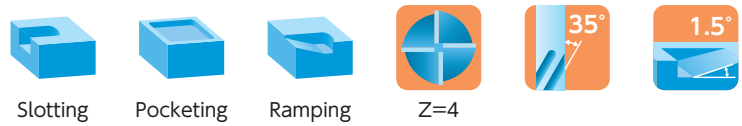
Heat Resistant Alloy | S | ●　● : 1st Choice　● : 2nd choice

Item Number		Grade SX9	Flute	φDc (mm)	φDc (Inch)	φDs (mm)	φDs (Inch)	φD2 (mm)	φD2 (Inch)	Rε (mm)	Rε (Inch)	Ap max (mm)	Ap max (Inch)	L1 (mm)	L1 (Inch)	L2 (mm)	L2 (Inch)
RCEM	080J6R100S	●	6	**8.0**	—	8.0	—	—	—	1.0	—	6	—	60	—	—	—
	100J6R125S	●		**10.0**	—	10.0	—	—	—	1.25	—	7.5	—	65	—	—	—
	120J6R150S	●		**12.0**	—	12.0	—	—	—	1.5	—	9	—	70	—	—	—
RCEI	375J6R047S	●		**9.525**	3/8	9.525	3/8	—	—	1.19	.047	7.14	9/32	63.5	2.5	—	—
	500J6R068S	●		**12.7**	1/2	12.7	1/2	—	—	1.73	.068	9.525	3/8	69.9	2.75	—	—

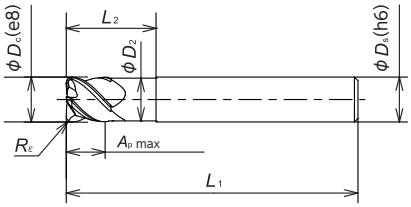
RCS for Cast Iron / HRSA Materials

RCS-H4

○No center cutting edge



Slotting　Pocketing　Ramping　Z=4



Tolerances

ϕDc / ϕDs	e8	h6
12mm, 16mm, 1/2", 5/8"	-0.032/-0.059	+0/-0.011

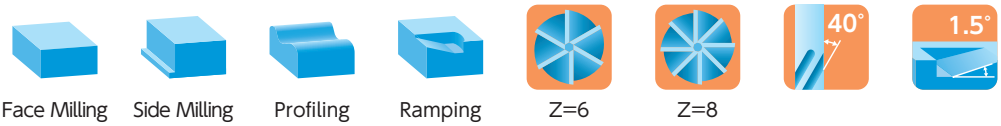
Cast Iron	K	●
Heat Resistant Alloy	S	●

● : 1st Choice　● : 2nd choice

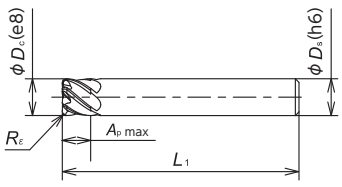
Item Number	Grade	Flute	ϕDc		ϕDs		ϕD2		Rε		Ap max		L1		L2	
	SX9		(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)
RCSM 120H4R150S	●	4	**12.0**	—	12.0	—	11.6	—	1.5	—	9.0	—	70	—	24	—
160H4R200S	●		**16.0**	—	16.0	—	15.5	—	2.0	—	12.0	—	75	—	32	—
RCSI 500H4R068S	●		**12.7**	1/2	12.7	1/2	12.3	.484	1.73	.068	9.525	3/8	69.85	2.75	25.4	1
625H4R078S	●		**15.875**	5/8	15.875	5/8	15.375	.609	1.98	.078	11.91	.469	76.2	3	31.75	1.25

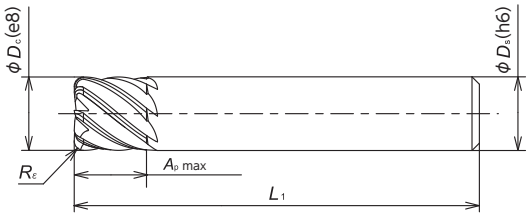
RCS-J6 / RCS-J8

○No center cutting edge



Face Milling　Side Milling　Profiling　Ramping　Z=6　Z=8





Tolerances

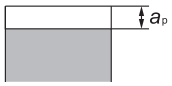
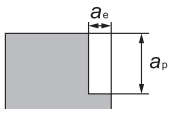
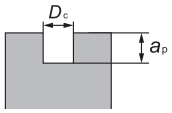
ϕDc / ϕDs	e8	h6
12mm, 16mm, 1/2", 5/8"	-0.032/-0.059	+0/-0.011
20mm, 3/4"	-0.040/-0.073	+0/-0.013

Cast Iron	K	●
Heat Resistant Alloy	S	●

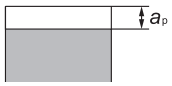
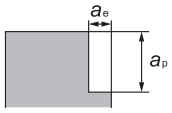
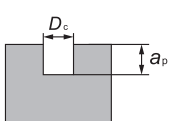
● : 1st Choice　● : 2nd choice

Item Number	Grade	Flute	ϕDc		ϕDs		ϕD2		Rε		Ap max		L1		L2	
	SX9		(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)
RCSM 120J6R150S	●	6	**12.0**	—	12.0	—	—	—	1.5	—	9.0	—	70	—	—	—
160J6R200S	●		**16.0**	—	16.0	—	—	—	2.0	—	12.0	—	75	—	—	—
RCSI 500J6R068S	●		**12.7**	1/2	12.7	1/2	—	—	1.73	.068	9.525	3/8	69.85	2.75	—	—
625J6R078S	●		**15.875**	5/8	15.875	5/8	—	—	1.98	.078	11.91	.469	76.2	3	—	—
RCSM 200J8R250S	●	8	**20.0**	—	20.0	—	—	—	2.5	—	15.0	—	110	—	—	—
RCSI 750J8R094S	●		**19.05**	3/4	19.05	3/4	—	—	2.38	.094	14.29	.562	107.95	4.25	—	—

Recommend Cutting Conditions for HRSA material

Application	Grade	ϕ D_c	Flute	Cutting Speed (m/min) 150 600 1000	Feed (mm/t)	Depth of cut a_p (mm)	Width of cut a_e (mm)	Coolant
Face Milling 	SX9	3/8"	4/6/8		0.03	1.4	—	DRY
		1/2"				1.9		
		5/8"				2.4		
		3/4"				2.9		
		8mm				1.2		
		10mm				1.5		
		12mm				1.8		
		16mm				2.4		
		20mm				3.0		
Side Milling 	SX9	3/8"	4/6/8		0.03	4.8	0.9	DRY
		1/2"				6.4	1.3	
		5/8"				8.0	1.6	
		3/4"				9.5	1.9	
		8mm				4.0	0.8	
		10mm				5.0	1.0	
		12mm				6.0	1.2	
		16mm				8.0	1.6	
		20mm				10.0	2.0	
Slotting 	SX9	3/8"	4		0.03	2.4	—	DRY
		1/2"				3.2		
		5/8"				4.0		
		8mm				2.0		
		10mm				2.5		
		12mm				3.0		
		16mm				4.0		
		3/8"	6			1.4		
		1/2"				1.9		
		5/8"				2.4		
		8mm				1.2		
		10mm				1.5		
		12mm				1.8		
		16mm				2.4		
		3/4"	8		0.03	2.9	—	
		16mm				3.0		

Recommended cutting conditions for Cast Iron

Application	Grade	ϕ D_c	Flute	Cutting Speed (m/min) 150 600 1000	Feed (mm/t)	Depth of cut a_p (mm)	Width of cut a_e (mm)	Coolant
Face Milling 	SX9	1/2"	4/6/8		0.1	2.4	—	DRY
		5/8"				5.0		
		3/4"				4.8		
		12mm				3.0		
		16mm				4.0		
		20mm				5.0		
Side Milling 	SX9	1/2"	4/6/8		0.1	9.5	2.1	DRY
		5/8"				11.9	2.6	
		3/4"				14.3	3.2	
		12mm				9.0	2.0	
		16mm				12.0	2.5	
		20mm				15.0	3.3	
Slotting 	SX9	1/2"	4/6/8		0.1	2.4	—	DRY
		5/8"				4.0		
		3/4"				4.8		
		12mm				3.0		
		16mm				4.0		
		20mm				5.0		

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 300m/min 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

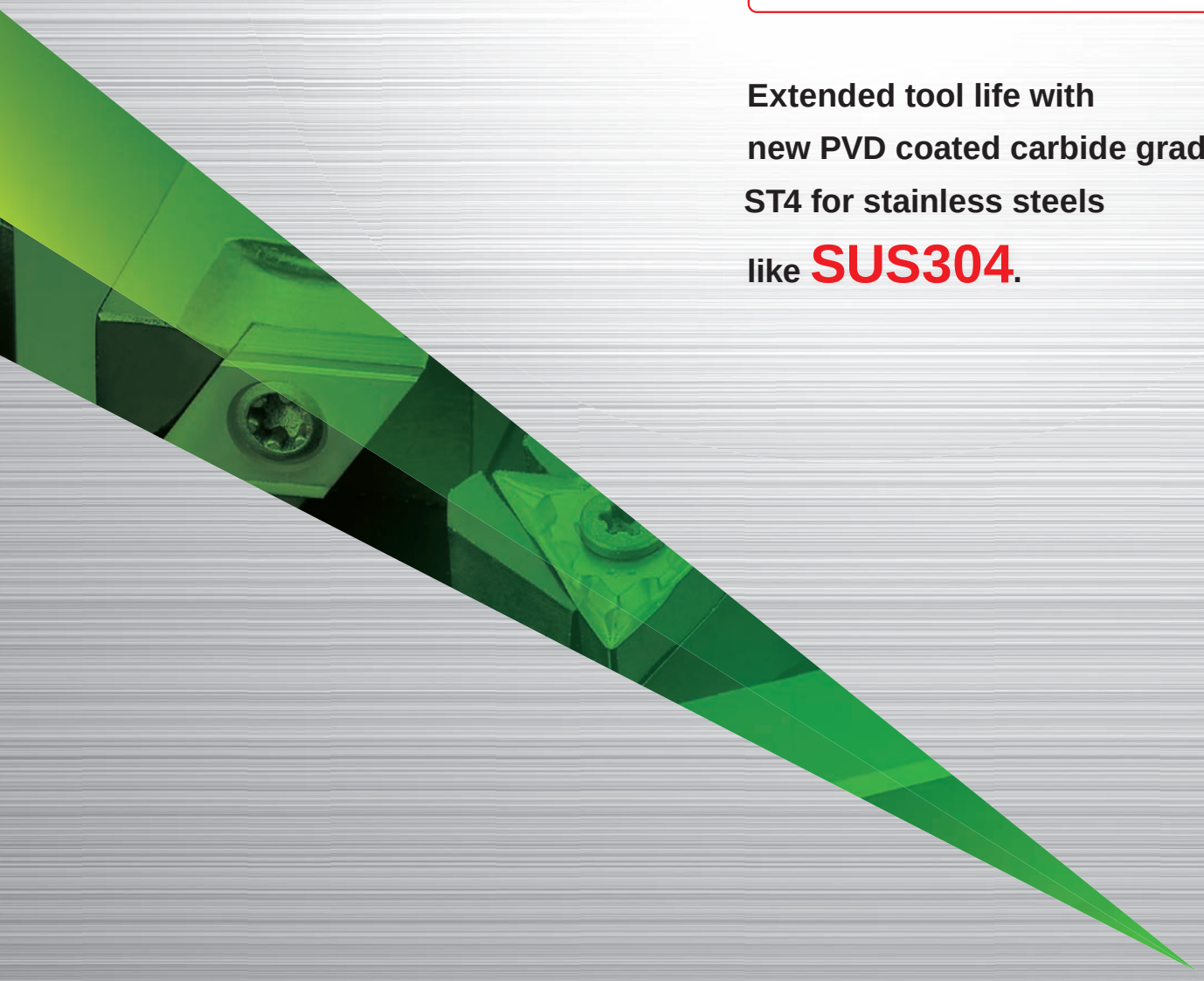
- Continue to machine even if you see BUE, removing BUE may cause chipping or breakage to the edge.
- High speed machining work hardens the material. For this reason, leave at least 0.3mm of material for a finishing process.

ST4

SUPER TOUGH COAT

For Stainless Steel

Extended tool life with new PVD coated carbide grade. ST4 for stainless steels like SUS304.



WATCH ON YouTube

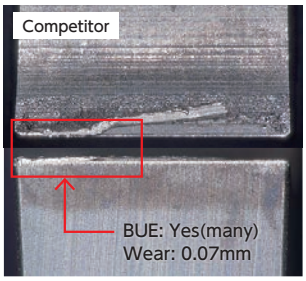
Stable and consistent performance when machining stainless steel

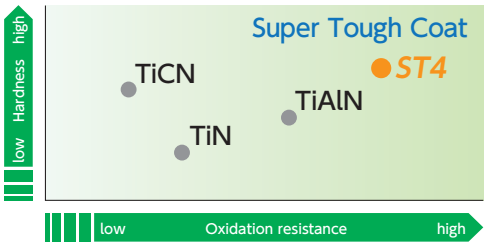
Low tool life , and unstable chip evacuation are factors preventing stable machining of stainless steel.
The New PVD coated carbide grade ST4 solves the issues related to machining stainless steel.

Higher hardness and oxidation resistance

NTK's unique coating technology creates a high-aluminum composition.
Extends tool life and allows high-speed machining of stainless steel.

NTK vs. competitor(cut off)
Workmaterial : SUS304(ϕ11) Vc=80m/min f=0.03mm after 200pcs cut-off

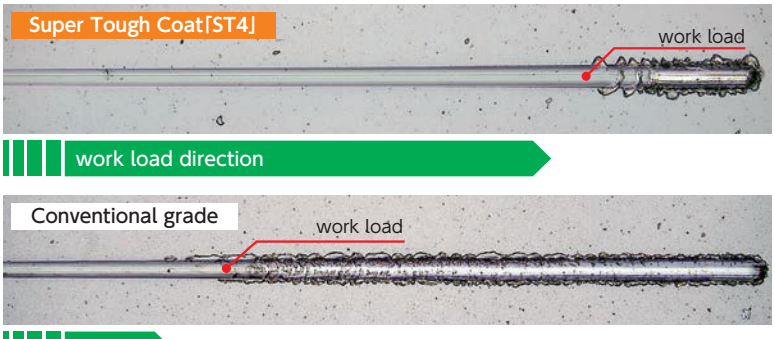


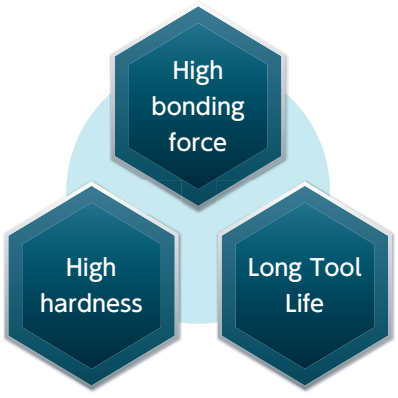


Stable machining, excellent surface finish ⇒ Extended tool life

NTK new PVD coated carbide grade ST4 improved bonding force and surface smoothness .
It prevents BUE trouble from stainless steel machining, and achived stable cutting.

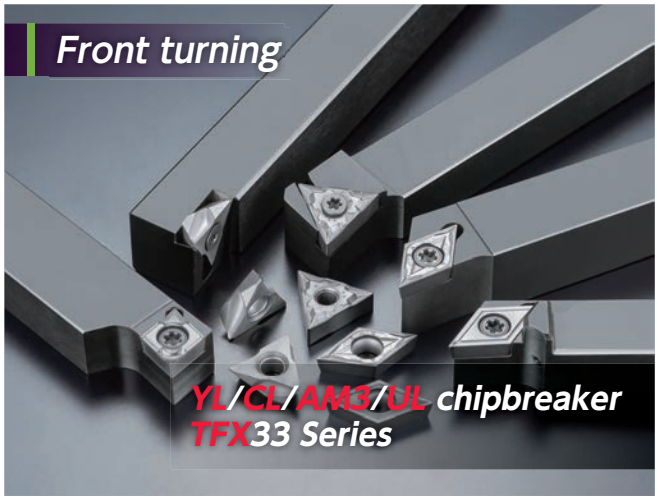
Measurement (Scratch test on coating layer)



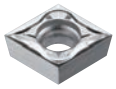
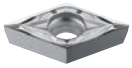
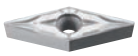
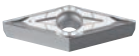
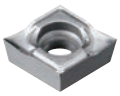
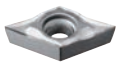
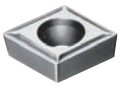


Super Tough Coat ST4 × Chipbreaker for stainless steel

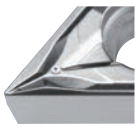
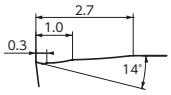
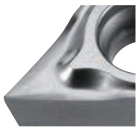
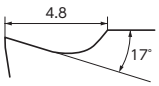
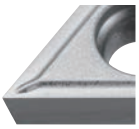
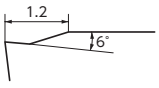
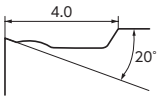
NTK's ST4 grade combined with unique chipbreakers meet the demands of your machining.



Front turning YL • CL • AM3 • UL chipbreaker

Shape	Item number		Corner R	Stock ST4	Dimensions (mm) I.C.	Thickness
	CCGT	09T301M YL	0.08	●	9.525	3.97
		09T302M YL	0.18	●		
		09T304M YL	0.38	●		
		09T308M YL	0.78	●		
	DCGT	11T301M YL	0.08	●	9.525	3.97
		11T302M YL	0.18	●		
		11T304M YL	0.38	●		
		11T308M YL	0.78	●		
	VCGT	110301M YL	0.08	●	6.35	3.18
		110302M YL	0.18	●		
		110304M YL	0.38	●		
	VBGT	160402FN YL	0.2	●	9.525	4.76
		160404FN YL	0.4	●		
		160408FN YL	0.8	●		
	CCGT	060201M CL	0.08	●	6.35	2.38
		060202M CL	0.18	●		
		09T301M CL	0.08	●	9.525	3.97
		09T302M CL	0.18	●		
		09T304M CL	0.38	●		
	DCGT	070201M CL	0.08	●	6.35	2.38
		070202M CL	0.18	●		
		070204M CL	0.38	●		
		11T301M CL	0.08	●	9.525	3.97
		11T302M CL	0.18	●		
		11T304M CL	0.38	●		
	VCGT	110301M CL	0.08	●	6.35	3.18
		110302M CL	0.18	●		
	CCGT	060201M FN AM3	0.08	●	6.35	2.38
		060202M FN AM3	0.18	●		
		060204M FN AM3	0.38	●		
		09T301M FN AM3	0.08	●	9.525	3.97
		09T302M FN AM3	0.18	●		
		09T304M FN AM3	0.38	●		
	DCGT	070201M FN AM3	0.08	●	6.35	2.38
		070202M FN AM3	0.18	●		
		070204M FN AM3	0.38	●		
		11T301M FN AM3	0.08	●	9.525	3.97
		11T302M FN AM3	0.18	●		
		11T304M FN AM3	0.38	●		
	VCGT	110301M FN AM3	0.08	●	6.35	3.18
		110302M FN AM3	0.18	●		
		110304M FN AM3	0.38	●		
	VPGT	110301M FN AM3	0.08	●	6.35	3.18
		110302M FN AM3	0.18	●		
	TNGG	160401M FN UL	0.08	●	9.525	4.76
		160402M FN UL	0.18	●		
		160404M FN UL	0.38	●		
		160408M FN UL	0.78	●		

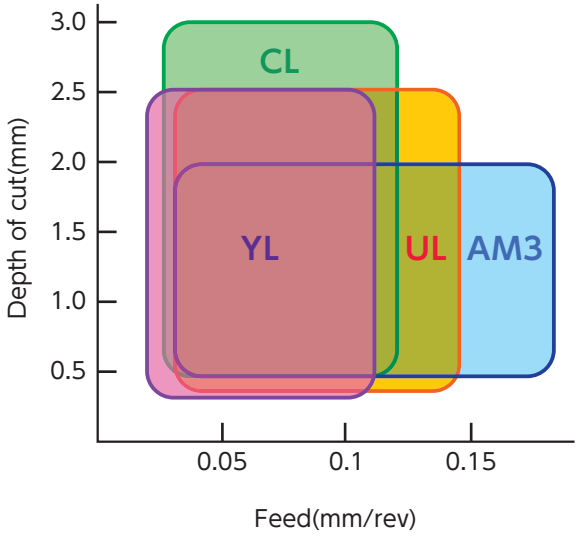
Features

Name	Chipbreker Geometry		Features
YL		 ※DCGT11T302MYL	・Great combination of sharpness and toughness ・Covers extremely wide range ・Excellent chip control
CL		 ※DCGT11T302M	・Sharpest molded chipbreaker ・Excellent chip control ・Less tool pressure
AM3		 ※DCGT11T302	・All purpose chipbreaker ・Sharp edge with toughness
UL		 ※TNGG160401MFN	・Negative insert with a positive insert's chipbreaker ・Reduced burrs ・Improves microfinish ・Superb advantage in cost per corner over positive inserts

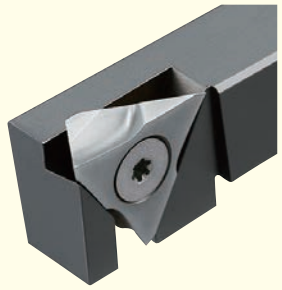
Chipbreker Geometry

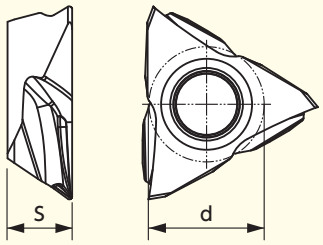
Toolholder	CCGT Series	DCGT Series	VCGT Series	VPGT Series	TNGG Series
General catalogue	G23~G24	G24~G27	G28~G31	G32~G33	G38~G39
2018 SS catalogue	D22~D23	D24~D27	D28~D31	D32~D33	D36~D37

Chip Control Range

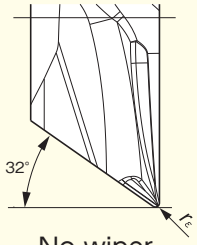


Front turning TFX Series

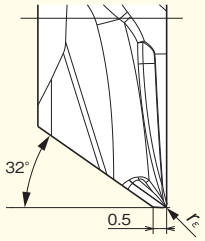




Shape



No wiper



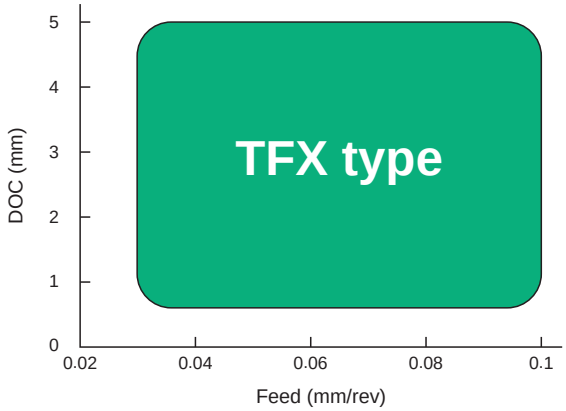
With wiper

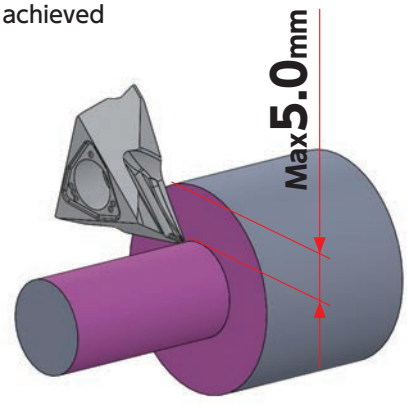
Wiper	Item number	r_ε (mm)	Stock ST4	Max. DOC (mm)	Dimensions (mm) d	Dimensions (mm) s	Toolholder General catalogue
No	TFX 3301MR	0.08	●	5.0	9.525	4.76	G34
	3302MR	0.18	●				
	3304MR	0.38	●				
Yes	TFX 3301MRW	0.08	●	5.0	9.525	4.76	G34
	3302MRW	0.18	●				
	3304MRW	0.38	●				

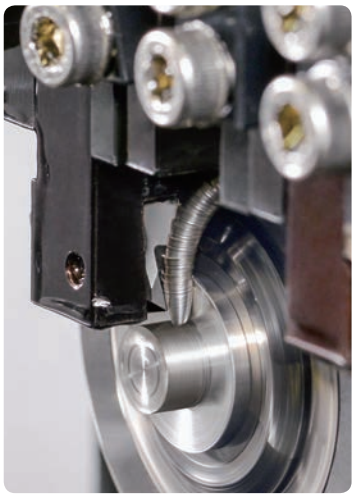
Features

Specially designed sharp chipbreaker provides 1 pass turning up to 5.0mm.

Reduce cutting force with high DOC turning, and achieved excellent chipcontrol with good surface finish.

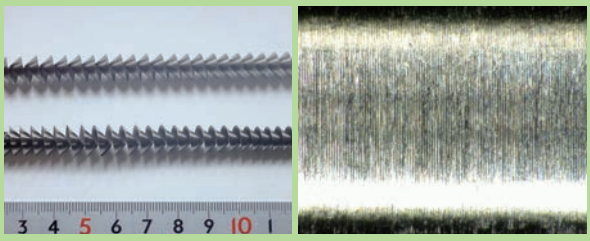






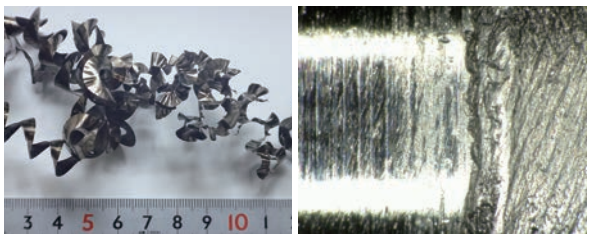
DOC 5.0mm Workmaterial : SUS304 Cutting condition : Vc=80m/min f=0.03mm/rev WET

NTK The Front Max



Good chip control and excellent machined surface finish

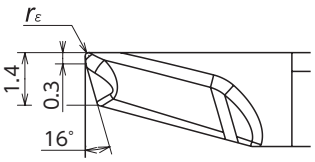
Competitor's chipbreaker designed for high DOC turning



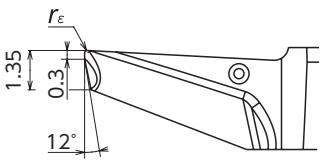
Rough surface

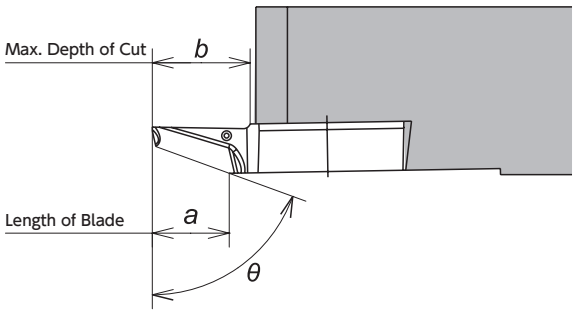
Back turning TBP/TBPA-BM Series

TBP-BM Series



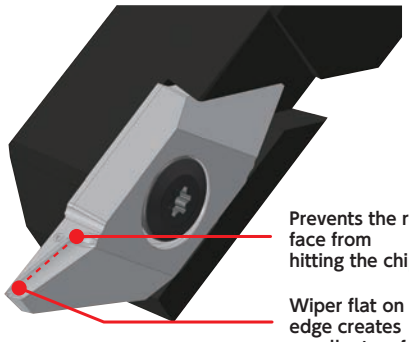
TBPA-BM Series





Item number	r_ε (mm)	Length of Blade a (mm)	Max. Depth of Cut b (mm)	Cutting edge angle θ	Stock ST4	Toolholder: General catalogue	Toolholder: 2018 SS catalogue
TBP 72FR05-BM	0.05	3.5	5.3	72°	●	G52 ~ G53	E12 ~ E13
72FR10M-BM	0.08	3.5	5.3	72°	●		
72FR20M-BM	0.18	3.5	5.3	72°	●		
TBPA 70FR05-BM	0.05	5.5	6.5	70°	●	G54 ~ G55	E14
70FR10M-BM	0.08	5.5	6.5	70°	●		
70FR20M-BM	0.18	5.5	6.5	70°	●		

Features



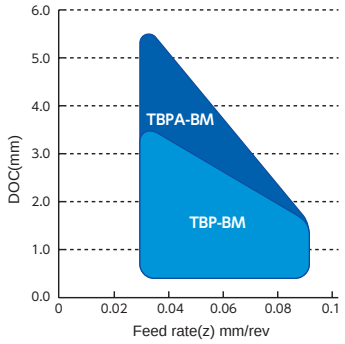
Prevents the rough end face from hitting the chip

Wiper flat on cutting edge creates excellent surface finishes

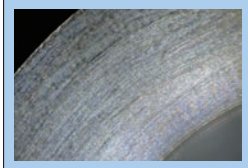
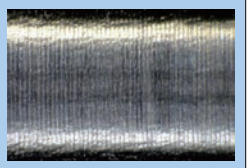
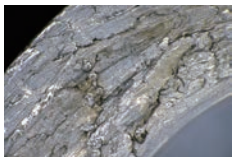
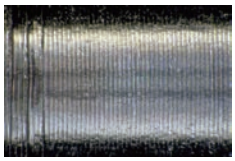
BM chipbreaker	Competitor's tool
Good chip control	Unstable chip control

Cutting condition: Vc=80m/min WET
Material: SUS304 ϕ16 Holder: TBPR12
Insert: TM4 TBP72FR10M-BM

Chip control range



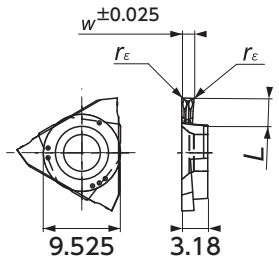
Superior Surface Finish

1 Pass	BM chipbreaker		Competitor's tool	
	End face	OD	End face	OD
				
	Excellent surface	Ra : 0.72 μm Rz : 4.46 μm	Rough surface	Ra : 1.65 μm Rz : 6.01 μm

Cutting condition: Vc=80m/min f(x)=0.02mm/rev f(z)=0.08mm/rev ap=3.0mm WET
Material: SUS304 ϕ16 Holder: TBPR12 Insert: TM4 TBP72FR10M-BM

Grooving GTMH32-GX Series

side turning capability
Details
Front rake angle: 17degree
Side rake angle :14 degree

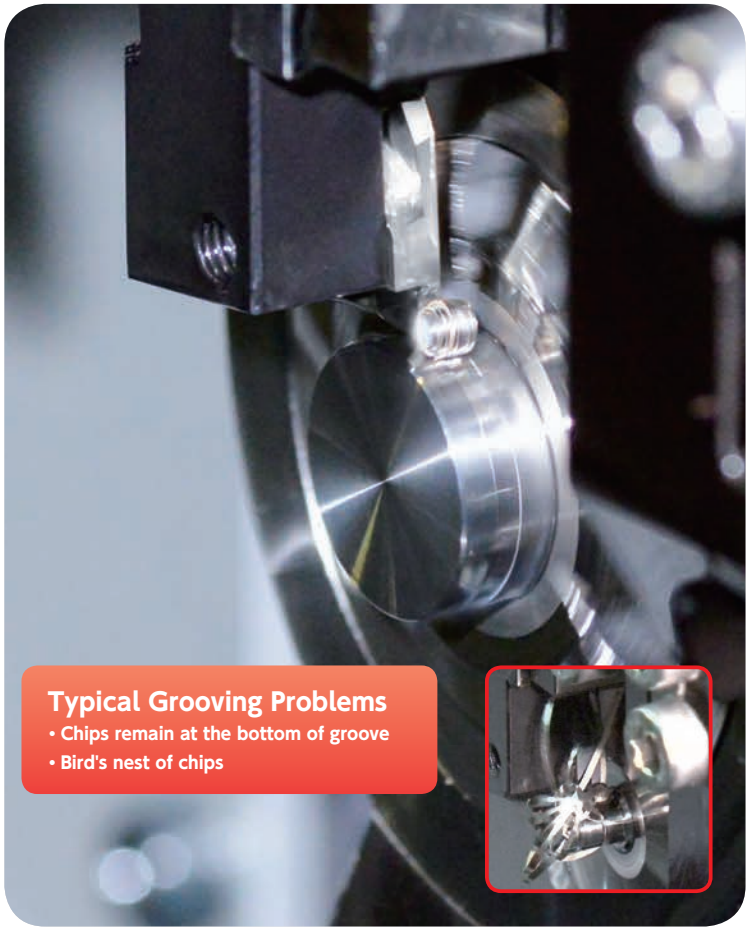


Groove width: ~ 1.0

Groove width : 1.5 ~

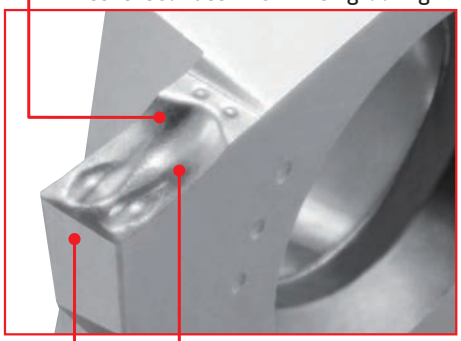
Item number	Dimension(mm)					Stock
	W	r_ε	L	Max Depth Grooving (mm)	Max Depth Side turning (mm)	ST4
GTMH32 033RGX	0.33	0.05	0.6	0.25	—	●
043RGX	0.43	0.05	1.2	0.9	—	●
050RGX	0.50	0.05	1.2	0.9	—	●
053RGX	0.53	0.05	1.2	0.9	—	●
075RGX	0.75	0.05	2.0	1.6	0.75	●
095RGX	0.95	0.05	2.0	1.6	1.5	●
100RGX	1.0	0.05	2.0	1.6	1.5	●
100RGX01	1.0	0.1	2.0	1.6	1.5	●
GTMH32 150RGX	1.5	0.05	3.0	2.7	2.0	●
150RGX01	1.5	0.1	3.0	2.7	2.0	●
150RGX02	1.5	0.2	3.0	2.7	2.0	●
200RGX	2.0	0.05	3.0	2.7	2.0	●
200RGX01	2.0	0.1	3.0	2.7	2.0	●
200RGX02	2.0	0.2	3.0	2.7	2.0	●
300RGX	3.0	0.05	3.0	2.7	2.0	●
300RGX02	3.0	0.2	3.0	2.7	2.0	●

Features



Center bump and dent design improve chip control

Help chip curl & control.
Excellent surface finish when grooving.



Improve chip control when side turning.

Chip control performance at side turning improved (MAX. ap- 2.0mm)

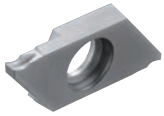
Outer periphery polishing offers excellent surface finish

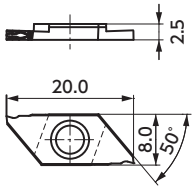
■ Toolholder

Toolholder	
General catalogue	2018 SS catalogue
H18 ~ H21	H8 ~ H11

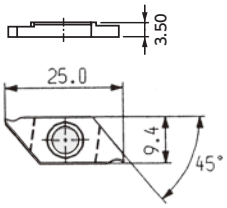
Cut off CTP/CTPA-CX Series

CTP-TH Series
(Max. Cut-off Dia. ~φ12)





CTPA-TH Series
(Max. Cut-off Dia. ~φ16)

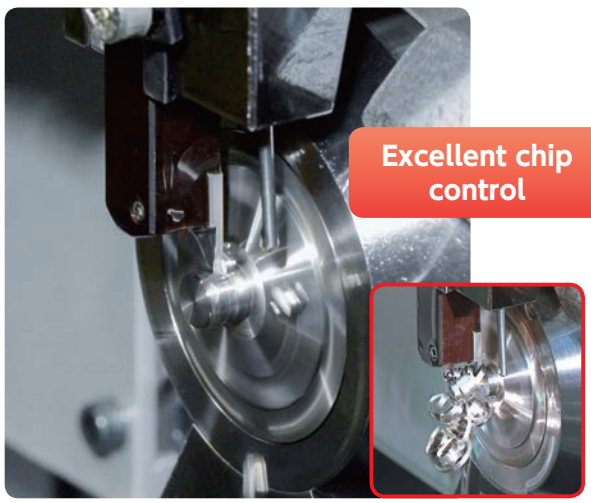


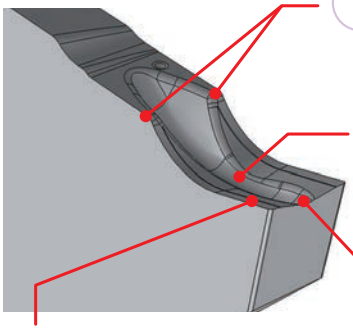
Type	Hand	Shape	Item number	Max. Cut-off Dia. (mm) φD	Dimension(mm)				Stock
					w	A	θ	r_ε	ST4
CTP Series	R		CTP 10FR-CX	12.0	1.0	0.32	16°	0.05	●
			13FR-CX	12.0	1.3	0.40	16°	0.05	●
			15FR-CX	12.0	1.5	0.46	16°	0.05	●
			CTP 10FRN-CX	12.0	1.0	—	0°	0.05	●
			13FRN-CX	12.0	1.3	—	0°	0.05	●
			13FRN02-CX	12.0	1.3	—	0°	0.2	●
			15FRN-CX	12.0	1.5	—	0°	0.05	●
			15FRN02-CX	12.0	1.5	—	0°	0.2	●
	L		CTP 10FLK-CX	11.0	1.0	0.32	16°	0.05	●
			13FLK-CX	11.0	1.3	0.40	16°	0.05	●
			15FLK-CX	11.0	1.5	0.46	16°	0.05	●
			CTP 10FLN-CX	12.0	1.0	—	0°	0.05	●
			13FLN-CX	12.0	1.3	—	0°	0.05	●
			13FLN02-CX	12.0	1.3	—	0°	0.2	●
			15FLN-CX	12.0	1.5	—	0°	0.05	●
			15FLN02-CX	12.0	1.5	—	0°	0.2	●
CTPA Series	R		CTPA 15FR-CX	16.0	1.5	0.46	16°	0.05	●
			CTPA 15FRN-CX	16.0	1.5	—	0°	0.05	●
	L		CTPA 15FLK-CX	14.5	1.5	0.46	16°	0.05	●
			CTPA 15FLN-CX	16.0	1.5	—	0°	0.05	●

※Max. Cut-off Dia. is indicates the cutting diameter of the insert when the top of the cutting edge is located on center

Features

Folds chip strongly from both ends and achieves superior machined surface finish.





1 Fold chips from both ends strongly.

4 Center groove guides the chips.

3 V-shape has 2 step action for keeping nose R sharp and fold ships.

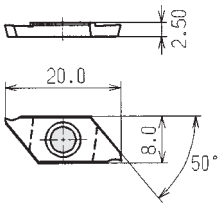
2 Up sharp edge like a ground inserts(Rake angle :15 degree)

■ Toolholder

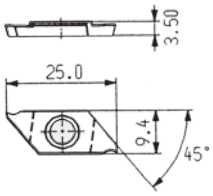
Catalogue	CTP Series	CTPA Series
General catalogue	G74 ~ G75	G80 ~ G81
2018 SS catalogue	F10 ~ F11	F16 ~ F17

Cut-off CTP/CTPA-TH Series (Tough edge type)

CTP-TH Series (Max. Cut-off Dia. ~φ12)



CTPA-TH Series (Max. Cut-off Dia. ~φ16)

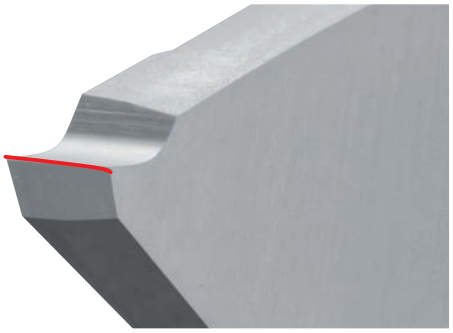


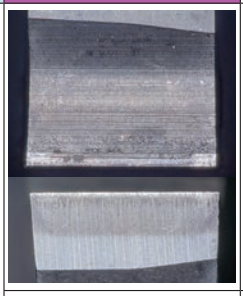
Type	Hand	Shape	Item number	Max. Cut-off Dia. (mm) φD	Dimension(mm) w	A	θ	r_ε	Stock ST4
CTP Series	R		CTP 10FR-TH	12.0	1.0	0.32	16°	0.05	●
			15FR-TH	12.0	1.5	0.46	16°	0.05	●
			20FR-TH	12.0	2.0	0.61	16°	0.05	●
			CTP 10FRN-TH	12.0	1.0	—	0°	0.05	●
			15FRN-TH	12.0	1.5	—	0°	0.05	●
			20FRN-TH	12.0	2.0	—	0°	0.05	●
	L		CTP 10FLK-TH	11.0	1.0	0.32	16°	0.05	●
			15FLK-TH	11.0	1.5	0.46	16°	0.05	●
			20FLK-TH	11.0	2.0	0.61	16°	0.05	●
			CTP 10FLN-TH	12.0	1.0	—	0°	0.05	●
			15FLN-TH	12.0	1.5	—	0°	0.05	●
			20FLN-TH	12.0	2.0	—	0°	0.05	●
CTPA Series	R		CTPA 15FR-TH	16.0	1.5	0.46	16°	0.05	●
			20FR-TH	16.0	2.0	0.61	16°	0.05	●
			CTPA 15FRN-TH	16.0	1.5	—	0°	0.05	●
			20FRN-TH	16.0	2.0	—	0°	0.05	●
	L		CTPA 15FLK-TH	14.5	1.5	0.46	16°	0.05	●
			20FLK-TH	14.5	2.0	0.61	16°	0.05	●
			CTPA 15FLN-TH	16.0	1.5	—	0°	0.05	●
			20FLN-TH	16.0	2.0	—	0°	0.05	●

※Max. Cut-off Dia. indicates the cutting diameter of the insert when the top of the cutting edge is located on center

Features

-TH achieves superior fracture resistance
Long tool life on stainless steel cut-off operation



Case sutdy	CTP-TH type	Competitor's tool
Material: SUS304 φ11 Cutting condition: Vc=80m/min f=0.03mm/rev Tools: Insert: CTP-TH Series 2.0mm width Holder: CTPR12		
	200pcs. machined	100pcs. machined

Toolholder

Catalogue	CTP Series	CTPA Series
General catalogue	G74 ~ G75	G80 ~ G81
2018 SS catalogue	F10 ~ F11	F16 ~ F17

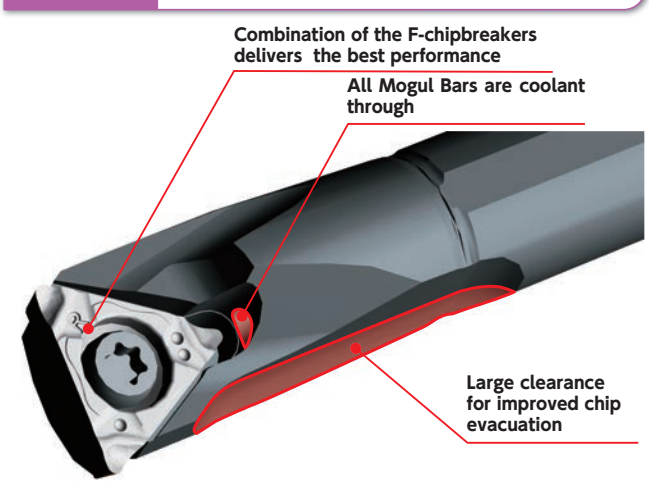
ID turning F05 • F1 • FG chipbreaker

Shape	Number		Corner R	Stock ST4	Dimensions (mm) I.C.	Thickness
	TCGH	060101FR F05	0.1	●	3.97	1.59
		060102FR F05	0.2	●		
		060104FR F05	0.4	●		
	TPGH	090201FR F1	0.1	●	5.58	2.38
		090202FR F1	0.2	●		
		090204FR F1	0.4	●		
		090208FR F1	0.8	●		
		110302FR F1	0.2	●	6.35	3.18
		110304FR F1	0.4	●		
		110308FR F1	0.8	●		
	TPGH	090202R FG	0.2	●	5.56	2.38
		090204R FG	0.4	●		
		110302R FG	0.2	●	6.35	3.18
		110304R FG	0.4	●		
Angle 75°	MBL	005FR F1	0.05	●	3.60	2.38
		015FR F1	0.15	●		
Angle 75°	ERGHT	30101FR F1	0.1	●	3.97	1.59
		30102FR F1	0.2	●		
		30104FR F1	0.4	●		
	CPGH	040101FR F1	0.1	●	4.76	1.59
		040102FR F1	0.2	●		
		040104FR F1	0.4	●		
		060202FR F1	0.2	●	6.35	2.38
		060204FR F1	0.4	●		
	CCGT	060201FR F1	0.1	●	6.35	2.38
		060202FR F1	0.2	●		
		060204FR F1	0.4	●		
		09T302FR F1	0.2	●	9.525	3.97
		09T304FR F1	0.4	●		

Toolholder

Catalogue	TCGH Series	TPGH Series	MBL Series	ERGHT Series	CPGH Series	CCGT Series
General catalogue	K30 ~ K31	K30 ~ K31	K24 ~ K25	K26 ~ K27	K28 ~ K29	K28
2018 SS catalogue	K36 ~ K37	K36 ~ K37	K30 ~ K31	K32 ~ K33	K34 ~ D35	K34

Features



Features

- *F type chipbreaker allow chips to evacuate backward.*
- *Combination of the F-chipbreakers and Mogul Bar delivers the best performance.*

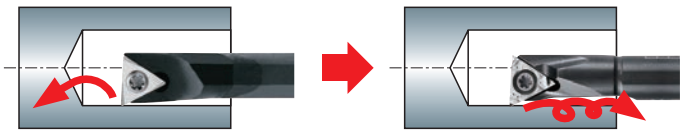
	DOC (mm)	Feed(mm/rev) 0.05	Feed(mm/rev) 0.1
FG chipbreaker ● Best for finishing ● Works for small DOC (ap-0.5mm) ● High rake angle	0.1		
	0.3		
F1 • F05 chipbreaker ● Covers wide range of conditions ● Ground chipbreaker	0.5		

Note: Right-hand inserts with FG and F1 chipbreakers should be used with right-hand holders

Material : SCM435 Holder : S10K-STUPR11D12-OH
Insert : TPGH110304 Series Cutting condition : V_c=80m/min
Bore diameter : ϕ12 External coolant **Depth of cut : 20mm**

Typical inserts

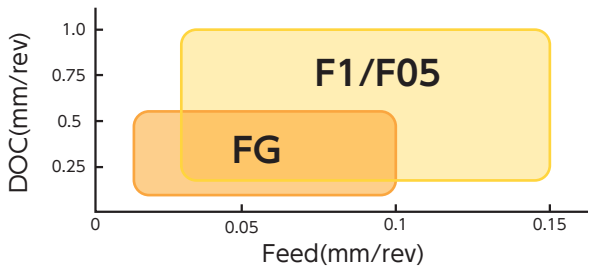
F05, F1, FG chipbreakers



Direct flow chips forward. Then packed chips damage and break cutting edge.

Direct chips backwards and eliminate chipping on inserts.

Chip control range



Recommended Cutting Condition (Grooving, Cut-off)

GTMH32-GX Series

Width (mm)	Feed (mm/rev)				Cutting speed (mm/min)		
	Grooving		Side turning		SUS303	SUS304	SUS440C
	Range	SUS304	Range	SUS304			
0.33～0.53	0.01～0.03	0.02	No capability	No capability	60 100 150	50 70 100	30 60 80
0.75～1.0	0.02～0.05	0.03	0.015～0.04	0.02			
1.5～2.0	0.02～0.08	0.04	0.015～0.06	0.03			
3.0	0.03～0.10	0.05	0.025～0.08	0.04			

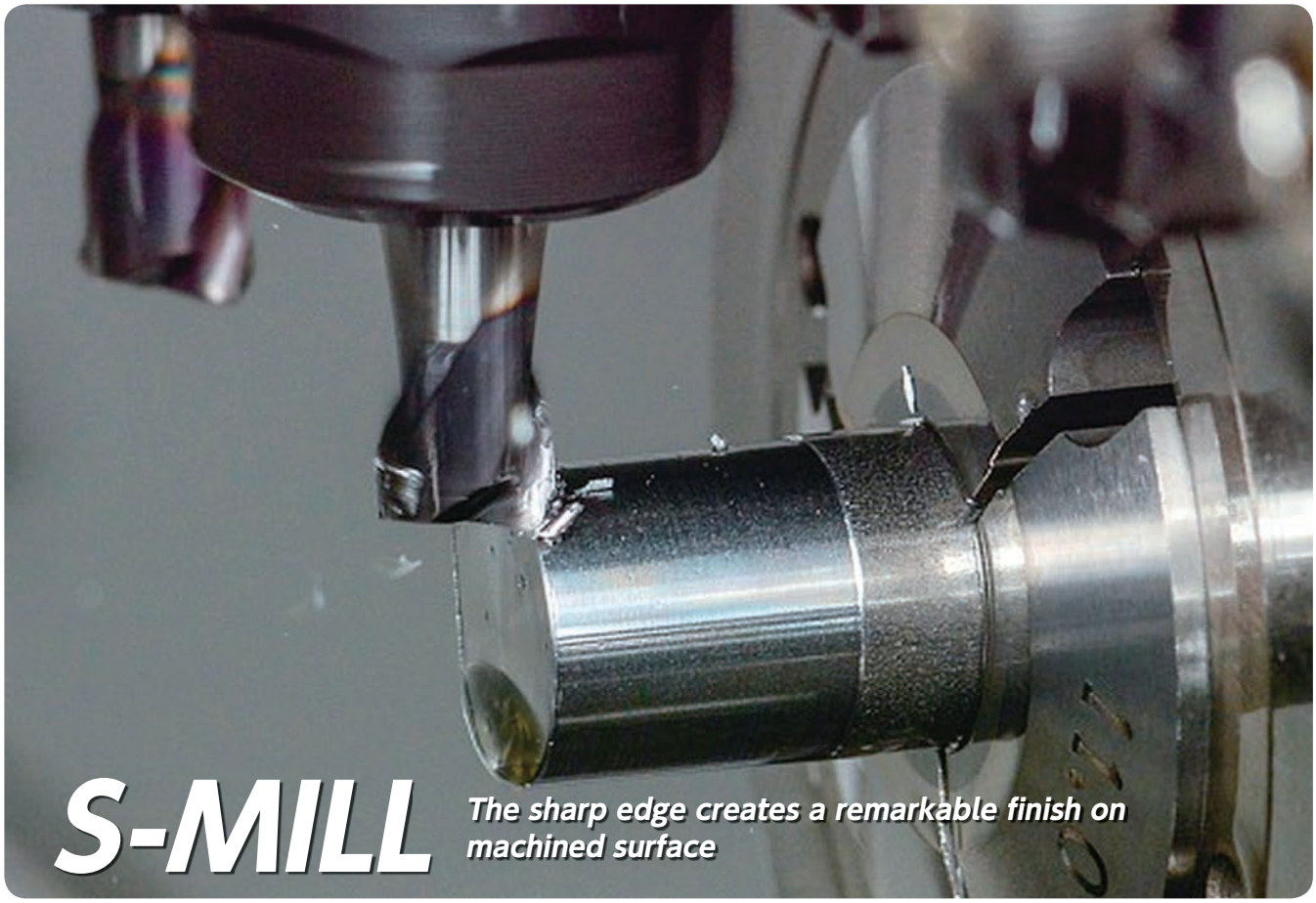
CTP/CTPA-CX Series

Width (mm)	Feed (mm/rev)		Cutting speed (mm/min)		
	Range	SUS304	SUS303	SUS304	SUS440C
1.0	0.02～0.04	0.02	60 100 150	50 70 100	30 60 80
1.3	0.02～0.05	0.03			
1.5	0.02～0.06	0.03			

CTP/CTPA-TH Series

Width (mm)	Feed (mm/rev)		Cutting speed (mm/min)		
	Range	SUS304	SUS303	SUS304	SUS440C
1.0	0.02～0.05	0.03	60 100 150	50 70 100	30 60 80
1.5	0.02～0.06	0.04			
2.0	0.02～0.07	0.04			

S-MILL Line up Expansion



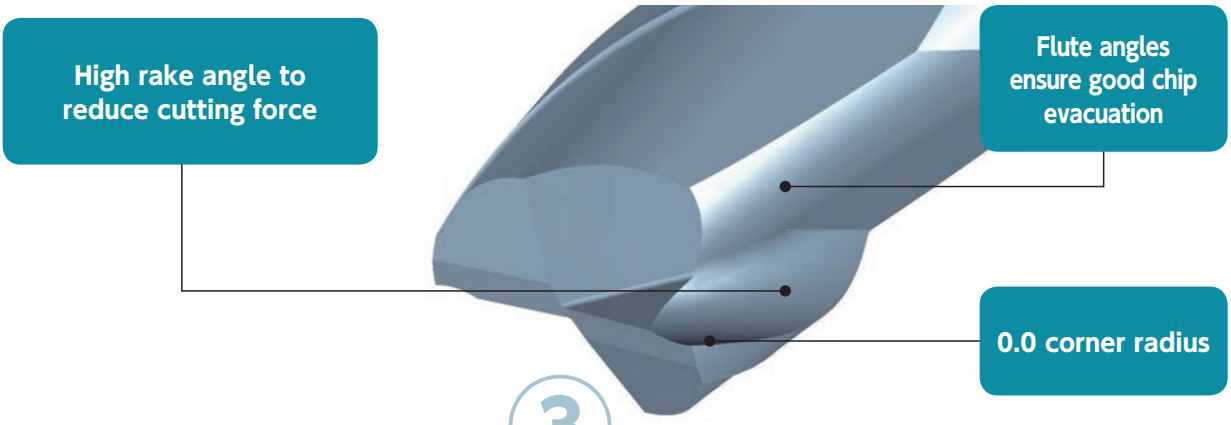
- Excellent surface finish
- Reduce cutting force
- Provide stable machining

- Line up Expansion
  ϕ8.0 and ϕ10.0 with ϕ7.0 shank Dia.

WATCH ON YouTube

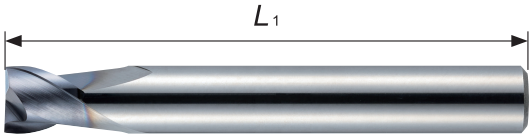
Features

1 The sharp edge creates a remarkable finish on machined surface.



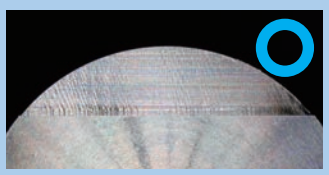
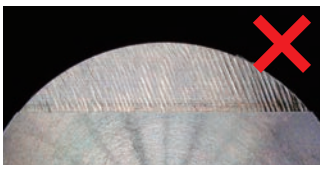
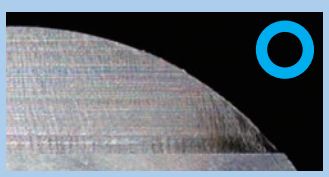
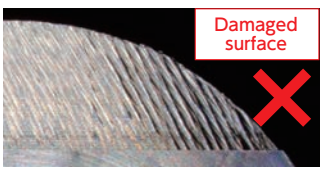
2 Designed for swiss type lathe

ϕ3.0 / ϕ4.0 = **40.0mm**
ϕ5.0 / ϕ6.0 = **45.0mm**
ϕ7.0 / ϕ8.0 / ϕ10.0 = **50.0mm**



3 2, 3, 4 fl utes cover a variety of applications. (2 flutes available in ϕ2mm)

Comparision of machined surfaces

	NTK (S-MILL)	Competitor A	Competitor B
Side face			
Magnified (side face)			
	Excellent surface finish	*Rough surface finish*	

Tool : ϕ6.0 2 flutes Work material : SUS304 (Φ16.0) Cutting condition : a_p=3.0mm a_e=1.2mm S=3,000rpm F=300mm/min

Stock list

RWEM Series

Figure. 1

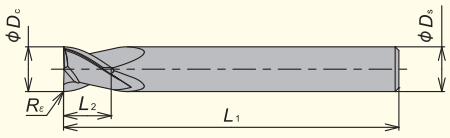
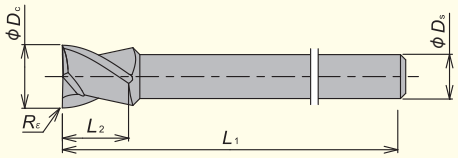


Figure. 2



Tolerance: mm

ϕDc	Tolerance
2, 3, 5	+0 / −0.025
4, 6, 7	+0 / −0.03
8, 10	+0 / −0.035

Material Group

P: Steel	M: Stainless steel	K: Cast iron	N: Nonferrous metal	S: Heat resistant alloy	H: Hardened material
◎	◎				

◎ : 1st Choice

2 flutes

Shape	Flute	Item Number	Grade AC3	Cutting dia. ϕD_c(mm)	Shank dia. ϕD_s(mm)	Length L_1(mm)	Cutting edge length L_2(mm)	Corner radius R_ε(mm)
Figure. 1	2	RWEM 020H2R00S04	●	2.0	4.0	40.0	2.0	0.0
		030H2R00S04	●	3.0	4.0	40.0	3.0	
		040H2R00S04	●	4.0	4.0	40.0	4.0	
		050H2R00S06	●	5.0	6.0	45.0	5.0	
		060H2R00S06	●	6.0	6.0	45.0	6.0	
		070H2R00S08	●	7.0	8.0	50.0	6.0	
		080H2R00S08	●	8.0	8.0	50.0	6.0	
		100H2R00S10	●	10.0	10.0	50.0	6.0	
Figure. 2	2	NEW RWEM 080H2R00S07	●	8.0	7.0	50.0	6.0	0.0
		NEW 100H2R00S07	●	10.0	7.0	50.0	6.0	

3 flutes

Shape	Flute	Item Number	Grade AC3	Cutting dia. ϕD_c(mm)	Shank dia. ϕD_s(mm)	Length L_1(mm)	Cutting edge length L_2(mm)	Corner radius R_ε(mm)
Figure. 1	3	RWEM 030H3R00S04	●	3.0	4.0	40.0	3.0	0.0
		040H3R00S04	●	4.0	4.0	40.0	4.0	
		050H3R00S06	●	5.0	6.0	45.0	5.0	
		060H3R00S06	●	6.0	6.0	45.0	6.0	
		070H3R00S08	●	7.0	8.0	50.0	6.0	
		080H3R00S08	●	8.0	8.0	50.0	6.0	
		100H3R00S10	●	10.0	10.0	50.0	6.0	
Figure. 2	3	NEW RWEM 080H3R00S07	●	8.0	7.0	50.0	6.0	0.0
		NEW 100H3R00S07	●	10.0	7.0	50.0	6.0	

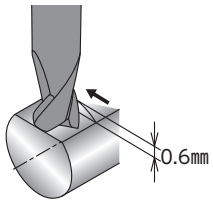
4 flutes

Shape	Flute	Item Number	Grade AC3	Cutting dia. ϕD_c(mm)	Shank dia. ϕD_s(mm)	Length L_1(mm)	Cutting edge length L_2(mm)	Corner radius R_ε(mm)
Figure. 1	4	RWEM 030H4R00S04	●	3.0	4.0	40.0	3.0	0.0
		040H4R00S04	●	4.0	4.0	40.0	4.0	
		050H4R00S06	●	5.0	6.0	45.0	5.0	
		060H4R00S06	●	6.0	6.0	45.0	6.0	
		070H4R00S08	●	7.0	8.0	50.0	6.0	
		080H4R00S08	●	8.0	8.0	50.0	6.0	
		100H4R00S10	●	10.0	10.0	50.0	6.0	
Figure. 2	4	NEW RWEM 080H4R00S07	●	8.0	7.0	50.0	6.0	0.0
		NEW 100H4R00S07	●	10.0	7.0	50.0	6.0	

Field result

SUS416F(D-cut) ϕ6mm-2 flutes

Work material	: SUS416F
rev/min	: 3,200
Feed(mm /rev)	: 140
DOC (mm)	: 0.6
Coolant	: WET

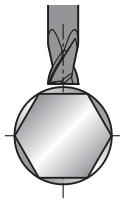


NTK : S-MILL	12,000 pcs/corner+α
Competitor's solid endmill	10,000 pcs/corner

As the competitor's endmill reached the end of its tool life with bad surface finish.
NTK's S-MILL maintained quality surface finish through out its longer tool life.

S45C(Hexagon machining ϕ10⇒ϕ8mm AF) ϕ6mm-2 flutes

Work material	: S45C
rev/min	: 2,600
Feed(mm /rev)	: 480
DOC(mm)	: 1.0
Coolant	: WET



NTK : S-MILL	70 pcs/corner+α
Competitor's solid endmill	50 pcs/corner

The S-Mill's sharpness reduced the occurance of burrs and increased tool life; clear improvments over the competitor's tool. The sharp cutting edge also produces noticeably less sound than the current tooling.

Recommended Cutting Condition

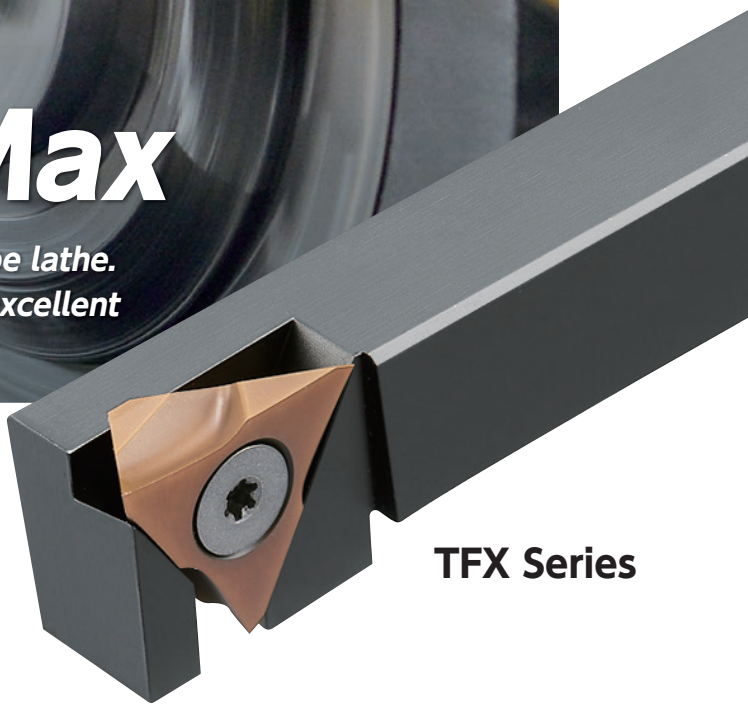
Flute	Cutting diameter ϕDc (mm)	Carbon steel S45C		Alloy steel SCM435		Stainless steel SUS304		$a_e=\phi D_c\times0.2$		$a_e=\phi D_c\times0.5$		$a_e=\phi D_c\times0.75$		$a_e=\phi D_c\times0.9$		$a_e=\phi D_c$
		RPM (min⁻¹)	Feed (mm/min)	RPM (min⁻¹)	Feed (mm/min)	RPM (min⁻¹)	Feed (mm/min)	a_p (mm)	a_e (mm)	a_p (mm)	a_e (mm)	a_p (mm)	a_e (mm)	a_p (mm)	a_e (mm)	a_p (mm)
2 flutes	2.0	6,000	100	6,000	100	6,000	90	≦2.0	0.4	≦0.8	1.0	≦0.6	1.5	≦0.5	1.8	≦0.4
	3.0	6,000	210	6,000	240	6,000	180	≦3.0	0.6	≦1.2	1.5	≦0.9	2.3	≦0.7	2.7	≦0.6
	4.0	6,000	320	5,600	300	5,200	240	≦4.0	0.8	≦1.6	2.0	≦1.2	3.0	≦1.0	3.6	≦0.8
	5.0	5,000	370	4,500	330	4,100	260	≦5.0	1.0	≦2.0	2.5	≦1.5	3.8	≦1.2	4.5	≦1.0
	6.0	4,200	380	3,700	340	3,400	270	≦6.0	1.2	≦2.4	3.0	≦1.8	4.5	≦1.5	5.4	≦1.2
	7.0	3,600	370	3,200	330	3,000	270	≦6.0	1.4	≦2.8	3.5	≦2.1	5.3	≦1.7	6.3	≦1.4
	8.0	3,200	360	2,800	320	2,600	250	≦6.0	1.6	≦3.2	4.0	≦2.4	6.0	≦2.0	7.2	≦1.6
	10.0	2,500	320	2,200	280	2,100	230	≦6.0	2.0	≦4.0	5.0	≦3.0	7.5	≦2.5	9.0	≦2.0
3 flutes	3.0	6,000	250	6,000	250	6,000	220	≦3.0	0.6	≦1.2	1.5	≦0.9	2.3	≦0.7	2.7	≦0.6
	4.0	6,000	390	5,600	360	5,200	290	≦4.0	0.8	≦1.6	2.0	≦1.2	3.0	≦1.0	3.6	≦0.8
	5.0	5,000	440	4,500	400	4,100	310	≦5.0	1.0	≦2.0	2.5	≦1.5	3.8	≦1.2	4.5	≦1.0
	6.0	4,200	460	3,700	410	3,400	330	≦6.0	1.2	≦2.4	3.0	≦1.8	4.5	≦1.5	5.4	≦1.2
	7.0	3,600	450	3,200	400	3,000	320	≦6.0	1.4	≦2.8	3.5	≦2.1	5.3	≦1.7	6.3	≦1.4
	8.0	3,200	430	2,800	380	2,600	310	≦6.0	1.6	≦3.2	4.0	≦2.4	6.0	≦2.0	7.2	≦1.6
	10.0	2,500	380	2,200	330	2,100	280	≦6.0	2.0	≦4.0	5.0	≦3.0	7.5	≦2.5	9.0	≦2.0
4 flutes	3.0	6,000	290	6,000	290	6,000	250	≦3.0	0.6	≦1.2	1.5	≦0.9	2.3	≦0.7	2.7	≦0.6
	4.0	6,000	450	5,500	410	5,200	340	≦4.0	0.8	≦1.6	2.0	≦1.2	3.0	≦1.0	3.6	≦0.8
	5.0	5,000	520	4,500	460	4,100	370	≦5.0	1.0	≦2.0	2.5	≦1.5	3.8	≦1.2	4.5	≦1.0
	6.0	4,200	540	3,700	480	3,400	380	≦6.0	1.2	≦2.4	3.0	≦1.8	4.5	≦1.5	5.4	≦1.2
	7.0	3,600	520	3,200	460	3,000	380	≦6.0	1.4	≦2.8	3.5	≦2.1	5.3	≦1.7	6.3	≦1.4
	8.0	3,200	500	2,800	440	2,600	360	≦6.0	1.6	≦3.2	4.0	≦2.4	6.0	≦2.0	7.2	≦1.6
	10.0	2,500	440	2,200	390	2,100	320	≦6.0	2.0	≦4.0	5.0	≦3.0	7.5	≦2.5	9.0	≦2.0

・Cutting conditions (machine, work material...) affect surface finish and burr generation.
If cutting performance is not good with above cutting conditions, please adjust speed and feed by same %.

The Front Max

The Front Max

NEW style front turning insert for swiss type lathe. Specially designed chipbreaker provides excellent chip control and sharpness.



TFX Series

MAX DOC 5.0mm available

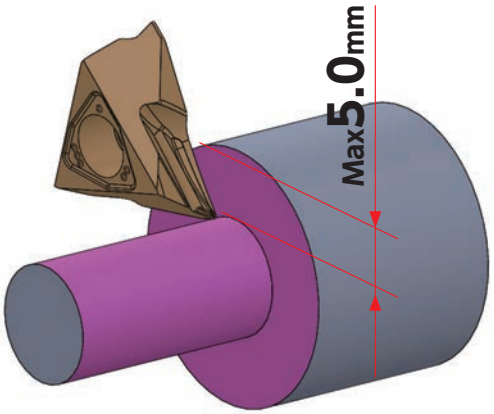
WATCH ON YouTube

Are these common issues in your machining operation?

- It is hard to machine a large depth of cut on Swiss type lathes.
- It is difficult to control chips and dimensions.

The Front Max is the solution.

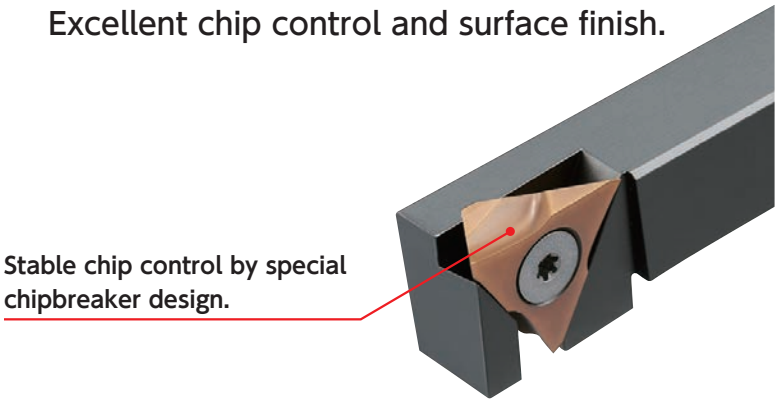
Features



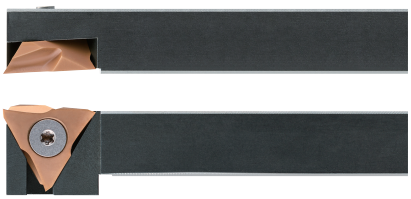
1 Up to 5.0mm DOC capability

Specially designed chipbreaker reduces cutting resistance, achieves excellent chip control and surface finish.

Excellent chip control and surface finish.



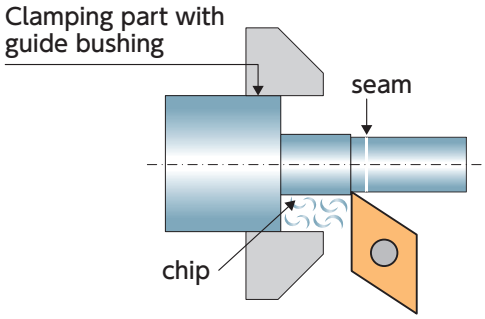
2 Rigid side clamp system



Strong clamping prevents moving insert .
This provides stable turning process.

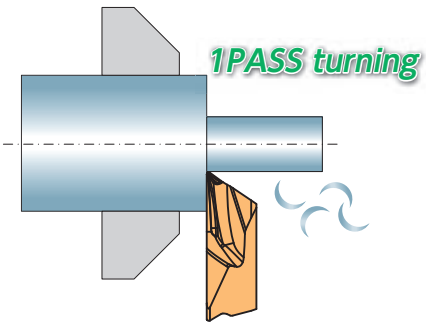
Tooling for Large DOC

Conventional tooling



- Longer cycle time with roughing and finish turning.
- Seam on surfece occurs with separate turning.
- Tool wear increase by 2 passes
- Chip may go into guide-bushing.
- Need to run multi times due to guide-bushing limitation

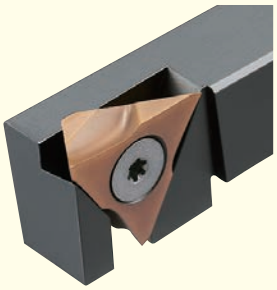
The Front Max

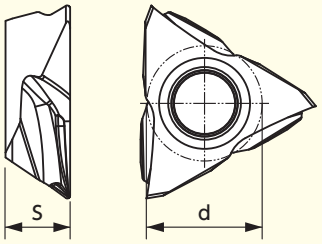


- Reduce cycle time
- Extend insert tool life
- Improve part quality
- Simplify machining program

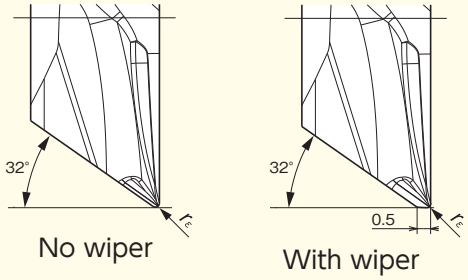
Insert

NEW TFX Series(3D molded chipbreaker)





Shape

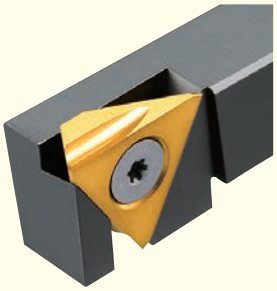


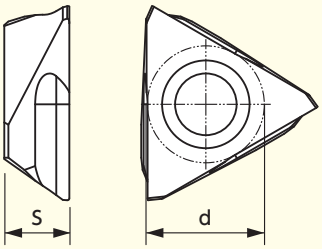
No wiper　　With wiper

All angles shown are obtained when insert is set in the holder

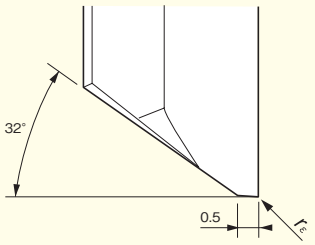
shape	Max. DOC (mm)	Wiper	Item number	Dimension (mm)			PVD coated carbide		
				r_ε	d	s	ST4	DM4	ZM3
	5.0	No	**TFX 3301MR**	0.08	9.525	4.76	●	●	
			3302MR	0.18	9.525	4.76	●	●	
			3304MR	0.38	9.525	4.76	●	●	
		Yes	**TFX 3301MRW**	0.08	9.525	4.76	●	●	
			3302MRW	0.18	9.525	4.76	●	●	
			3304MRW	0.38	9.525	4.76	●	●	

TF Series(Ground chipbreaker)





Shape



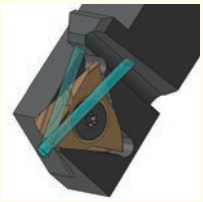
All angles shown are obtained when insert is set in the holder

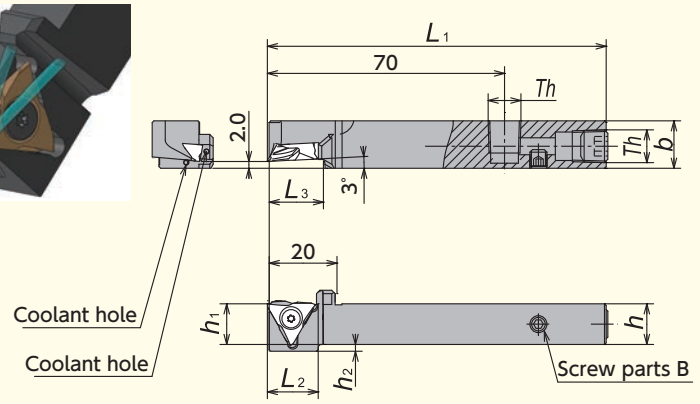
shape	Max. DOC (mm)	Wiper	Item number	Dimension (mm)			PVD coated carbide		
				r_ε	d	s	ST4	DM4	ZM3
	4.0	Yes	**TF 3300R**	0.0	9.525	4.76			●
			3305R	0.05	9.525	4.76			●
			3315R	0.15	9.525	4.76			●
			3320R	0.2	9.525	4.76			●

Toolholder

NEW TFT-OH2 Series

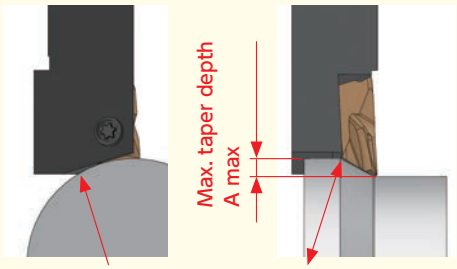
Coolant through (Screw accessible from both sides)





Th(Screw parts A)
1014 size : M6×1.0
1214 size : Rc1/8(PT1/8)

Taper cut capability



Item Number	Taper cut capability		
	D max	A max	T max
TFTR 1014H-OH2	20	2.5	30 °
1214H-OH2	30		
1616X-OH2	40		

●Right-Hand style shown

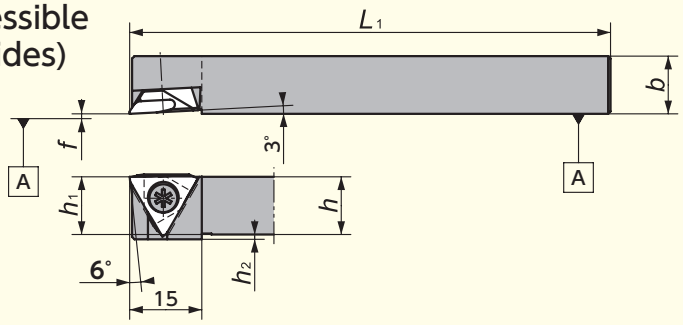
Toolholder dimension • Spare parts

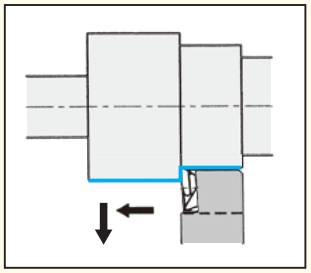
Item Number	Stock	Dimensions (mm)							Screw parts A			
									Clamp screw	Wrench	Screw parts A	Screw parts B
		h	*b*	L_1	h_1	h_2	L_2	L_3				
TFTR 1014H-OH2	●	10	14	100	10	4	15	15	LR-S-4*10PW	CLR-15S	SS0605SC	SS0505SC (Wrench : LW-2.5)
1214H-OH2	●	12	14	100	12	2	15	15	LR-S-4*10PW	CLR-15S	SPR1/8	
1616X-OH2	●	16	16	120	16	–	–	17.5	LR-S-4*10PW	CLR-15S	SPR1/8	

When coolant is supplied from the tool post directly to the tools, please remove screw parts 「B」and set screw parts A at side and rear of toolholder.
Wrench for screw parts 「A」(SS0605SC) is not attached.
Please use Hex wrench3.0(LW-3) for SS0605SC, Hex wrench5.0(LW-5) for SPR1/8.

TFT Series

(Screw accessible from both sides)





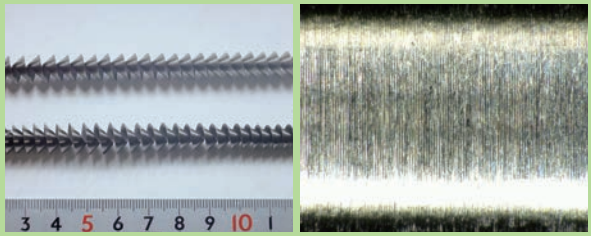
●Right-Hand style shown

Item Number	Stock	Dimensions (mm)						Parts		Taper cut capability
								Clamp screw	Wrench	
		h	*b*	L_1	*f*	h_1	h_2			
TFTR 10	●	10	10	120	0.0	10	3	LR-S-4*10PW	CLR-15S	No capability for taper cut.
12	●	12	12	120	0.0	12	1			
16	●	16	16	120	0.0	16	–			
20	●	20	20	120	0.0	20	–			

Cutting performance

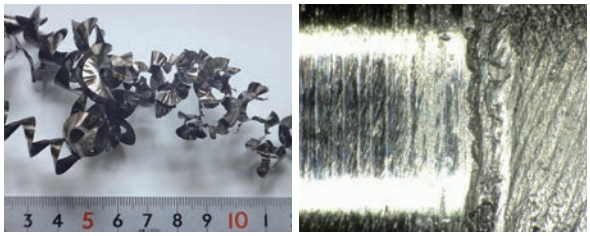
DOC 5.0mm Work material : SUS304 Cutting condition : Vc=80m/min f=0.03mm/rev WET

NTK The Front Max



Good chip control and excellent machined surface finish

Competitor's chipbreaker designed for high DOC turning

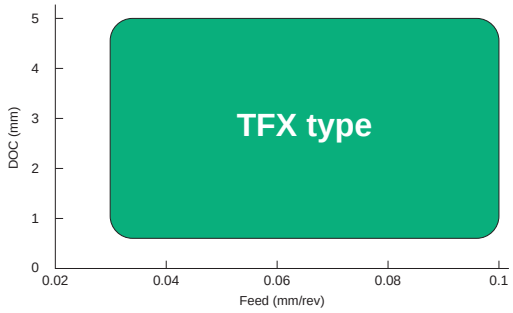


Rough surface finish

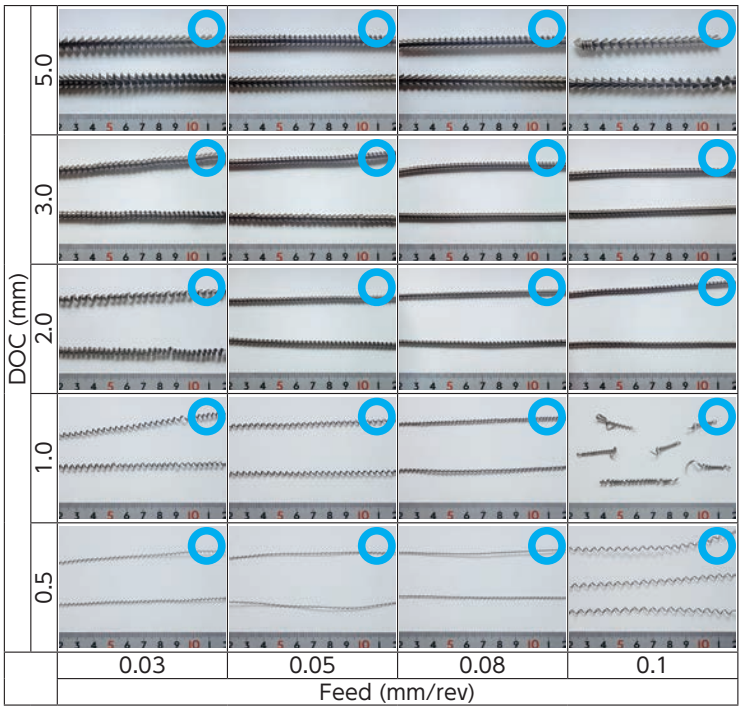
Excellent chip control in variety of cutting conditions

Covers a wide range of Doc's and feeds.

〈Chip control〉

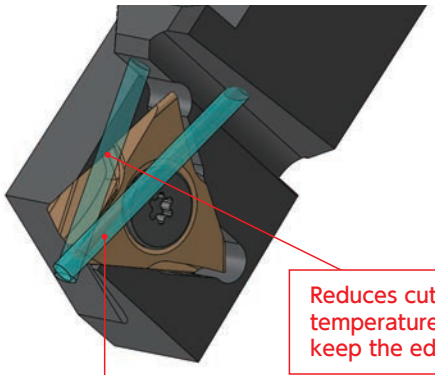


Workmaterial : SUS304 Cutting condition : Vc=80m/min WET



Available in coolant through toolholder

- Can take 30° taper.
- Use with TFX type insert enables stable turning.

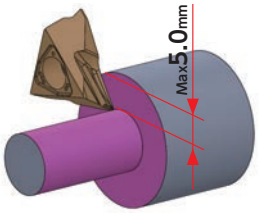


Reduces cutting tool temperature and helps keep the edge sharp

Improves part tolerance by steady coolant supply to the edge

Work material : SUS304

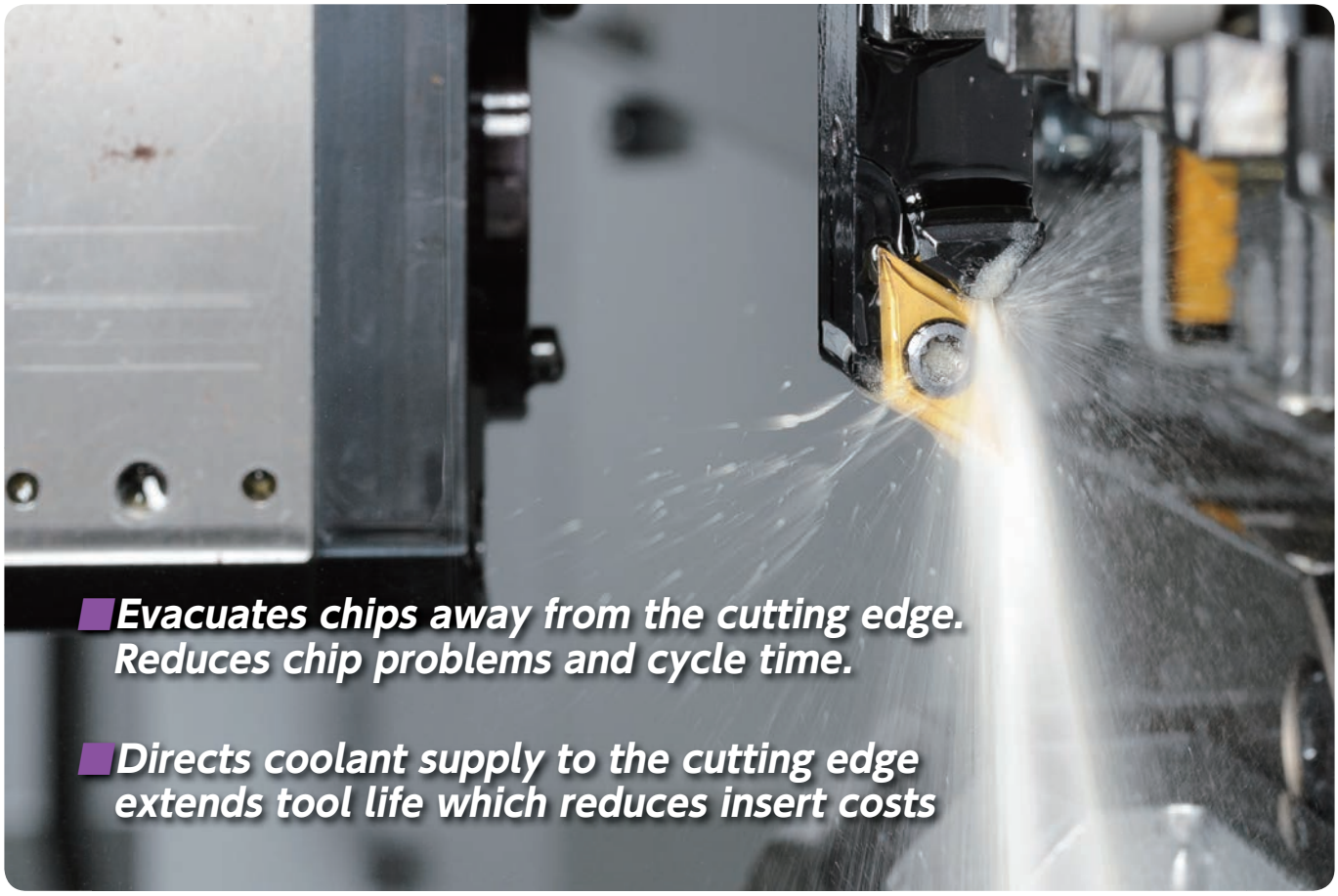
	The Front Max	Competitor
Cutting speed(m/min)	80	110
Feed(mm/rev)	0.03	0.01
DOC(mm/rev)	5.0	←
Coolant	Wet	←



Insert item number:
DM4 TFX3302MR

The Front Max	180pcs./corner
Competitor	50pcs./corner

・NTK Front Max provided 5.0mm DOC with higher feed and got 3 times longer tool life.

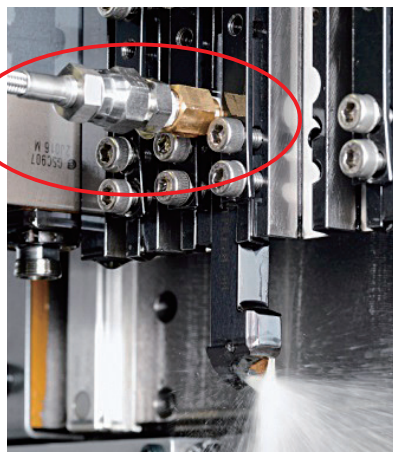


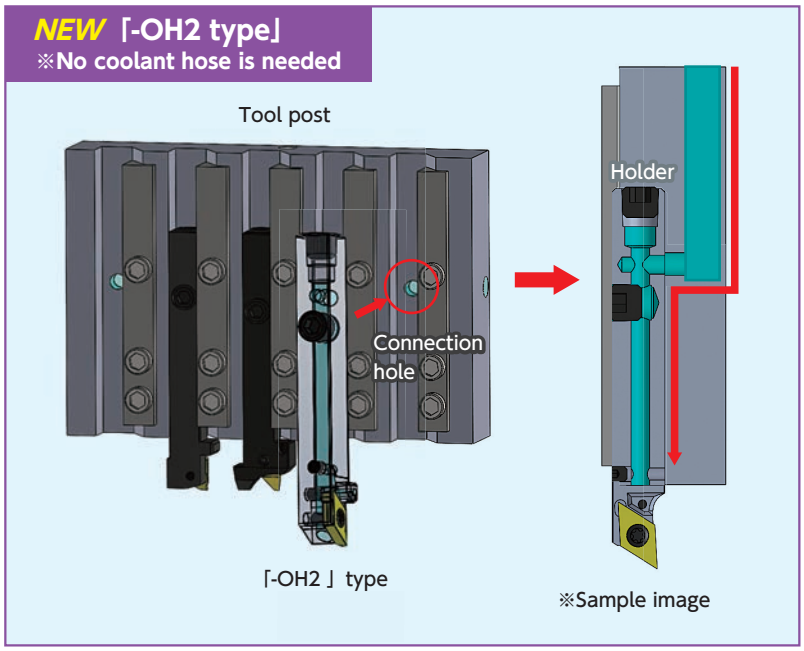
Hose free capability - OH2 - new feature added

Coolant is supplied from the tool post directly to the tools

※ No coolant hose is needed

※Conventional type「-OH」type (hose is needed)





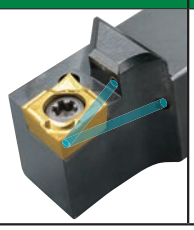
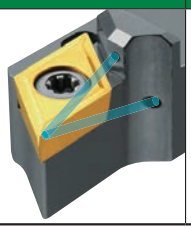
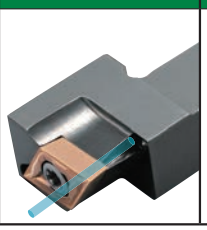
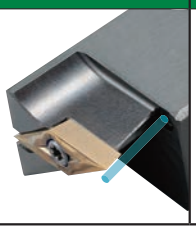
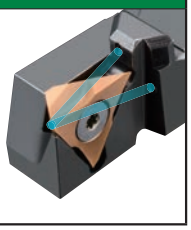
- Eliminates chip entanglement on hoses
- Use the tool post space effectively

➡ Can install more SPLASH toolholders, for higher productivity

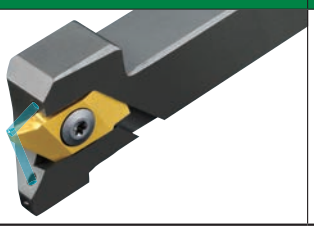
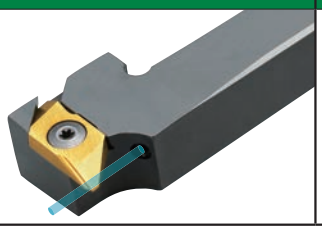
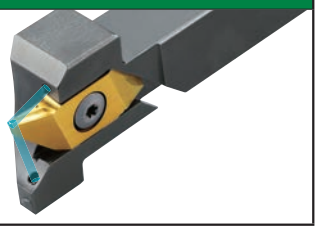
WATCH ON YouTube

Lineup

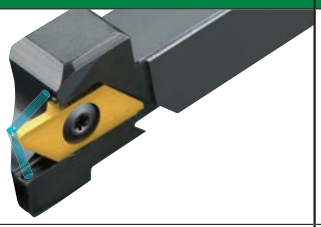
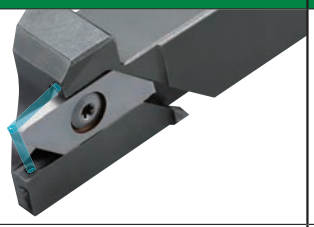
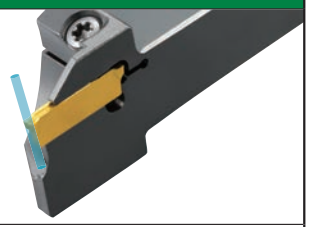
Front turning

Inserts	CC.. Series	DC.. Series		VC.. Series		TFX33../TF33..Series
Holder	SCLC-OH2/OH	SDJC-OH2/OH	Y-SDJC-OH2/OH	SVJC-OH	Y-SVJC-OH	TFTR-OH2
						

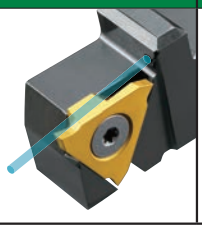
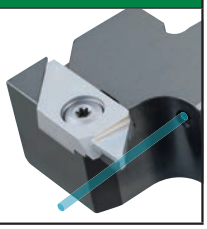
Back turning

Inserts	TBP Series		TBPA Series
Holder	TBP-OH2/OH	Y-TBP-OH	TBPA-OH
			

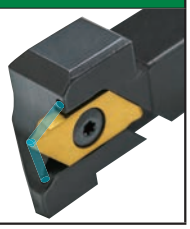
Cut off

Inserts	CTP Series	CTPA Series	CTDP Series
Holder	CTP-OH2/OH	CTPA-OH2/OH	CTDP-OH2/OH
			
MAX Bar Dia.	～ϕ12	～ϕ16	～ϕ25.4

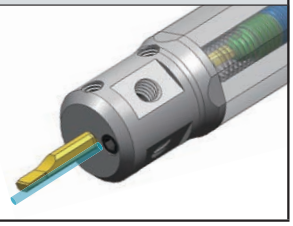
Grooving/ Side turning

Inserts	GTM.. Series		GTPA.. Series	
Holder	GTT-OH2/OH	Y-GTT-OH	GTPA-OH	Y-GTPA-OH
				

Threading

Inserts	TTP Series
Holder	TTP-OH2
	

ID turning - STICK DUO SPLASH-

Inserts	HY-NBH-OH Series
Holder	

NOTE for 「-OH2 」type toolholder

- When coolant is supplied from the tool post directly to the holder: please remove set screw [B] (SS0505SC) and install both set screws [A] (for hoseconnections) on side and rear of toolholder.
- Wrench for screw part [A] (SS0605SC) is not included. Please use hex wrench3.0(LW-3) for SS0605SC, hex wrench5.0(LW-5) for SPR1/8.

Stock list

Front turning

SCLC-OH2

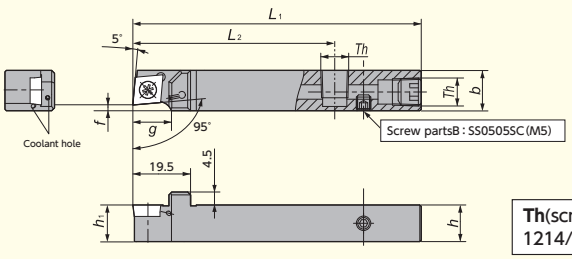
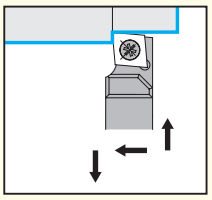


Fig.1

Th(screw parts「A」)
1214/1616size : SPR1/8(Rc1/8)



●R-hand shown

SCLC-OH

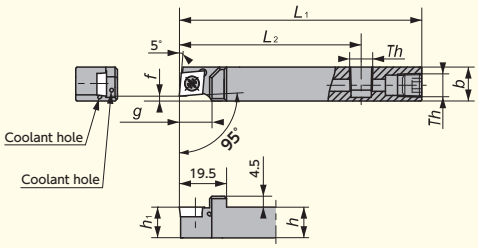
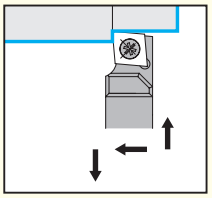


Fig.2

Th(screw parts「A」)
1014size : SS0605SC(M6×1.0)
1214/1616size : SPR1/8(Rc1/8)



●R-hand shown

■Toolholder dimension・Spare parts

Figure	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
											Clamp screw	Wrench
			h	b	h_1	L_1	f	L_2	g			
1	**SCLCR 1214H09N-F02OH2**	●	12	14	12	100	2.0	70	12	CC 09T3	LRIS-4＊10	LLR-25S
	1616X09N-F02OH2	●	16	16	16	120	2.0	70	17.7	CC 09T3	LRIS-4＊10	LLR-25S
2	**SCLCR 1014F09N-F02OH**	●	10	14	10	80	2.0	55	12	CC 09T3	LRIS-4＊10	LLR-25S
	1214H09N-F02OH	●	12	14	12	100	2.0	75	12	CC 09T3	LRIS-4＊10	LLR-25S
	1616H09N-F02OH	●	16	16	16	100	2.0	75	17.7	CC 09T3	LRIS-4＊10	LLR-25S

SDJC-OH2

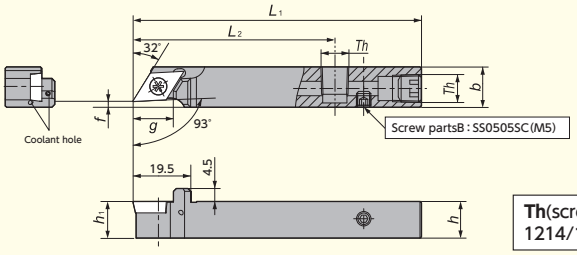
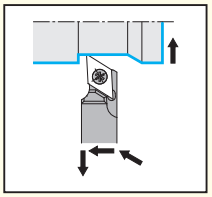


Fig.1

Th(screw parts「A」)
1214/1616size : SPR1/8(Rc1/8)



●R-hand shown

SDJC-OH

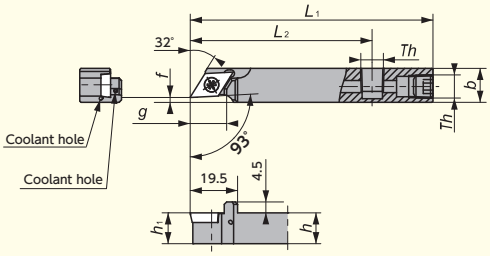
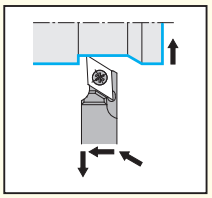


Fig.2

Th(screw parts「A」)
1014size : SS0605SC(M6×1.0)
1214/1616size : SPR1/8(Rc1/8)

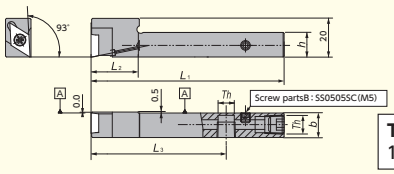


●R-hand shown

■Toolholder dimension・Spare parts

Figure	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
											Clamp screw	Wrench
			h	b	h_1	L_1	f	L_2	g			
1	**SDJCR 1214H11N-F02OH2**	●	12	14	12	100	2.0	70	16	DC 11T3	LRIS-4＊10	LLR-25S
	1616X11N-F02OH2	●	16	16	16	120	2.0	70	18.4	DC 11T3	LRIS-4＊10	LLR-25S
2	**SDJCR 1014F11N-F02OH**	●	10	14	10	80	2.0	55	16	DC 11T3	LRIS-4＊10	LLR-25S
	1214H11N-F02OH	●	12	14	12	100	2.0	75	16	DC 11T3	LRIS-4＊10	LLR-25S
	1616H11N-F02OH	●	16	16	16	100	2.0	75	18.4	DC 11T3	LRIS-4＊10	LLR-25S

Y-SDJC-OH2



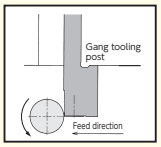
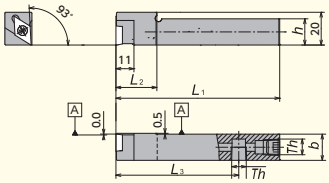


Fig.1

Th(screw parts「A」)
1212size : SPR 1/8(Rc 1/ 8)

●R-hand shown
●Takes Right-hand or Neutral insert

Y-SDJC-OH



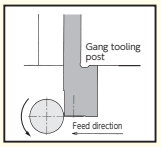


Fig.2

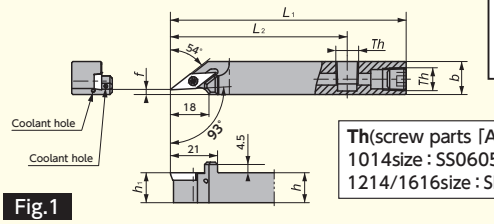
Th(screw parts「A」)
1212/1616size : SPR1/8(Rc1/8)

●R-hand shown
●Takes Right-hand or Neutral insert

■Toolholder dimension・Spare parts

Figure	Toolholder	Stock	Dimensions (mm)						Applicable insert	Spare parts	
			h	*b*	L_1	*f*	L_2	L_3		Clamp screw	Wrench
1	**Y-SDJCR 1212H11S-OH2**	●	12	12	100	–	20	70	DC 11T3	LRIS-4＊8	LLR-25S
2	**Y-SDJCR 1212H11S-OH**	●	12	12	100	–	20	75	DC 11T3	LRIS-4＊8	LLR-25S
	1616H11-OH	●	16	16	100	–	25	75	DC 11T3	LRIS-4＊8	LLR-25S

SVJC-N-OH



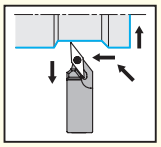
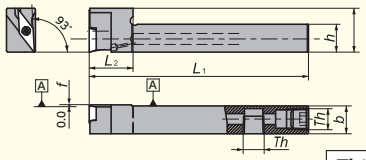


Fig.1

Th(screw parts「A」)
1014size : SS0605SC(M6×1.0)
1214/1616size : SPR1/8(Rc1/8)

●R-hand shown

Y-SVJC-OH



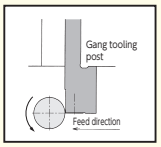


Fig.2

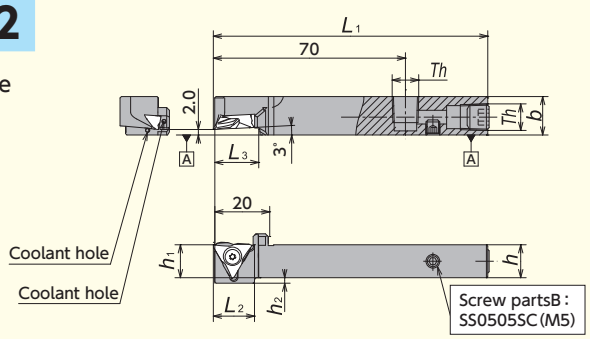
Th(screw parts「A」)
1212/1616size : SPR1/8(Rc1/8)

■Toolholder dimension・Spare parts

Figure	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
			h	*b*	L_1	h_1	*f*	L_2	*g*		Clamp screw	Wrench
1	**SVJCR 1014F11N-F02OH**	●	10	14	80	10	2.0	55	–	VC 1103	LRIS-2.5＊7	CLR-15S
	1214H11N-F02OH	●	12	14	100	12	2.0	75	–	VC 1103	LRIS-2.5＊7	CLR-15S
	1616H11N-F02OH	●	16	16	100	16	2.0	75	–	VC 1103	LRIS-2.5＊7	CLR-15S
2	**Y-SVJCR 1212H11S-OH**	●	12	12	100	–	0	20	–	VC 1103	LRIS-2.5＊7	CLR-15S
	1616H11S-OH	●	16	16	100	–	0	20	–	VC 1103	LRIS-2.5＊7	CLR-15S

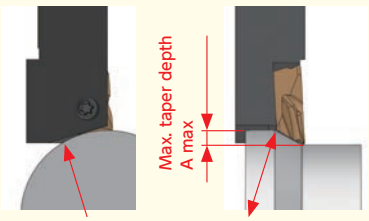
TFT-OH2

Screw accessible from both sides



Th(screw parts「A」)
1014size : SS0605SC(M6×1.0)　　1214/1616size : SPR1/8(Rc1/8)

Taper cut capability



Toolholder	Taper cut capability		
	D max	A max	T max
TFTR 1014H-OH2	20	2.5	30°
1214H-OH2	30		
1616X-OH2	40		

●R-hand shown

■Toolholder dimension・Spare parts

Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
		h	*b*	L_1	h_1	h_2	L_2	L_3		Clamp screw	Wrench
TFTR 1014H-OH2	●	10	14	100	10	4	15	15	TF / TFX	LR-S-4＊10PW	CLR-15S
1214H-OH2	●	12	14	100	12	2	15	15	TF / TFX	LR-S-4＊10PW	CLR-15S
1616X-OH2	●	16	16	120	16	–	–	17.5	TF / TFX	LR-S-4＊10PW	CLR-15S

Back turning

TBP-OH2

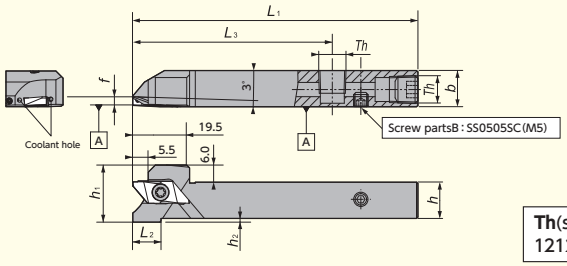
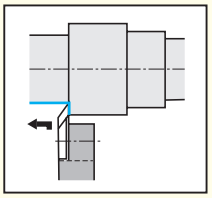


Fig.1

Th(screw parts「A」)
1212/1616size : SPR1/8(Rc1/8)



●R-hand shown

TBP-OH

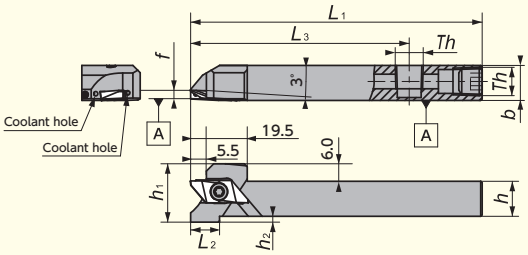
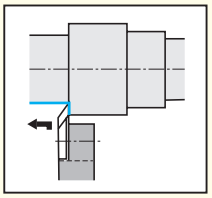


Fig.2

Th(screw parts「A」)
1012size : SS0605SC (M6×1.0)
1212/1616size : SPR1/8(Rc1/8)



●R-hand shown

■Toolholder dimension • Spare parts

Figure	Toolholder	Stock	Dimensions (mm)								Applicable insert	Spare parts	
												Clamp screw	Wrench
			h	b	h_1	L_1	f	L_2	h_2	L_3			
1	**TBPR 12H-OH2**	●	12	12	12	100	3.5	10	2.0	70	TBP	LRIS-4*12PW	CLR-15S
	16X-OH2	●	16	16	16	120	3.5	0	0	70	TBP	LRIS-4*12PW	CLR-15S
2	**TBPR 1012H-OH**	●	10	12	10	100	3.5	19	4	75	TBP	LRIS-4*10PW	CLR-15S
	12H-OH	●	12	12	12	100	3.5	10	2	75	TBP	LRIS-4*12PW	CLR-15S
	16H-OH	●	16	16	16	100	3.5	0	0	75	TBP	LRIS-4*12PW	CLR-15S

TBPA-OH

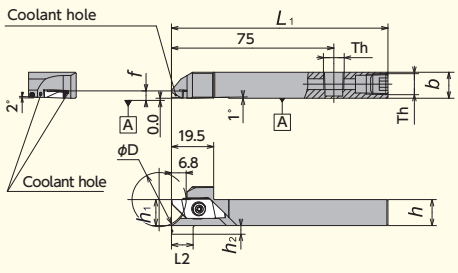
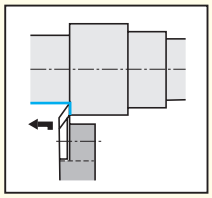


Fig.1

Th(screw parts「A」)
1212/1616/2020size : SPR1/8(Rc1/8)



●R-hand shown

Y-TBP-OH

Screw accessible
from both sides

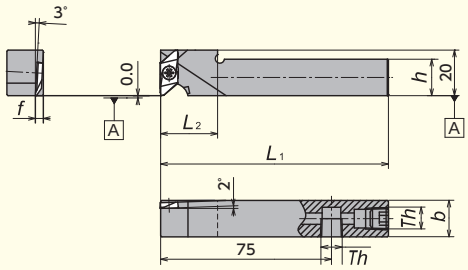
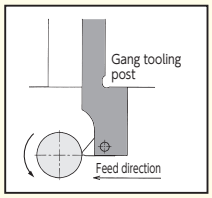


Fig.2

Th(screw parts「A」)
1212/1616size : SPR1/8(Rc1/8)



●R-hand shown
●Takes Right-hand or Neutral insert

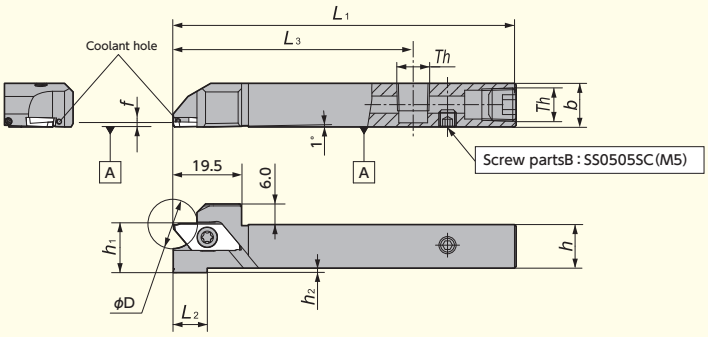
■Toolholder dimension • Spare parts

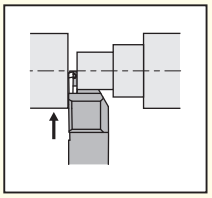
Figure	Toolholder	Stock	Max. cut off Dia. (mm) ϕD	Dimensions (mm)							Applicable insert	Spare parts	
												Clamp screw	Wrench
				h	b	h_1	L_1	f	L_2	h_2			
1	**TBPAR 12H-OH**	●	25	12	12	12	100	3.4	10	4	TBPA	LRIS-4*12PW	CLR-15S
	16H-OH	●	35	16	16	16	100	3.4	10	2	TBPA	LRIS-4*12PW	CLR-15S
	20H-OH	●	50	20	20	20	100	3.4	0	0	TBPA	LRIS-4*12PW	CLR-15S
2	**Y-TBPR 12HS-OH**	●	–	12	12	–	100	3.5	20	–	TBP	LRIS-4*12PW	CLR-15S
	16H-OH	●	–	16	16	–	100	3.5	25	–	TBP	LRIS-4*12PW	CLR-15S

Cut off

※Max Dia. would be changed by insert.

CTP-OH2



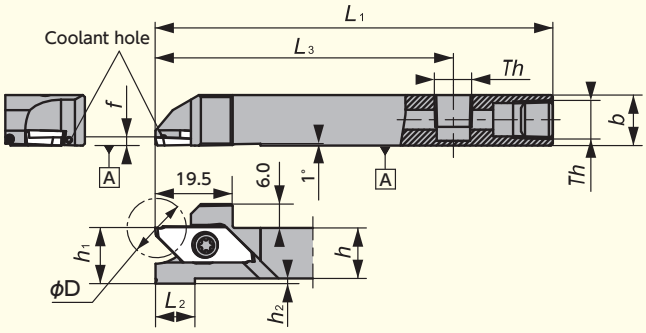


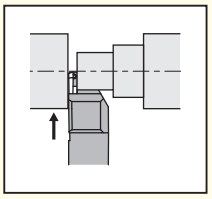
Th(screw parts「A」)
1212size : SPR1/8(Rc1/8)

Fig.1

L-hand coolant through holders are designed for R-hand machines

CTP-OH





Th(screw parts「A」)
1012size : SS0605SC(M6×1.0)
1212/1616size : SPR1/8(Rc1/8)

Fig.2

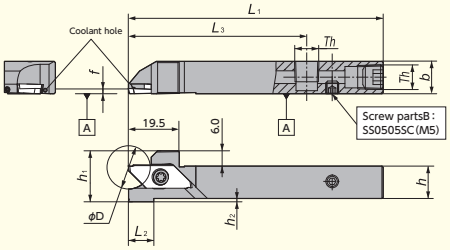
L-hand coolant through holders are designed for R-hand machines

■Toolholder dimension・Spare parts

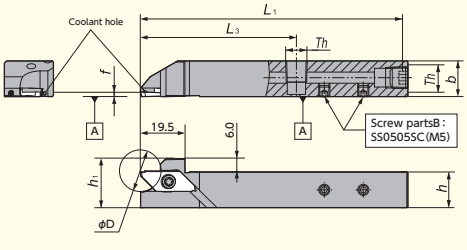
Figure	Toolholder	Stock	Max. cut off Dia.(㎜) ϕD	Dimensions(㎜) h	h1	b	L1	h2	L2	L3	※ f	Applicable insert	Spare parts Clamp screw	Spare parts Wrench
1	**CTP右 12H-OH2**	●	12	12	12	12	100	2	10	70	1.5	CTP	LRIS-4＊12PW	CLR-15S
2	**CTP右 1012H-OH**	●	12	10	12	12	100	4	19	75	1.5	CTP	LRIS-4＊12PW	CLR-15S
	12H-OH	●	12	12	12	12	100	2	10	75	1.5	CTP	LRIS-4＊12PW	CLR-15S
	16H-OH	●	12	16	16	16	100	0	0	75	1.5	CTP	LRIS-4＊12PW	CLR-15S

※Dimension is set 1.5mm width insert

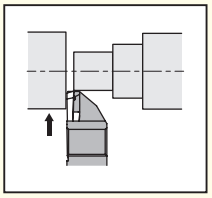
CTPA-OH2



CTPA右12H-OH2



CTPA右16X-OH2



Th(screw parts「A」)
1212/1616size : SPR1/8(Rc1/8)

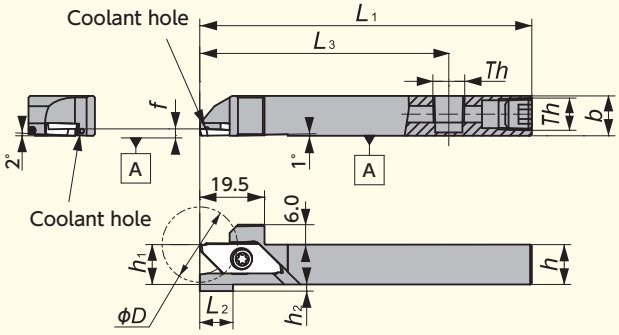
● L-hand coolant through holders are designed for R-hand machines
(Location of coolant connection parts is same with R/L hand holders.)
● Right-Hand style shown

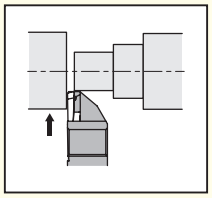
■Toolholder dimension・Spare parts

Toolholder	Stock	Max. cut off Dia.(㎜) ϕD	Dimensions(㎜) h	h1	b	L1	h2	L2	L3	※ f	Applicable insert	Spare parts Clamp screw	Spare parts Wrench
CTPA右 12H-OH2	●	16	12	12	12	100	2	10	70	2.0	CTPA	LRIS-4＊12PW	CLR-15S
16X-OH2	●	16	16	16	16	120	0	0	70	2.0	CTPA	LRIS-4＊12PW	CLR-15S

※Dimension is set 2.0mm width insert

CTPA-OH





Th(screw parts「A」)
1212/1616size:SPR1/8(Rc1/8)

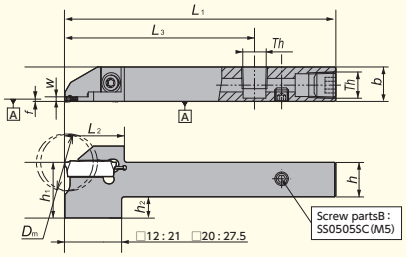
●L-hand coolant through holders are designed for R-hand machines
(Location of coolant connection parts is same with R/L hand holders.)
●Right-Hand style shown

■Toolholder dimension・Spare parts

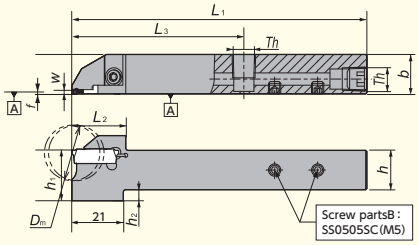
Toolholder	Stock	Max. cut off Dia.(mm) φD	Dimensions(mm)								Applicable insert	Spare parts	
			h	h1	b	L1	h2	L2	L3	※ f		Clamp screw	Wrench
CTPA※ 12H-OH	●	16	12	12	12	100	2	10	75	2.0	CTPA	LRIS-4＊12PW	CLR-15S
16H-OH	●	16	16	16	16	100	0	0	75	2.0	CTPA	LRIS-4＊12PW	CLR-15S

※Dimension is set 2.0mm width insert

CTDP-OH2

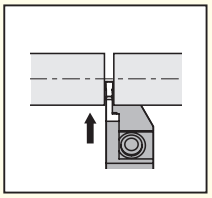


CTDP※12-20D25-OH2
CTDP※20-25D34A-OH2



CTDP※16-20D25-OH2

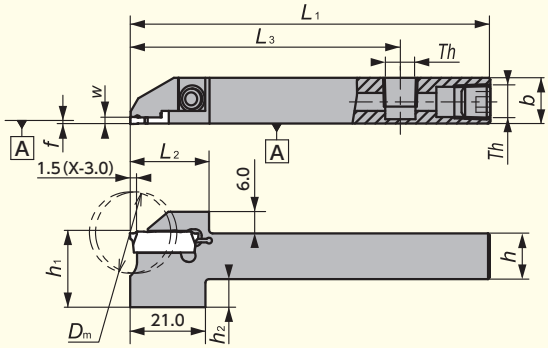
Fig.1

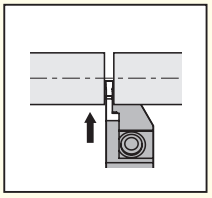


Th(screw parts「A」)
1212/1616/2020size:SPR1/8(Rc1/8)

●R-hand shown

CTDP-OH





Th(screw parts「A」)
1212/1616size:SPR1/8(Rc1/8)

●R-hand shown

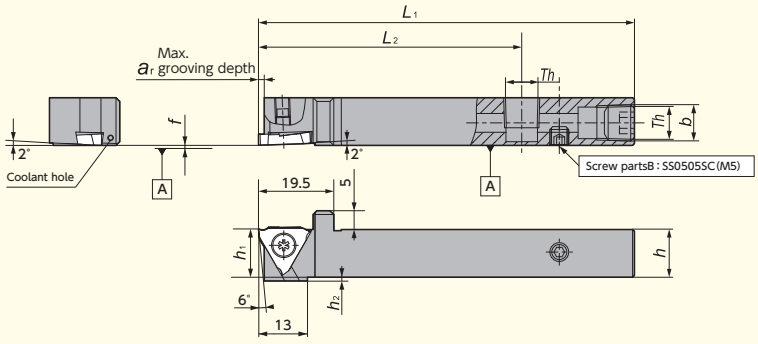
Fig.2

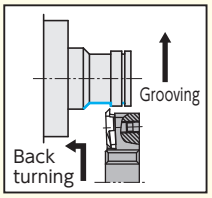
■Toolholder dimension・Spare parts

Figure	Toolholder	Stock	Max. cut off Dia.(mm) φD	Dimensions(mm)									Applicable insert	Spare parts	
				w	h	b	h1	L1	h2	L2	L3	f		Clamp screw	Wrench
1	CTDP※ 12-20D25-OH2	●	25.4	2	12	12	20.5	100	8.5	22.0	70	0.15	CTDP20	LRIS-4＊12	LLR-25S
	16-20D25-OH2	●	25.4	2	16	16	20.5	100	4.5	22.0	70	0.15	CTDP20	LRIS-4＊12	LLR-25S
	20-25D34A-OH2	●	34.0	2.5	20	20	24.0	120	4.0	28.5	75	0.15	CTDP25	CS0516LSH	LW-3
2	CTDP※ 12-20D25-OH	●	25.4	2	12	12	20.5	100	8.5	22.0	75	0.15	CTDP20	LRIS-4＊12	LLR-25S
	16-20D25-OH	●	25.4	2	16	16	20.5	100	4.5	22.0	75	0.15	CTDP20	LRIS-4＊12	LLR-25S

Grooving / Back turning

GTT-OH2



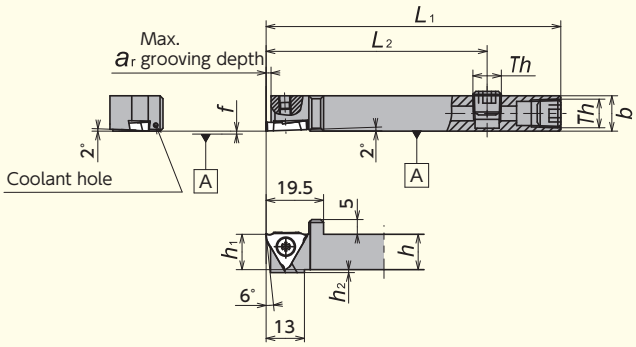


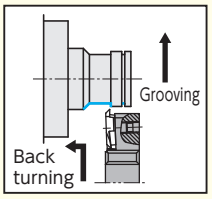
Th(screw parts「AJ」)
1212/1616size : SPR1/8(Rc1/8)

●R-hand shown

Fig.1

GTT-OH





Th(screw parts「AJ」)
1012size : SS0605SC(M6×1.0)
1212/1616size : SPR1/8(Rc1/8)

●R-hand shown

Fig.2

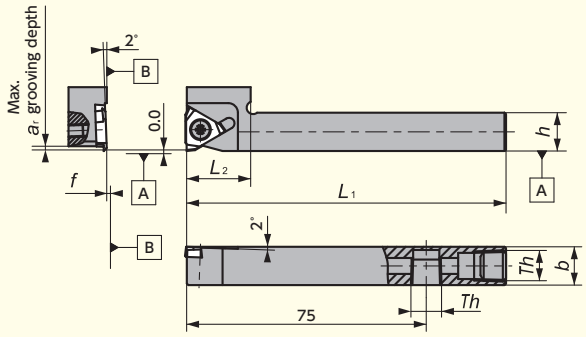
■Toolholder dimension・Spare parts

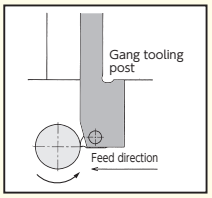
Figure	Toolholder	Stock	Dimensions(㎜) h	b	h1	L1	f	L2	ar	h2	Groove width※(㎜) w	Applicable insert	Spare parts Clamp screw	Wrench
1	**GTTR 12H00-OH2**	●	12	12	12	100	0	70	1.6	1	0.3~3.00	GTM□32 / TBMH32	LRIS-4*10PW	CLR-15S
	16X00-OH2	●	16	16	16	120	0	70	1.6	0	0.3~3.00	GTM□32 / TBMH32	LRIS-4*10PW	CLR-15S
2	**GTTR 1012H00-OH**	●	10	12	10	100	0	70	1.6	1	0.3~3.00	GTM□32 / TBMH32	LRIS-4*10PW	CLR-15S
	12H00-OH	●	12	12	12	100	0	70	1.6	1	0.3~3.00	GTM□32 / TBMH32	LRIS-4*10PW	CLR-15S
	16H00-OH	●	16	16	16	100	0	70	1.6	0	0.3~3.00	GTM□32 / TBMH32	LRIS-4*10PW	CLR-15S

※Dimension (ar) shows max. grooving depth. Max. grooving depth would be changed by insert.

Y-GTT-OH

Screw accessible from both sides





Th(screw parts「AJ」)
1212/1616size : SPR1/8(Rc1/8)

●R-hand shown
●Takes Right-hand Insert

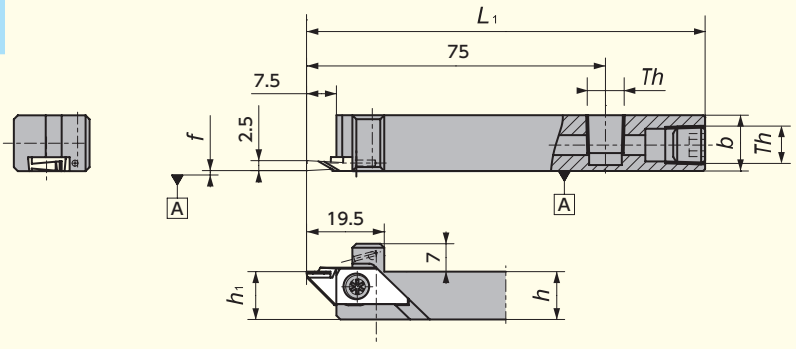
■Toolholder dimension・Spare parts

Toolholder	Stock	Dimensions(㎜) h	b	L1	h1	f	L2	ar	h2	Groove width※(㎜) w	Applicable insert	Spare parts Clamp screw	Wrench
Y-GTTR 12H00S-OH	●	12	12	100	–	0	20	1.6	–	0.3~3.00	GTM□32 / TBMH32	LRIS-4*10PW	CLR-15S
16H00-OH	●	16	16	100	–	0	25	1.6	–	0.3~3.00	GTM□32 / TBMH32	LRIS-4*10PW	CLR-15S

※Dimension (ar) shows max. grooving depth. Max. grooving depth would be changed by insert.

Grooving / Side turning

GTPA-OH



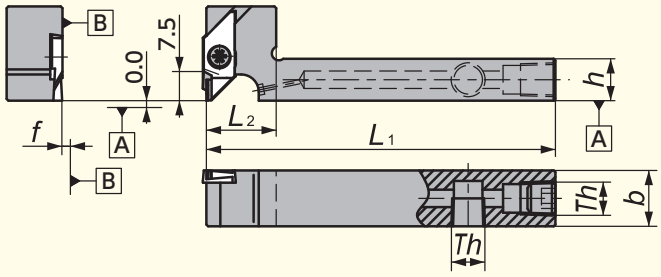
Th(screw parts「AJ)
1214size : SPR1/8(Rc1/8)

●R-hand shown

■Toolholder dimension・Spare parts

Toolholder	Stock	Dimensions(mm)						Applicable insert	Spare parts	
									Clamp screw	Wrench
		h	b	L_1	h_1	f	L_2			
GTPAR 1214H-OH	●	12	14	100	12	0.1	–	GTPA	LRIS-4＊12PW	CLR-15S

Y-GTPA-OH



Th(screw parts「AJ)
1014size : SS0605SC(M6×1.0)
1216/1616size : SPR1/8(Rc1/8)

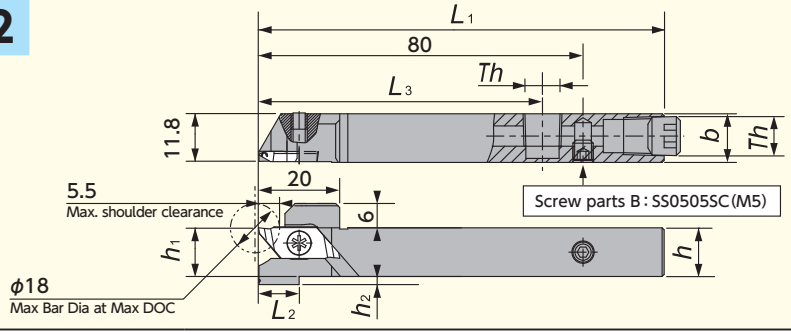
●R-hand shown

■Toolholder dimension・Spare parts

Toolholder	Stock	Dimensions(mm)						Applicable insert	Spare parts	
									Clamp screw	Wrench
		h	b	L_1	h_1	f	L_2			
Y-GTPAR 1014FSS-OH	●	10	14	80	–	0.1	15	GTPA	LRIS-4＊12PW	CLR-15S
1216HS-OH	●	12	16	100	–	0.1	20	GTPA	LRIS-4＊12PW	CLR-15S
1616H-OH	●	16	16	100	–	0.1	25	GTPA	LRIS-4＊12PW	CLR-15S

Threading

TTP-OH2



Th(screw parts「AJ)
1212/1616size : SPR1/8(Rc1/8)

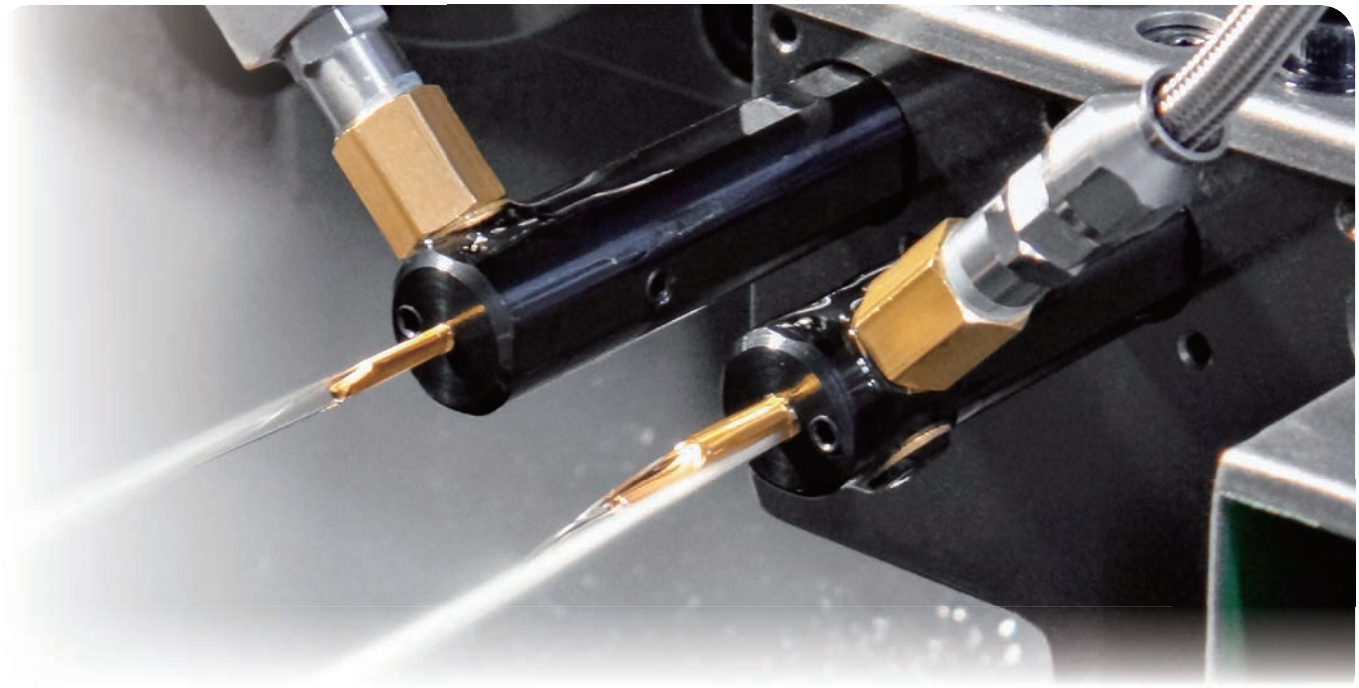
●R-hand shown

■Toolholder dimension・Spare parts

Toolholder	Stock	Dimensions(mm)							Applicable insert	Spare parts	
										Clamp screw	Wrench
		h	b	L_1	h_1	h_2	L_2	L_3			
TTP⅛ 12H-OH2	●	12	12	100	12	2	10	70	TTP	LRIS-4＊12PW	CLR-15S
16X-OH2	●	16	16	120	16	0	–	70	TTP	LRIS-4＊12PW	CLR-15S

STICK DUO SPLASH

Coolant through sleeves for ID Boring with Adjustable Overhang Mechanism

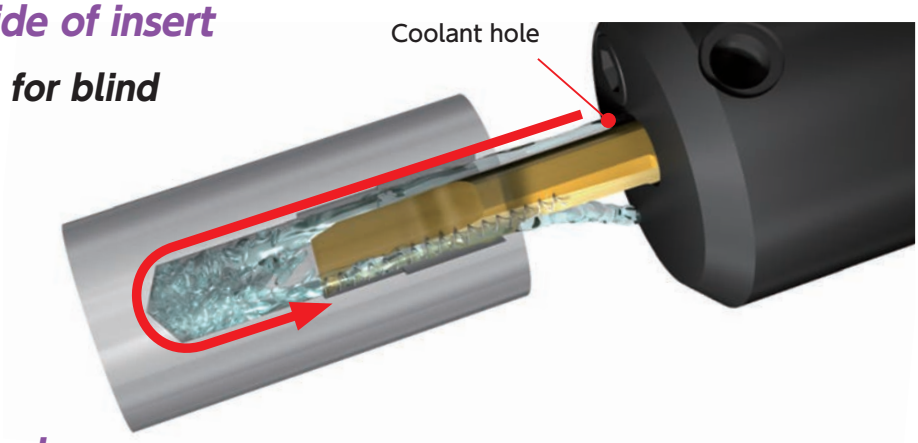


Features

Can choose from 2 coolant directions

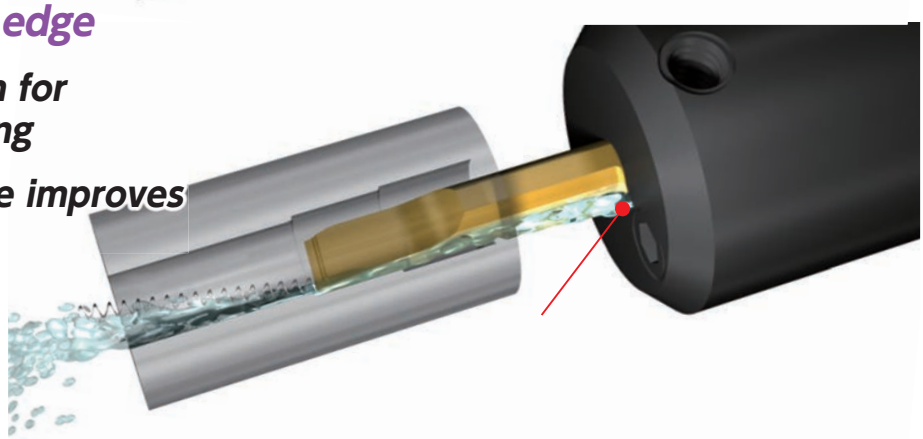
Coolant towards backside of insert

- Good chip evacuation for blind hole machining



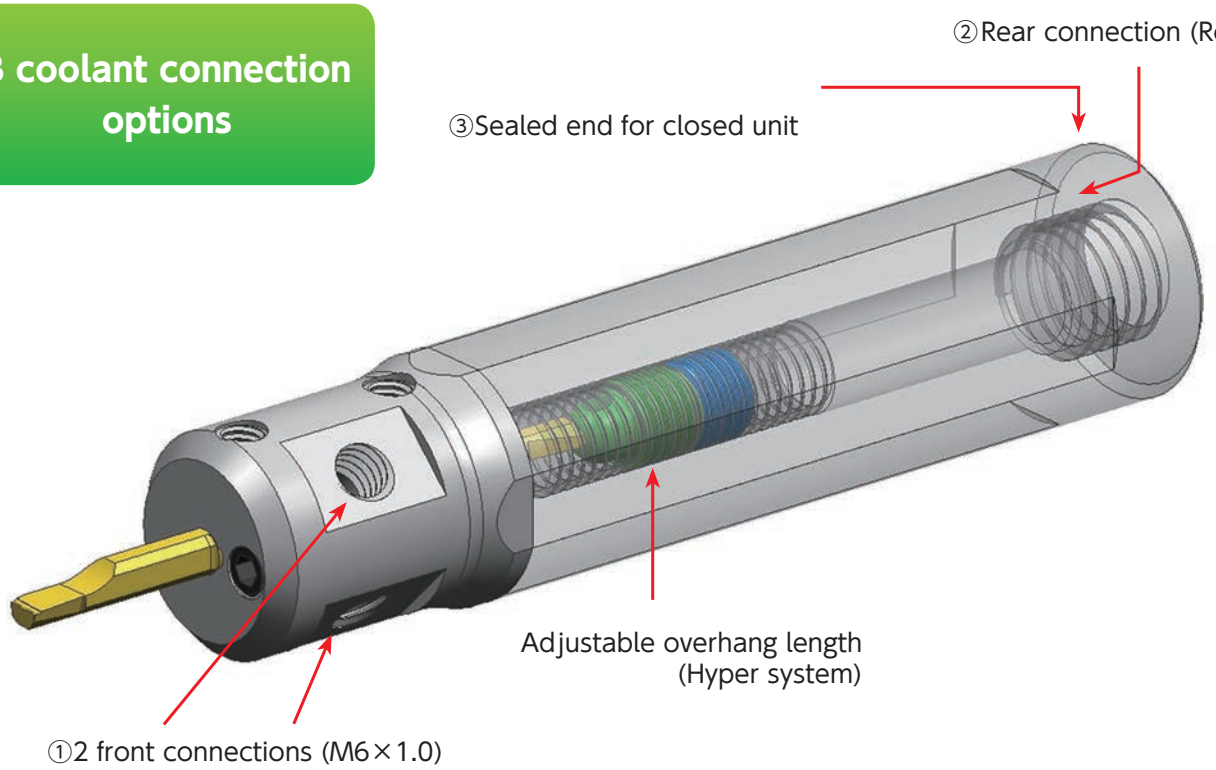
Coolant towards insert edge

- Good chip evacuation for through-hole machining
- Coolant to insert edge improves wear resistance

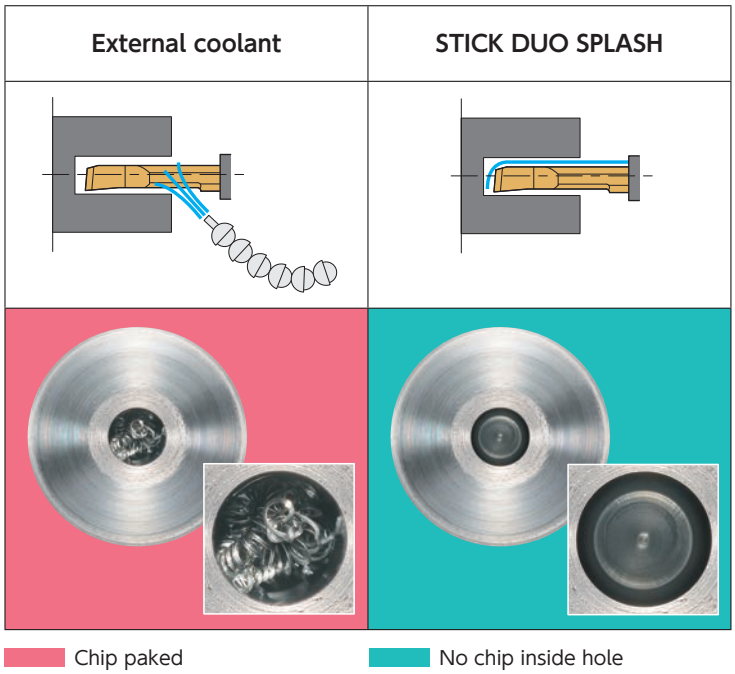


Structure

3 coolant connection options



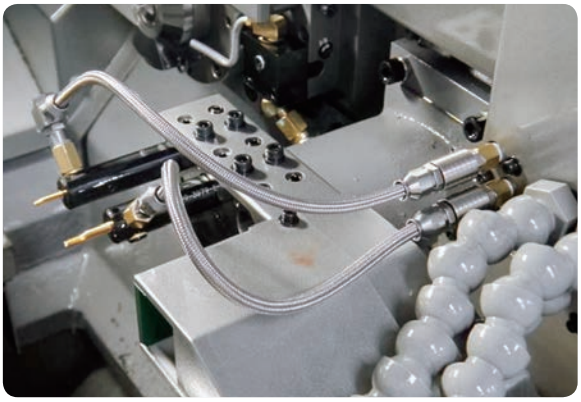
Machined work piece comparison



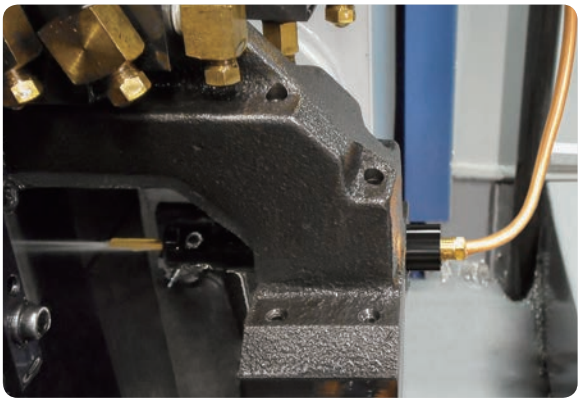
Work material : SCM435
Insert : SHFS040R005S
Cutting speed : v_c=50m/min
DOC : a_p=0.2
Feed : f =0.02mm /rev
Hole depth : 15mm
Pilot hole : ϕ5.1×28L
Coolant pressure : 5MPa

Picture for jointing coolant hose

Front connection example



Rear connection example



STICK DUO SPLASH(HY-NBH-OH Series)

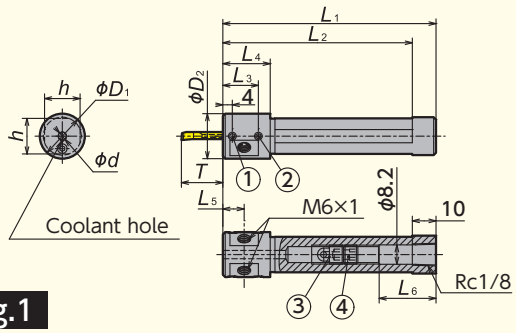


Fig.1

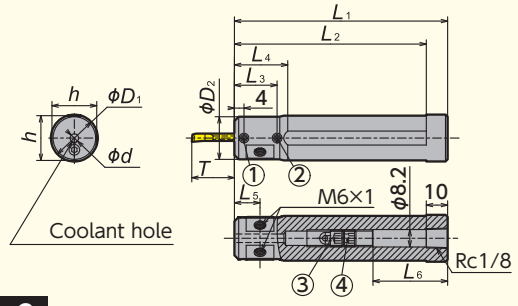
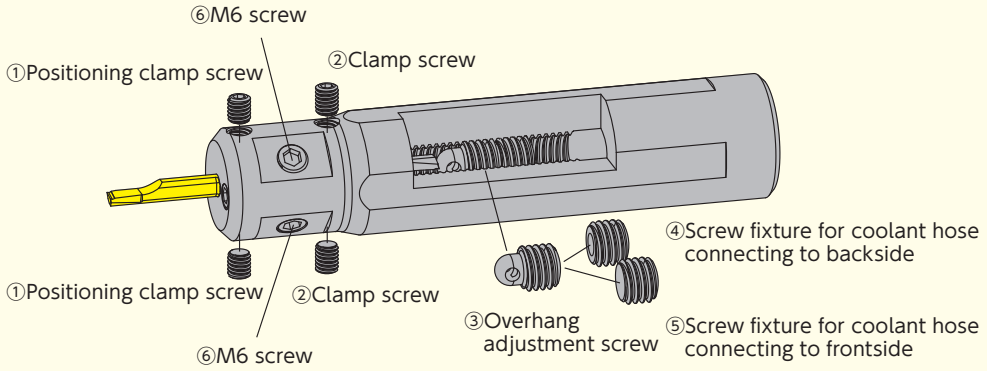


Fig.2

Shape	Code No.	Holder number	Dimensions (mm)										Overhang length of bar (mm)	
			φ d	φ D1	φ D2	h	L1	L2	L3	L4	L5	L6	Min.	Max.
Fig.1	●	HY-NBH 02016G-OH	2	16	19	15	90	80	15	19	9.5	29	5	18
	●	02516G-OH	2.5	16	19	15	90	80	15	19	9.5	30	6.3	19.5
	●	03016G-OH	3	16	19	15	90	80	15	19	9.5	31	7.5	21
	●	03516G-OH	3.5	16	19	15	90	80	15	19	9.5	23	8.8	24.5
	●	04016G-OH	4	16	19	15	90	80	20	24	12	24	10	28
	●	05016G-OH	5	16	19	15	90	80	20	24	12	16	12.5	35
Fig.2	●	HY-NBH 02019J-OH	2	19.05	19.05	18	110	100	15	—	9.5	49	5	18
	●	02519J-OH	2.5	19.05	19.05	18	110	100	15	—	9.5	50	6.3	19.5
	●	03019J-OH	3	19.05	19.05	18	110	100	15	—	9.5	51	7.5	21
	●	03519J-OH	3.5	19.05	19.05	18	110	100	15	—	9.5	43	8.8	24.5
	●	04019J-OH	4	19.05	19.05	18	110	100	20	—	12	44	10	28
	●	05019J-OH	5	19.05	19.05	18	110	100	20	—	12	36	12.5	35
	●	06019J-OH	6	19.05	19.05	18	110	100	20	—	12	28.5	15	42
	●	HY-NBH 02020J-OH	2	20	20	19	110	100	15	—	9.5	49	5	18
	●	02520J-OH	2.5	20	20	19	110	100	15	—	9.5	50	6.3	19.5
	●	03020J-OH	3	20	20	19	110	100	15	—	9.5	51	7.5	21
	●	03520J-OH	3.5	20	20	19	110	100	15	—	9.5	43	8.8	24.5
	●	04020J-OH	4	20	20	19	110	100	20	—	12	44	10	28
	●	05020J-OH	5	20	20	19	110	100	20	—	12	36	12.5	35
	●	06020J-OH	6	20	20	19	110	100	20	—	12	28.5	15	42
	●	HY-NBH 02022X-OH	2	22	20	21	120	110	15	25	9.5	59	5	18
	●	02522X-OH	2.5	22	20	21	120	110	15	25	9.5	60	6.3	19.5
	●	03022X-OH	3	22	20	21	120	110	15	25	9.5	61	7.5	21
	●	03522X-OH	3.5	22	20	21	120	110	15	25	9.5	53	8.8	24.5
	●	04022X-OH	4	22	20	21	120	110	20	25	12	54	10	28
	●	05022X-OH	5	22	20	21	120	110	20	25	12	46	12.5	35
	●	06022X-OH	6	22	20	21	120	110	20	25	12	28.5	15	42
	●	HY-NBH 02025.0K-OH	2	25.0	20	24	125	115	15	25	9.5	64	5	18
	●	02525.0K-OH	2.5	25.0	20	24	125	115	15	25	9.5	65	6.3	19.5
	●	03025.0K-OH	3	25.0	20	24	125	115	15	25	9.5	66	7.5	21
	●	03525.0K-OH	3.5	25.0	20	24	125	115	15	25	9.5	58	8.8	24.5
	●	04025.0K-OH	4	25.0	20	24	125	115	20	25	12	59	10	28
	●	05025.0K-OH	5	25.0	20	24	125	115	20	25	12	51	12.5	35
	●	06025.0K-OH	6	25.0	20	24	125	115	20	25	12	28.5	15	42
	●	HY-NBH 02025.4K-OH	2	25.4	20	24	125	115	15	25	9.5	64	5	18
	●	02525.4K-OH	2.5	25.4	20	24	125	115	15	25	9.5	65	6.3	19.5
	●	03025.4K-OH	3	25.4	20	24	125	115	15	25	9.5	66	7.5	21
	●	03525.4K-OH	3.5	25.4	20	24	125	115	15	25	9.5	58	8.8	24.5
	●	04025.4K-OH	4	25.4	20	24	125	115	20	25	12	59	10	28
	●	05025.4K-OH	5	25.4	20	24	125	115	20	25	12	51	12.5	35
	●	06025.4K-OH	6	25.4	20	24	125	115	20	25	12	28.5	15	42

Dimension "T" show overhang length of STICKDUO(hyper) bar when attached to sleeve with adjustment screw ③,④.

■Parts



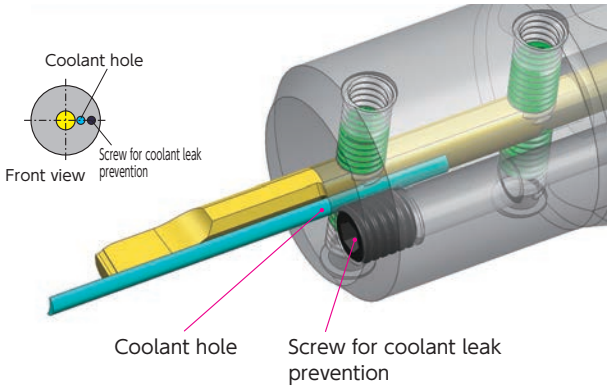
Holder number	Clamp screw		Overhang adjustment			M6 screw	Wrench		
	①	②	③	④※1	⑤※2	⑥	for ①,②	for ③,④,⑤	for ⑥
HY-NBH 020○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS0605SC	LW-2	LW-4*104	LW-3
025○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS0605SC	LW-2	LW-4*104	LW-3
030○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS0605SC	LW-2	LW-4*104	LW-3
035○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS0605SC	LW-2	LW-4*104	LW-3
040○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS0605SC	LW-2	LW-4*104	LW-3
050○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS0605SC	LW-2	LW-4*104	LW-3

※1 Select screw ④ to connect coolant hose backside
※2 Select screw ⑤ to connect coolant hose frontside

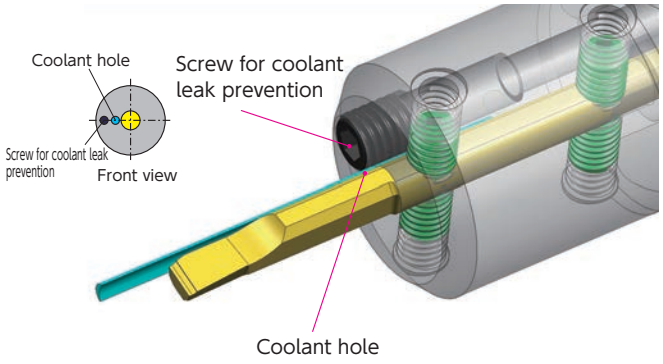
■How to set bar in the sleeve when internal coolant to insert tip or to insert backside

By rotating sleeve upsidedown, you can select the coolant output position.
Coolant hole located in screw side for coolant leak prevention. See the following about the details.

①Coolant to insert edge

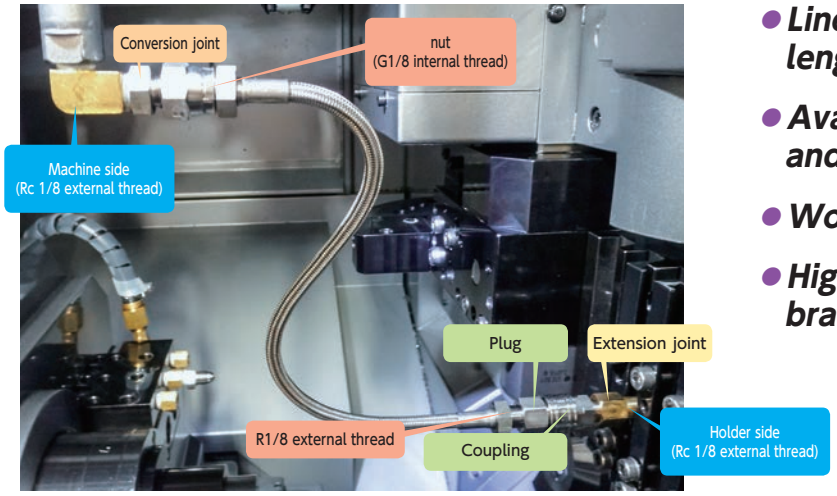


②Coolant to insert backside



Coolant Components

Coolant hose for connecting with R1/8



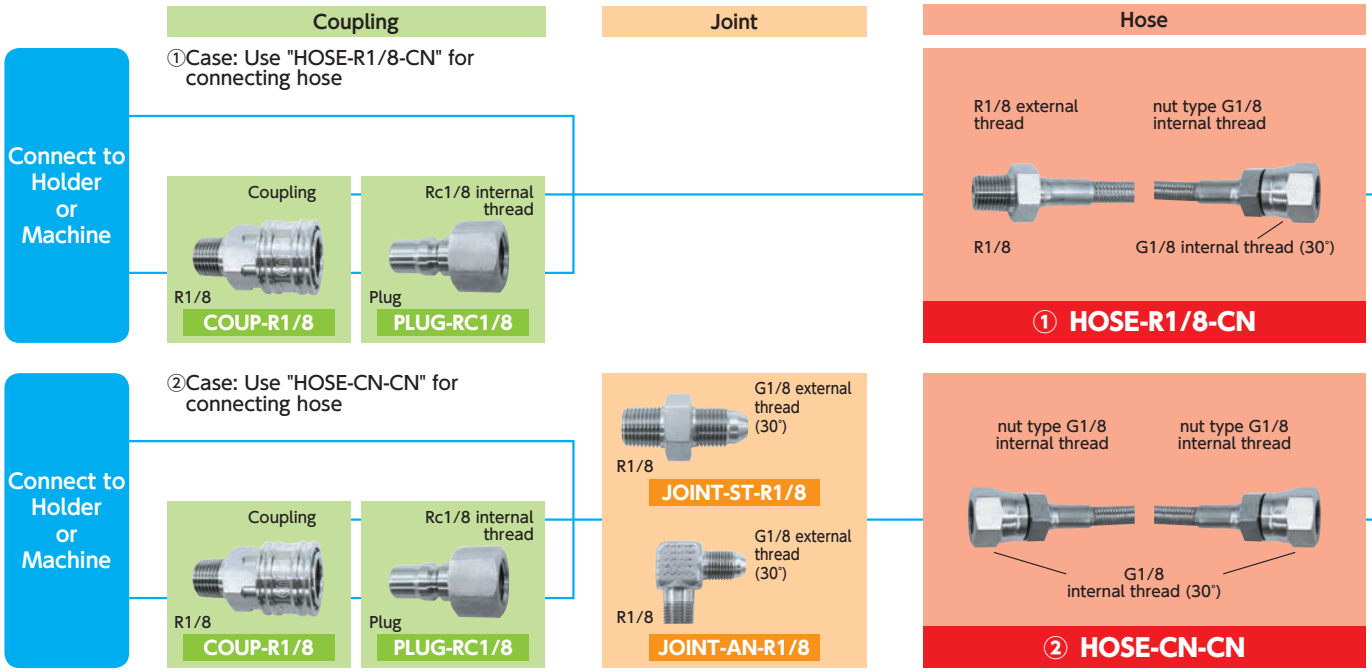
Ex. of connecting ①

- ***Line up a wide range of coolant hose length***
- ***Available for 2 types of coupling and conversion joint***
- ***Working pressure MAX. 20.6 MPa***
- ***High quality flexible stainless steel braided hose***

Ex. of connecting ①

Parts	P/N
Conversion joint	JOINT-ST-R1/8
hose	HOSE-R1/8-CN-400
Plug	PLUG-RC1/8
Coupling	COUP-R1/8
Extension joint	SCJ-R1/8-RC1/8-L

Chart for connecting coolant components



Hose

Shape	P/N	Dimensions (mm) L	Working pressure MAX.	Working pressure MIN.
① R1/8 External thread + nut: G1/8 intrenal thread	HOSE-R1/8-CN-200	200	20.6	50
	HOSE-R1/8-CN-250	250	20.6	50
	HOSE-R1/8-CN-300	300	20.6	50
	HOSE-R1/8-CN-400	400	20.6	50
	HOSE-R1/8-CN-500	500	20.6	50
	HOSE-R1/8-CN-800	800	20.6	50
② Both side: nut G1/8 intrenal thread	HOSE-CN-CN-200	200	20.6	50
	HOSE-CN-CN-250	250	20.6	50
	HOSE-CN-CN-300	300	20.6	50
	HOSE-CN-CN-400	400	20.6	50
	HOSE-CN-CN-500	500	20.6	50
	HOSE-CN-CN-800	800	20.6	50

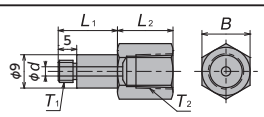
R1/8 External thread
Fix by rotating hose

nut G1/8 internal thread
Fix by rotating nut
(No need to rotate hose)

SPLASH Series Selection Support Sheet
Able to search the material you need by choosing the combination you wish to the support sheet.

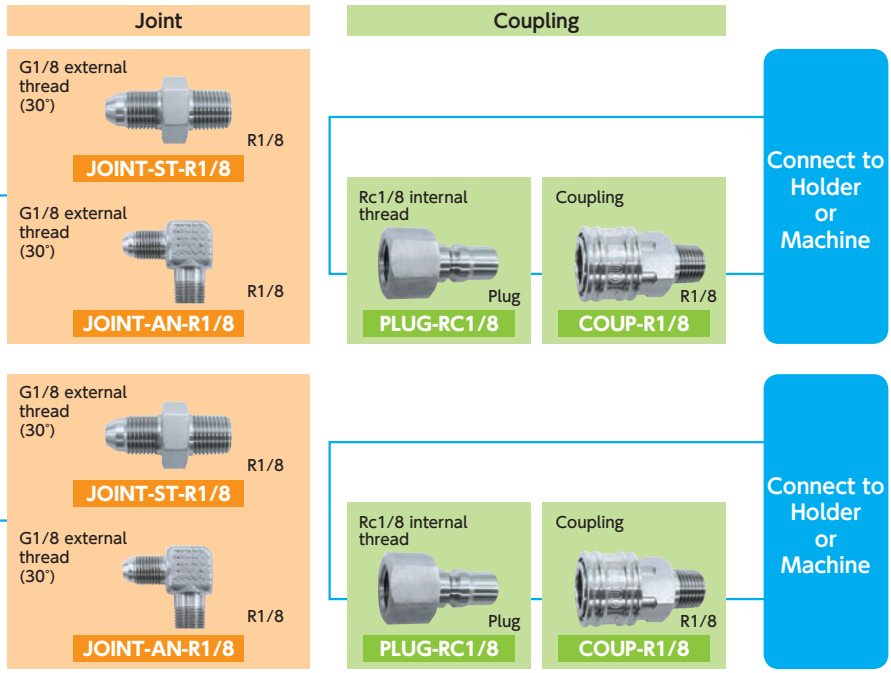
CUTTING TOOLS

Conversion / Extension Joint



Stock	Spare parts	Dimensions (mm)					
		T_1	T_2	L_1※1	L_2	B	d
●	SCJ-M6-RC1/8-L	M6	Rc1/8 (PT1/8)	16	15	13	2.5
●	SCJ-R1/8-M10-L	Rc1/8 (PT1/8)	M10×1	16	12	13	4.5
●	SCJ-R1/8-RC1/8-L	Rc1/8 (PT1/8)	Rc1/8 (PT1/8)	16	15	13	4.5
●	SCJ-R1/8-NPT1/8-L	Rc1/8 (PT1/8)	NPT1/8	16	15	13	4.5
●	SCJ-M6-M10	M6×1	M10×1	6	15	12	2.5
●	SCJ-M6-RC1/8	M6×1	Rc1/8 (PT1/8)	6	15	13	2.5
●	SCJ-M6-NPT1/8	M6×1	NPT1/8	6	15	13	2.5
●	SCJ-M8-RC1/8	M8×1	Rc1/8 (PT1/8)	6	15	13	3.5
●	SCJ-R1/8-M10	Rc1/8 (PT1/8)	M10×1	10	15	12	4.5
●	SCJ-R1/8-NPT1/8	Rc1/8 (PT1/8)	NPT1/8	10	15	13	4.5

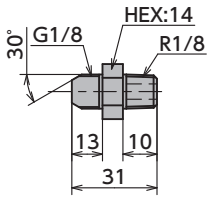
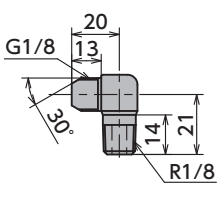
※1 To prevent hitting the coolant connecting part of holder from the gang tool post, "L1" dimension length is set longer.
NPT: ANSI/ASME B.1.20…1-1983(National Taper Pipe)



Suitable use of Coupling and Joint

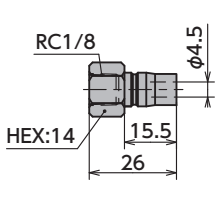
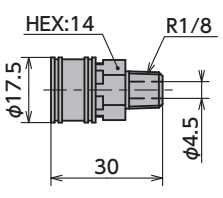
- Detach Hose frequently
  ⇒ Coupling is suitable
- Less detach Hose
  ⇒ Joint is suitable

■Conversion joint (nut G1/8 internal thread)

Parts	Straight style	L style
P/N	JOINT-ST-R1/8	JOINT-AN-R1/8
Working pressure MAX.	20.6	20.6
Shape		

※Screw standard will be different in both sides of straight and L style screw part.
Please use the same screw standard when connecting to hose or one touch coupler.

■Coupling

Parts	Plug	Coupling
P/N	PLUG-RC1/8	COUP-R1/8
Working pressure MAX.	7.5	7.5
Shape		

MEMO

B

NTK
CUTTING TOOLS

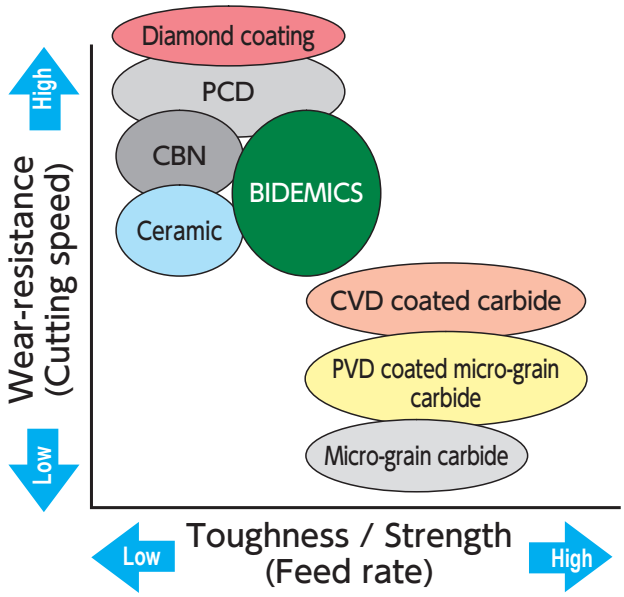
Tool Materials / Selection Guide

- Application Range of NTK Insert Grades ·· B2
- Recommended Types of Materials and Applications ·· B6
- Chipbreakers for Positive Inserts ····· B8
- Chipbreakers for Negative Inserts·····B12

Tool Materials / Selection Guide

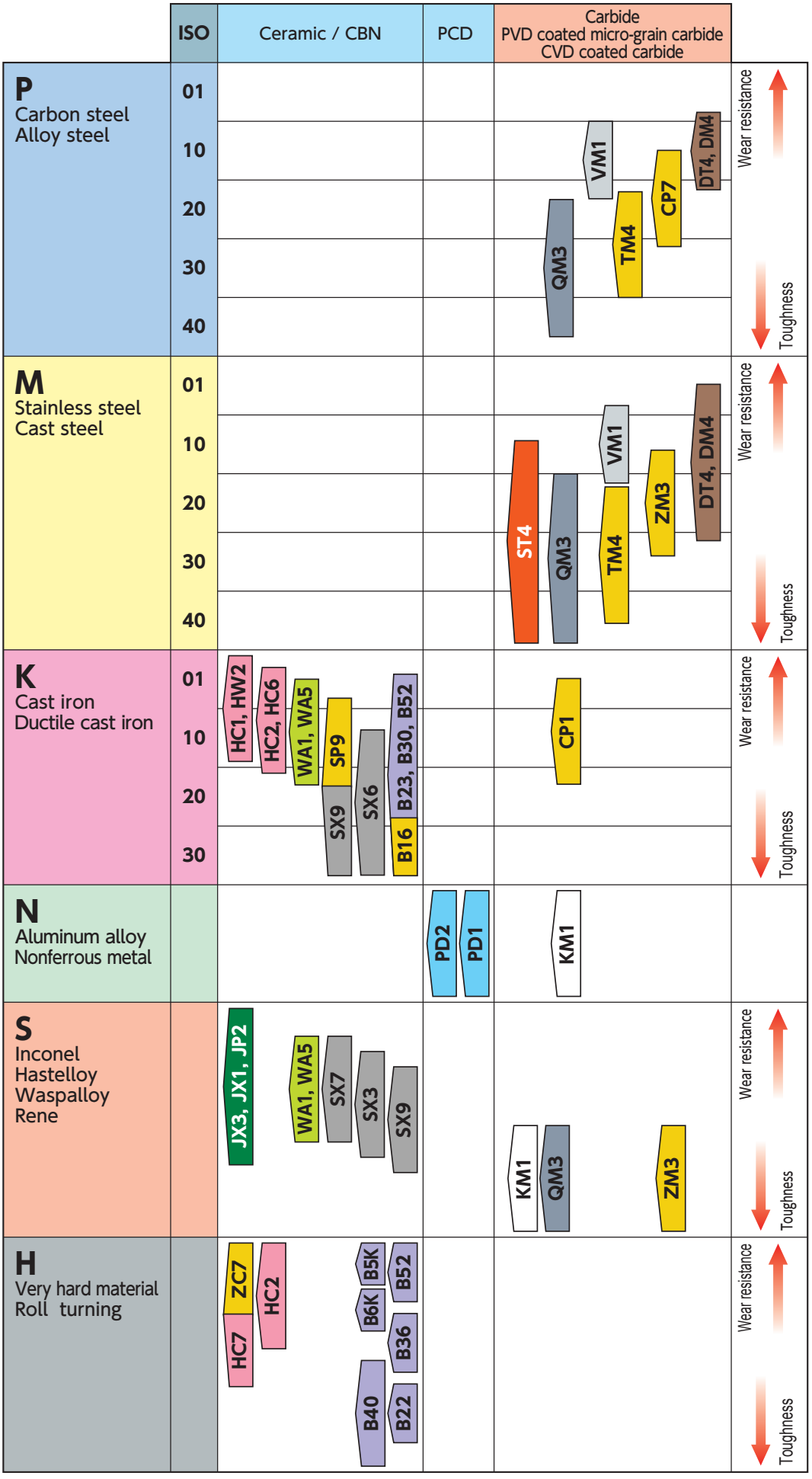
NTK Cutting Tools offer a wide range of tool materials, including PCD, CBN, ceramics and coated carbides, to accommodate various cutting applications.
In the SS Tool series, PCD and micro-grain ultra-hard carbides are set as the standard materials to meet the requirements of automatic and sliding head machines.
They are especially suited to micro-machining, offering excellent cutting performance and high quality surface finish.

● Material map



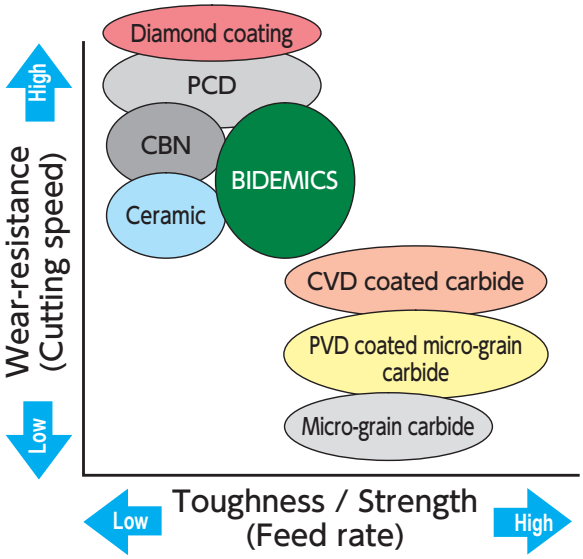
BIDEMICS	Highly efficient machinig for Heat resistance alloy	BIDEMICS **JX3, JX1, JP2**
PCD	High-speed cutting of non ferrous metals	Polycrystalline diamond PCD **PD1, PD2**
CBN	High-speed cutting of high hardness materials and cast irons	CBN **B22, B23, B30, B36, B40, B52** PVD coated **B5K, B6K** Solid CBN **B16**
Ceramic	Highly efficient cutting of high hardness materials and cast irons	Whisker grade **WA5 WA1,** Alumina/Titanium carbide grade **HC2, HC7, ZC7, HC6** Alumina grade **HC1, HW2,** Silicon nitride grade **SX3, SX6, SX7, SX9, SP9**
CVD coated carbide	General and multi-purpose machining of steels and cast irons	CVD coated carbide **CP1**···Cast iron **CP7**···Steel
PVD coated micro-grain carbide	Precision cutting, Cutting of stainless steel and hard-to-cut materials	PVD coated micro-grain carbide **ST4, TM4, ZM3, QM3, VM1, DT4, DM4**
Micro-grain carbide	Cutting of nonferrous metals and non-metal materials	Micro-grain carbide **KM1**

■Insert grade recommendation by work material type

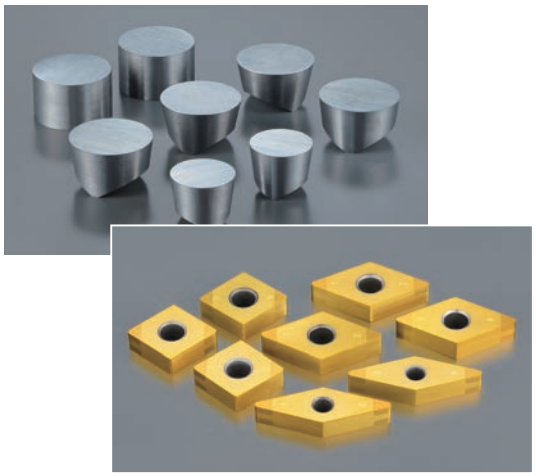


Tool Materials / Selection Guide

NTK cutting tools offer a wide range of tool materials, including PCD, CBN, ceramics and coated carbides, to accommodate various cutting conditions.
For the SS tool series, PCD, micro-grain carbides are set as the standard materials to meet the requirements of automatic lathes specifically micro-machining, with excellent cutting performance and high quality surface finish.



BIDEMICS

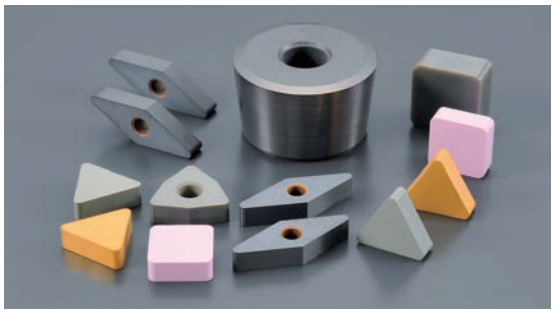


Highly efficient machinig for Heat resistance alloy

NTK's BIDEMICS is the latest revolutionary insert grade 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.

For more information, please go to ··· C2

Ceramic

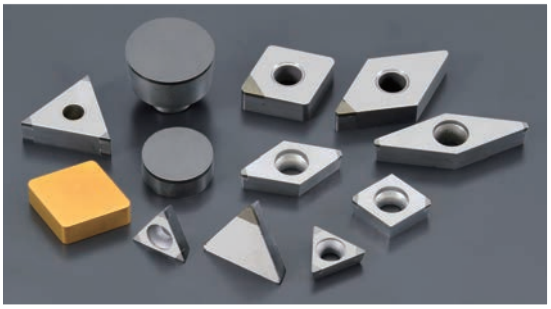


For high-efficiency cutting of hardened materials and cast irons

Ceramic tools offer high cutting speed and highly efficient machining thanks to their outstanding heat resistance and chemical stability.
A wide range of tools in various shapes, made of different types of ceramic including silicon nitride, alumina and whisker series, enables you to achieve high cutting speeds and higher productivity than carbide tools in many applications.

For more information, please go to ··· C8

CBN



For high-speed cutting of hardened materials and cast irons

This material is made of CBN (Cubic Boron Nitride) as the base component and a special ceramic binder, giving a high level of hardness at both room and high temperature ranges. One of its superior features is that it causes very little chemical reaction with work piece materials.
It is mainly used for machining of materials with high hardness and high-speed cutting of cast iron.

For more information, please go to ··· C6

PVD coated micro-grain carbide

For precision cutting and general machining of hard-to-cut materials including stainless steel

The carbides in this grade has been developed by reducing the size of the WC hard grains, which are the main component of cemented carbide, to approximately 1 μ.
By coating such carbide by the PVD method with TiN, TiCN, or TiAlN, these materials are the most suitable for precision cutting and cutting of difficult-to-cut materials.
PVD coating on such micro grain carbide offers much improved wear resistance and thermal shock resistance.
These carbides are tougher and harder than conventional carbides, with much sharper cutting edges.

For more information, please go to ··· D2

Micro-grain carbide

For cutting of non-ferrous metals and non-metal materials

Using non-coated micro-grain ultra-hard carbide, which provides ultra sharp cutting edges, this type of carbide usually, has a mirror-like polished surface.
This type is the most appropriate tool material for machining of non-ferrous metals and resins, where especially sharp cutting edges are required.

For more information, please go to ··· D2

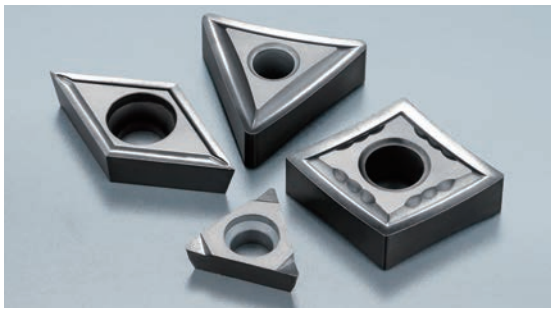
CVD coated carbide

For general cutting of steels and cast irons

This type of carbides, suitable for cutting steel and cast iron, use carbide as the base material with coating applied by the CVD method for extra wear and heat resistance.

For more information, please go to ··· D6

New diamond coating

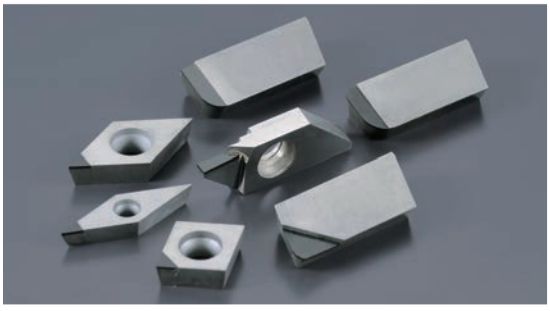


For Carbon and Ceramic

High purity and high hardness diamond coating are filmed minutely, so it has better wear resistance comparing to the past PCD tools.

For more information, please go to ··· C4

PCD

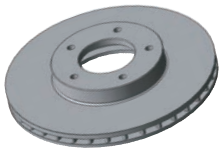
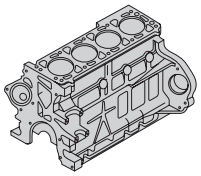


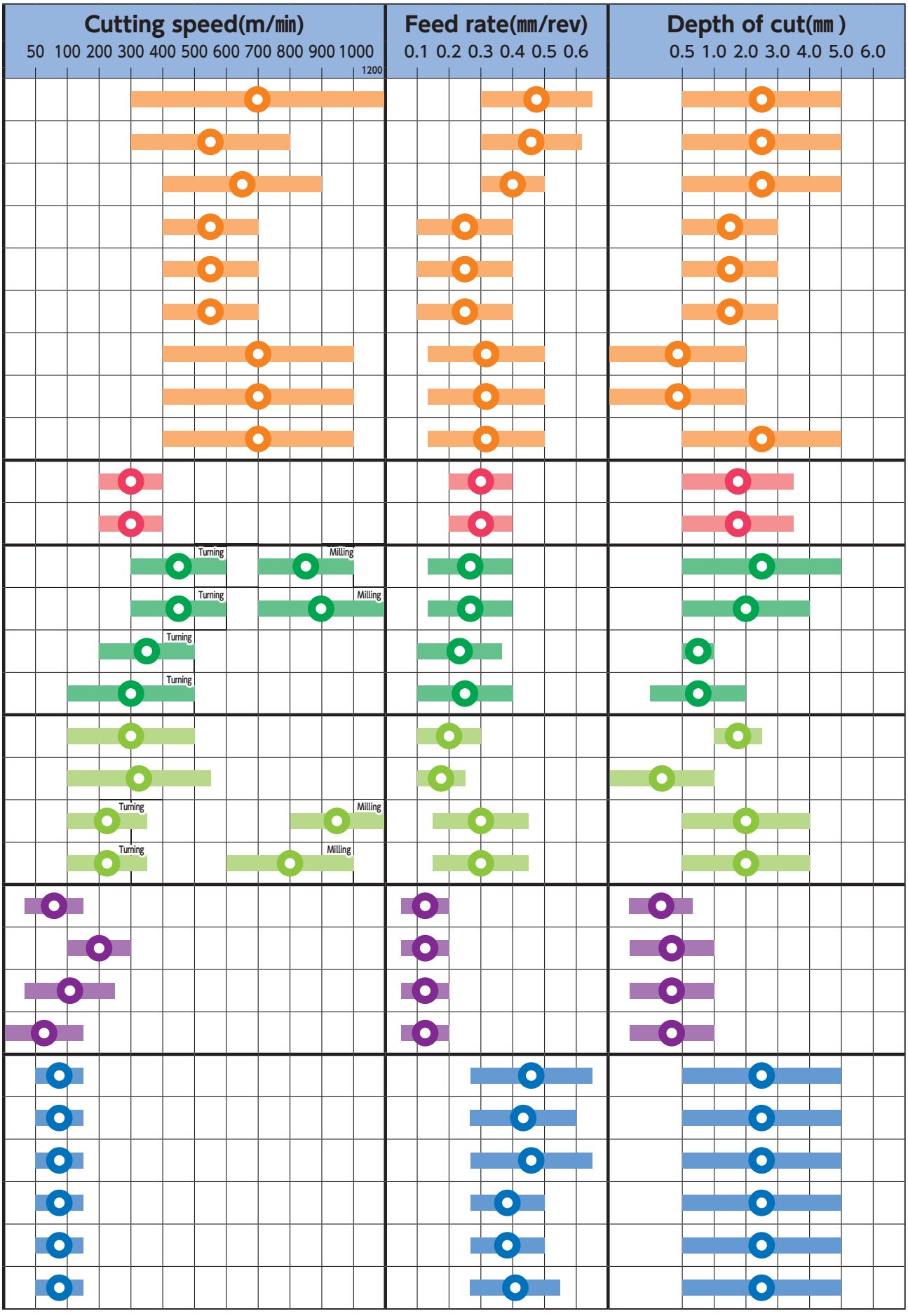
For high-speed cutting of non-ferrous metals

As diamond is the hardest and lowest in affinity with nonferrous metals cutting material , its deposition resistance as well as wear resistance is excellent. However, as a tool material, its low toughness and characteristically low chipping resistance posed problems.
PCD is the material that solved these problems by sintering micro-grain diamond to make a polycrystalline structure without affecting the diamond-specific characteristics.
This material allows you to cut non ferrous metals at a higher speed than carbide cutting tools.

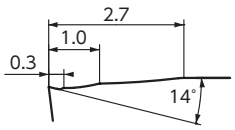
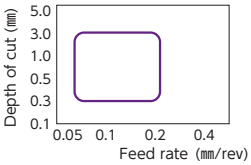
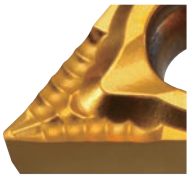
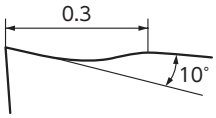
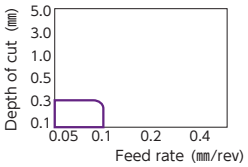
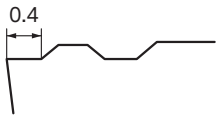
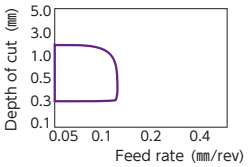
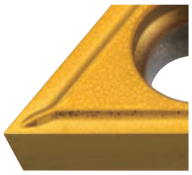
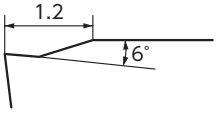
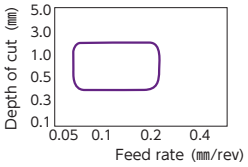
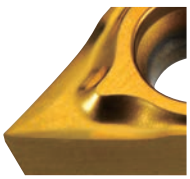
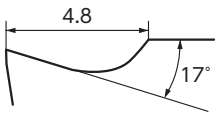
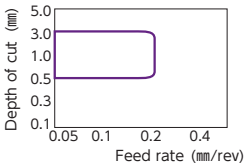
For more information, please go to ··· C5

■ Recommended Types of Materials and Applications : BIDEMICS, Ceramic and CBN ●First Choice ○Second Choice

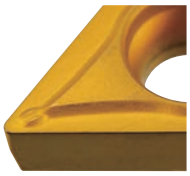
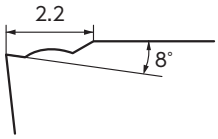
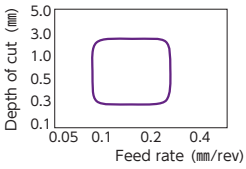
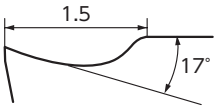
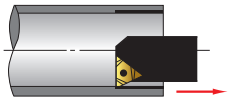
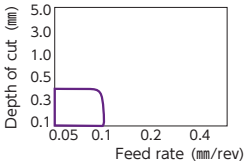
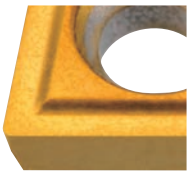
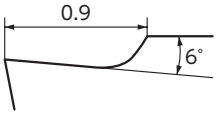
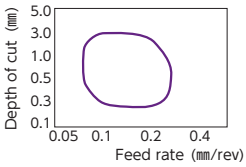
Work material	Tool material		Process					Cutting oil	
			Rough-ing	Semi-finishing	Finishing	Continuous	Light interruption	Interruption	Dry	Wet
Normal cast iron  	Ceramic	SX6							●	●
		SX9							●	●
		SP9							●	○
		HC1 / HW2							●	
		HC2 / HC6							●	●
		WA1							●	●
	CBN	B23							○	●
		B30							○	●
		B16							○	●
Special cast iron	Ceramic	HW2							●	
		HC2							●	○
Ductile cast iron	Ceramic	SX9							●	○
		SP9							●	○
		HC6							○	●
	CBN	B52							○	●
Heat-resistant alloy	BIDEMICS	JX3 / JX1								●
		JP2								●
	Ceramic	SX7 / SX3 / SX9							○	●
		WA1 / WA5							○	●
Hardened material	Ceramic	HC4 / ZC7								●
	CBN	B52							○	●
		B36							●	●
		B40							●	○
Rolls High-peed steel	Ceramic	WA1 / WA5							●	○
	CBN	B22/B23/B36							●	○
Cast iron	Ceramic	HC2 / HC7							●	○
	CBN	B22 / B30							●	○
Ductile iron	Ceramic	SX9							●	○
	CBN	B22 / B52							●	○

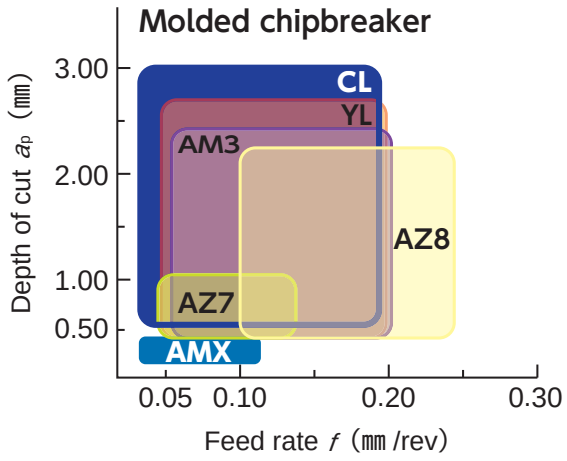

Cutting speed(m/min)
50 100 200 300 400 500 600 700 800 900 1000 1200
Feed rate(mm/rev)
0.1 0.2 0.3 0.4 0.5 0.6
Depth of cut(mm)
0.5 1.0 2.0 3.0 4.0 5.0 6.0
Turning
Milling
Turning
Milling
Turning
Turning
Turning
Milling
Turning
Milling

Molded Chipbreakers for Positive Inserts

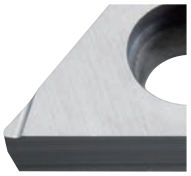
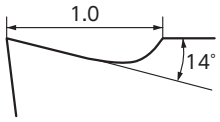
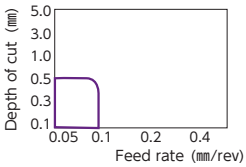
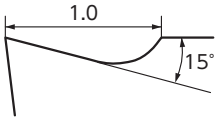
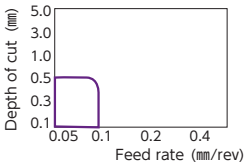
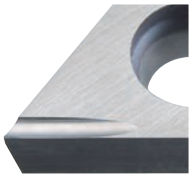
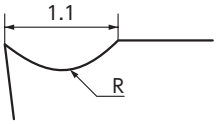
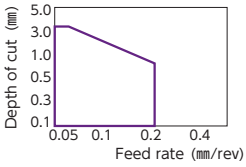
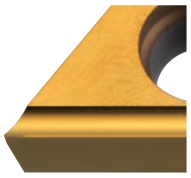
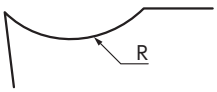
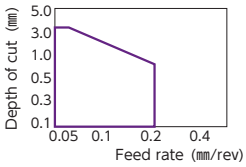
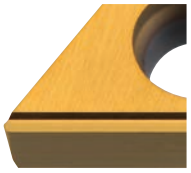
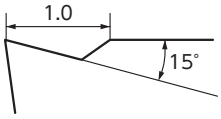
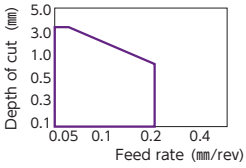
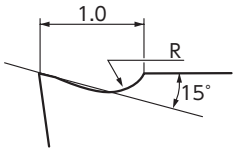
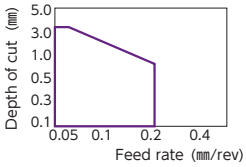
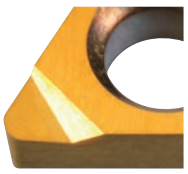
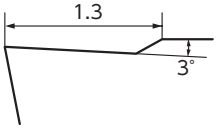
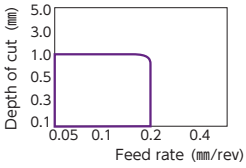
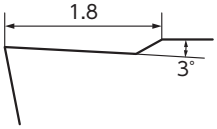
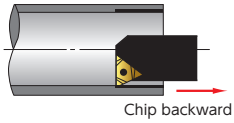
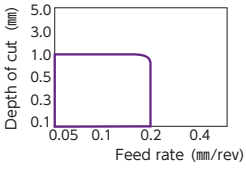
Name	Chipbreaker Geometry		Features	Chip Control Range
YL		 ※DCGT11T302 type	●Great combination of sharpness and toughness ●Covers extremely wide range ●Excellent chip control	
AMX		 ※DCGT11T302 type	●Designed for very light depth of cut ●Good sharpness	
AZ7		 ※DCGT11T302 type	●Excellent chip control at light feed and light depth of cut	
AM3		 ※DCGT11T302 type	●All purpose chipbreaker ●Sharp edge with toughness	
CL		 ※DCGT11T302 type	●Sharpest molded Chipbreaker ●Excellent chip control ●Less tool pressure	

Molded Chipbreakers for Positive Inserts

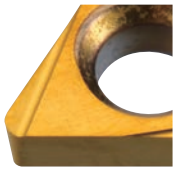
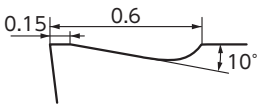
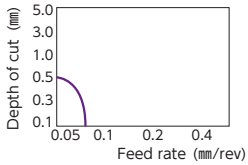
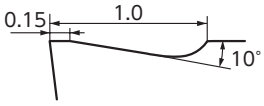
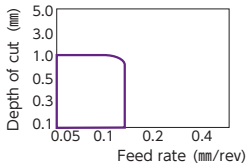
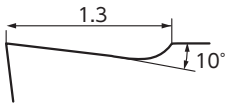
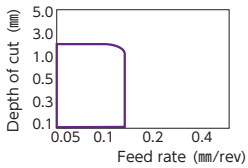
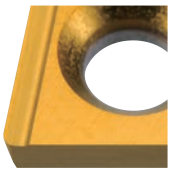
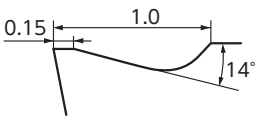
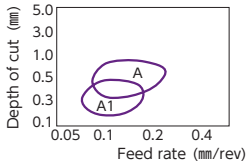
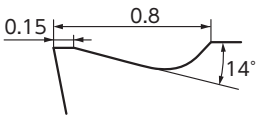
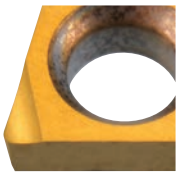
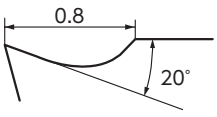
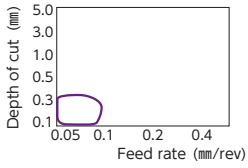
Name	Chipbreaker Geometry		Features	Chip Control Range
AZ8		 ※DCMT11T302 type	●CVD-coated versatile chipbreaker with its high cutting performance	
FG		 ※TPGH110304 type	●Exclusively designed for ID boring ●Evacuates chips BACKWARD at light depth of cut ●Sharp cutting edge with high rake angle 	
AM5		 ※CPGH060202 type	●Chipbreaker for boring ●Provides both good cutting performance and chip control	

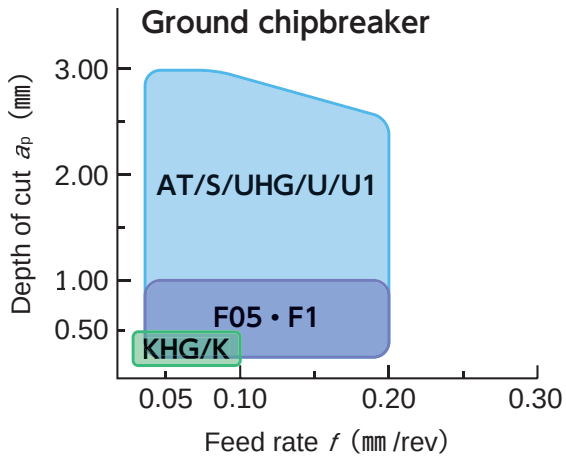


Ground Chipbreakers for Positive Inserts

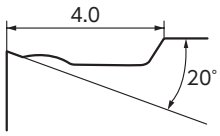
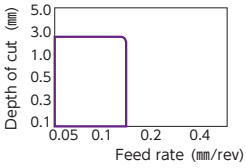
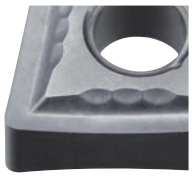
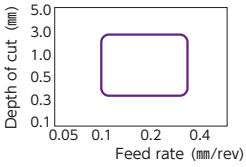
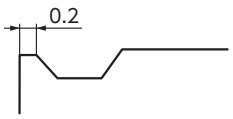
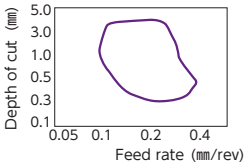
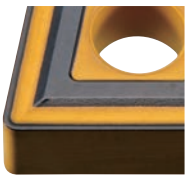
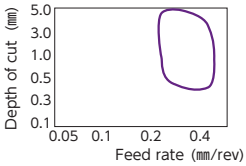
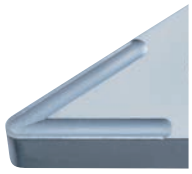
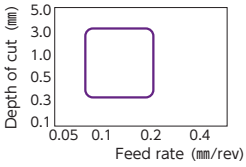
Name	Chipbreaker Geometry		Features	Chip Control Range
KHG		 ※DCET11T302 type	●Excellent chip control on finishing cuts ●For super high-precision machining ＊Precision tolerance in corner radius: ±0.01	
K		 ※TPGH090202 type	●Superb chip control on finishing applications ●Sharp cutting edge with high rake angle	
UHG		 ※DCET11T3008 type	●Sharp cutting edge ●Covers wide cutting condition range ＊Precision tolerance in corner radius: ±0.01	
U • U1		 ※DCGT11T302 type	●Sharp cutting edge prevents materials from work hardening	
S		 ※DCGT11T302 type	●Standard ground chipbreaker with wide cutting condition coverage ●Sharp cutting edge with excellent chip control	
AT		 ※DCGT11T302 type	●Excellent adhesion resistance with dimensional stability ●Best for small diameter parts and for machining low carbon steels	
F05		 ※TPGH060102 type	●Exclusively designed for ID boring ●Evacuates chips BACKWARD ●Excellent choice for blind hole machining	
F1		 ※TPGH110302 type		

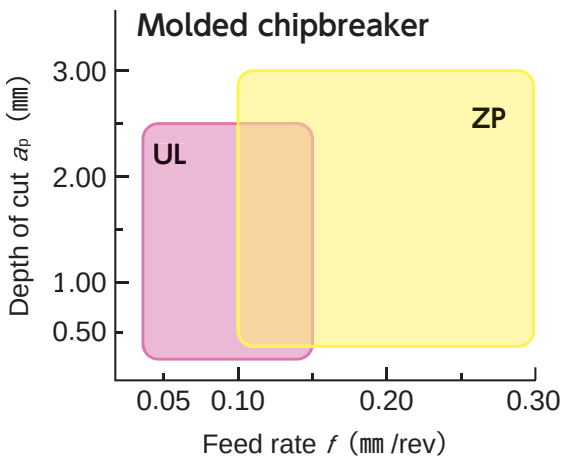
Ground Chipbreakers for Positive Inserts

Name	Chipbreaker Geometry	Features	Chip Control Range
B1	  ※TCGH060102 type	●Stable cutting when boring thanks to sharp and tough cutting edge	
B2	 ※TPGH090202 type		
B3	 ※TPGH090202 type		
A	  ※CPGH080202 type	●Tough cutting edge and good chip control ●General-purpose ID chipbreaker	
A1	 ※CPGH040102 type		
A2	  ※ERGHT30102 type	●Control chips at light feed and light depth of cut ●Sharp cutting edge due to large rake angle	

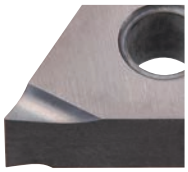
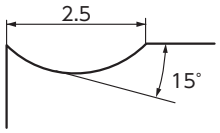
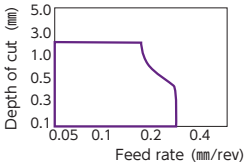
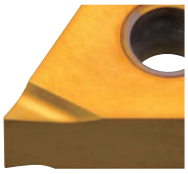
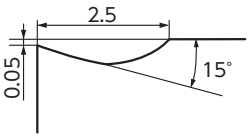
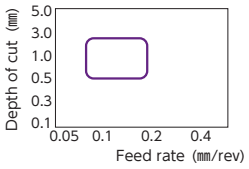
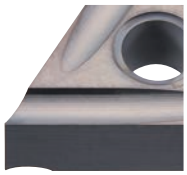
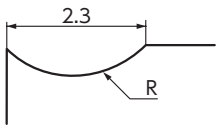
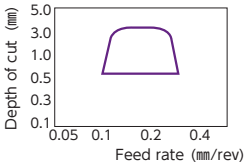
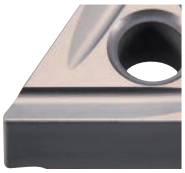
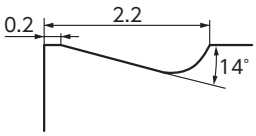
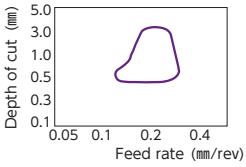


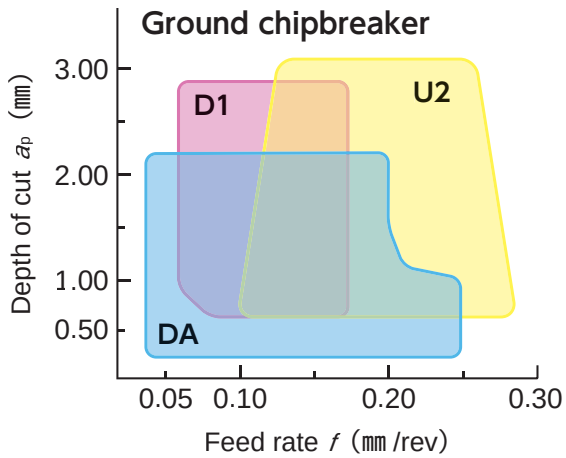
Molded Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
UL		 ※TNGG160401 type	●Negative insert with a positive insert's chipbreaker ●Reduced burr ●Improved microfinish ●Superb advantage in cost per corner over positive inserts	
ZP		※CNMG120408 type	●Double-positive rake and sharp cutting edge ●Low tool pressure even at heavy depth of cut	
Z5		 ※CNMG120408 type	●Very tough insert ●Designed for machining with heavy interruption	
G		※CNMG120408 type	●Tough chipbreaker for roughing with exceptional stability	
AM1		※VNMG160408 type	●Tough chipbreaker for roughing with exceptional stability	



Ground Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
DA		 ※TNGG160401 type	●Excellent chip control and sharp cutting edge	
D1		 ※TNEG160402 type		
U2		 ※TNGG160402 type	●Reduced burr and work hardening due to high rake design	
C		 ※TNGG160402 type	●General-purpose chipbreaker with excellent toughness and chip control	



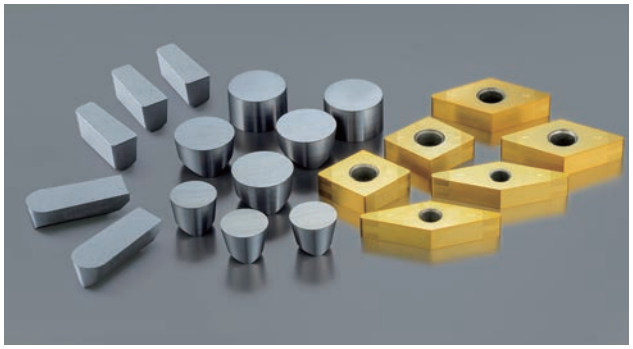
MEMO

C

BIDEMICS, PCD, CBN and Ceramics

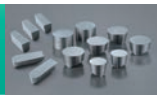
- BIDEMICS ····· C2
- Diamond Coating ····· C4
- PCD ····· C5
- CBN ····· C6
- Ceramics ····· C8
  - Alumina-based Ceramics ····· C10
  - Alumina TiC-based Ceramics ····· C12
  - Silicon Nitride-based Ceramics ····· C14
  - Whisker-reinforced Ceramics ····· C16

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.

JX1/JX3 NEW Semi-finishing & Finishing / Rough no scale



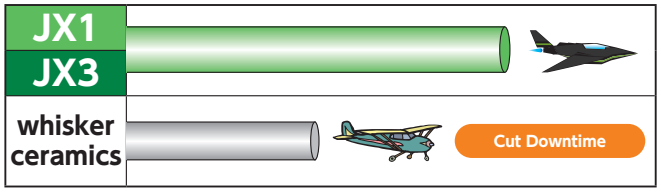
- Up to 480 m/min speed capability
- Much longer tool life at Whisker ceramics' speed range
- Better wear resistance and notching resistance than Whisker ceramics
- Superior surface finish vs. Whisker ceramics
- Newly added JX3 provides toughness to BIDEMICS family

JP2 Finishing

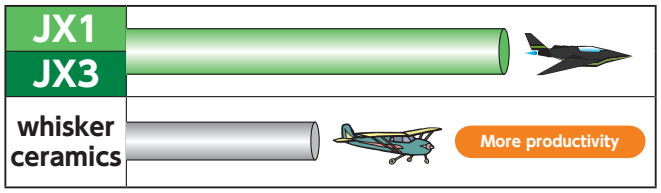
- 10 to 15x speed capability vs. carbide
- Better wear resistance and notching resistance than CBN
- Superior surface finish to Carbide or CBN
- Strong brazing technology

Increase Productivity vs. Whisker ceramics

① Significantly extended tool life at same speed

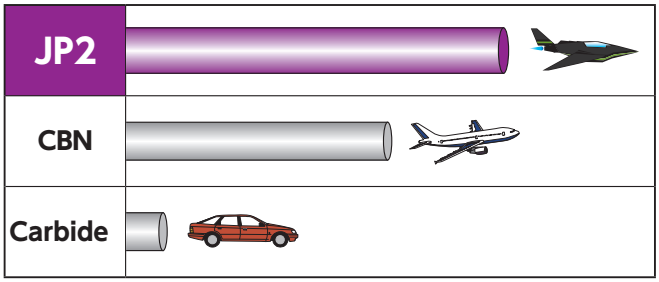


② Double speed capability



Increase Productivity vs. Carbide

① 10 to 15 times higher speed capability



Application : JX1 & JX3

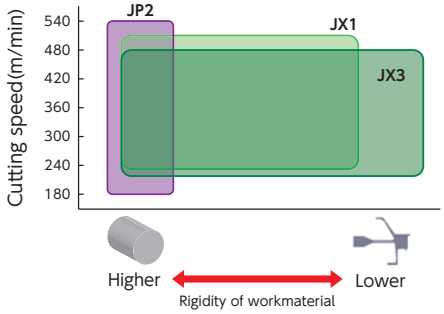
JX1

- *Higher speed, more productivity than ceramics.*
- *Suitable for turning in high rigid situation(External/ endface tuening) Turning in useing more toughness insert like RNGN type*
- *Offering excellent notch wear resistance*

JX3

- *Turning at the corner part, Grooving.*
- *Chipping occured when use JX1 grade*
- *Turning in low rigidity situation*

Grade

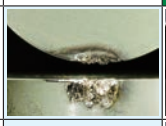
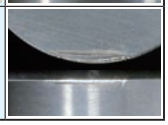


Grade	Workmaterial	Tooling	Applications	Cutting speed (m/min)	Feed (mm/rev)	D.O.C (mm)	DRY	WET
JX1 / JX3	Heat resistant alloy	Turning	Rough no scale	180-**480**	0.15-0.30	1.00-2.50		●
			Semi-finish	180-**480**	0.10-0.25	0.50-2.00		●
JP2	Heat resistant alloy	Turning	Finish	180-**520**	0.10-0.25	0.20-1.00		●

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.

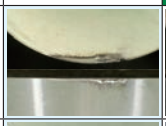
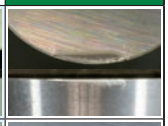
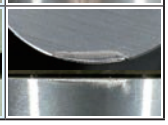
480 m/min	Competitor's Whisker	JX1
1st pass after 0.50 min		
2nd pass after 1.00 min	Impossible	

JX1

Whisker Ceramic

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.

330 m/min	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

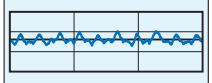
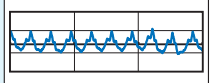
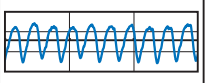
BIDEMICS has success on

Inconel 718
Inconel 625

- 718 Plus
- Rene41
- Rene88
- Rene104
- Waspaloy

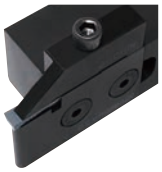
etc.

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		240 m/min	←	35 m/min
Feed		0.15 mm/rev	←	←
Cycle time		3.3 min	←	14.7 min
Removed chip		48 cc	←	←

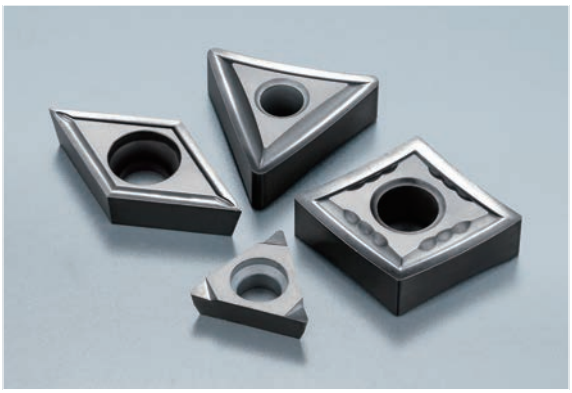
JP2's outstanding Wear Resistance and Notching Resistance results in work piece surface finishes consistently superior to either CBN or Carbide

5 Speed up grooving operations



VGW style Grooving inserts are now available

New diamond coating

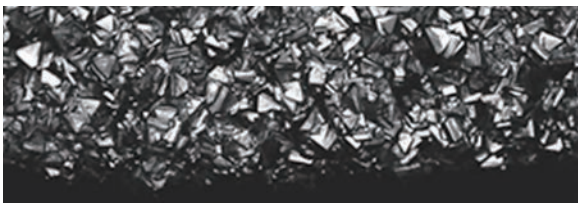


High purity and high hardness diamond coating are filmed minutely, so it has better wear resistance comparing to the past PCD tools.

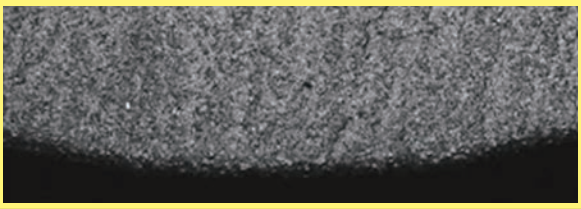
UC1 For Carbon and Ceramic

Comparing to the past diamond coating, particle diameter is less than 1/10

Past diamond coating "UC2"



New diamond coating "UC1"



Features

- ***Improve wear resistance***

  High purity and high hardness diamond coating are filmed minutely, so it has better wear resistance comparing to the past PCD tools.

- ***High adherence efficiency***

  NTK's original carbide base material and technical surface treatment development, acquires high adherence efficiency and can reduce the cause of unusual damage by coating exfoliate and able to cut more stable and long term.

- ***Improve chip control • More shape variations***

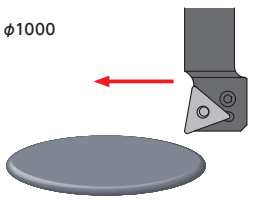
  Excellent chip-control of molded chipbreakers will be able to reduce the manufacturing lines stopping time.
  ・I t is able to deal with NTK standard chip-breaker coated by UC1 as special manufactures!

- ***High cost performance***

  Increasing the number of corners, it contributes to the improvement of machining cost.

【Case study 】

Application of carbon machining Carbon	
Work material	: Carbon
Cutting speed (m/min)	: 300
Feed (mm/rev)	: 0.1 ～ 0.4
Depth of cut (mm)	: 1.0
Coolant	: DRY

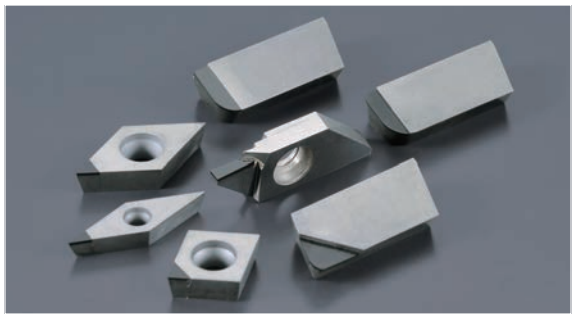


NTK : **UC1**	4 pcs/corner
Competitor's diamond coating	3 pcs/corner

【Carbon Ceramic 】

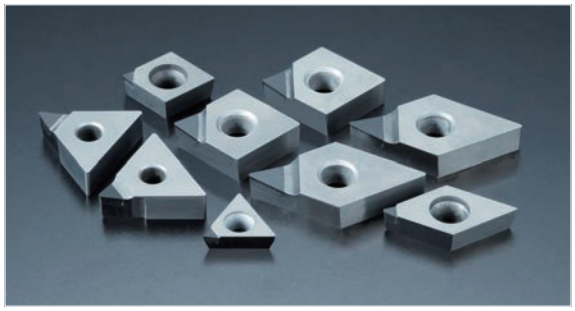
- ***Improve wear resistance due to the adoption of sharp standard chipbreaker,and long expectancy***
- ***Maximum 6 corner negative inserts are lined-up as well.***
  Contributed to cost reduction!

Diamond sintered body, PCD



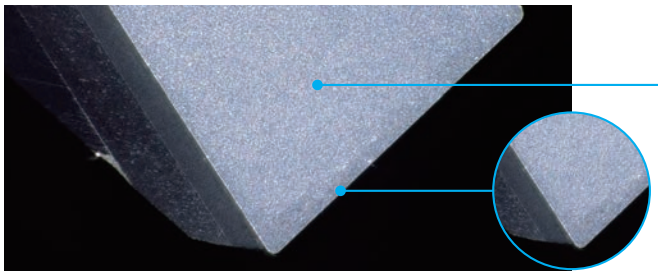
Diamond excels in deposition resistance with its low affinity and has excellent wear resistance with high hardness. But it also has a problem with fracture resistance due to lack of toughness. PCD is the material solving that problem without losing original characteristics of diamond by sintering fine grain diamond and generating polycrystallization. It enables much higher speed machining of nonferrous metals compared to carbide.

PD1 / PD2 For high speed machining of nonferrous metals!



Features

- *Elevated cutting speed when compared to carbide*
- *Recommended for cutting of aluminum and copper alloys with excellent deposition resistance*
- *Incorporates a very sharp cutting edge condition*
- *Pre-grinding and cutting-off types added in addition to the current milling cutter types*



- Uses strictly selected diamond grains , the hardest of all material types
- Further improved strength by poly-crystallizing dense diamond micro grains
- Excellent deposition resistance thanks to a lower affinity to nonferrous materials
- Sharp cutting edge attained
- Enables high precision and stable machining by control of potential built-up edge

Main applications for cutting: aluminum alloys, brass, copper alloys, graphite, ceramic compact, plastics

【Recommended cutting conditions】

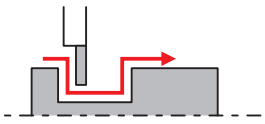
Work material	Cutting speed (m/min)	Feed rate (mm /rev)	Cutting oil
aluminum alloy	Turning : ~ 350 Milling : ~ 4000	Turning : ~ 0.12mm /rev Milling : ~ 0.20mm /t	WET
Copper alloy	Turning : ~ 200 Milling : ~ 1000		

【Actual machining examples】

Machining of spool ●Work material : A6063

	Conventional cutting tool	NTK
Material grade	Competitor's brazed carbide grade cutting tool	PD1
Cutting speed (m/min)	100	200
Feed rate (mm/rev)	0.02	0.06
Cutting oil	WET	←
Machining method	Grooving (5) followed by profiling of the grooves	Single stroke
Life (pcs./corner)	1,000	10,000

PD1

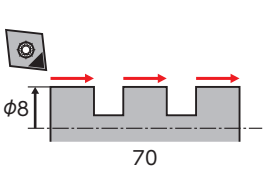


Shorter cycle time due to single pass machining.
PD1 produces an excellent surface finish without deposition, higher efficiency and prolonged life resulted.

Machining of spool

Material grade	: A6061
Cutting speed (m/min)	: 170
Feed rate (mm/rev)	: 0.06
Depth of cut (mm)	: 0.15
Cutting oil	: WET

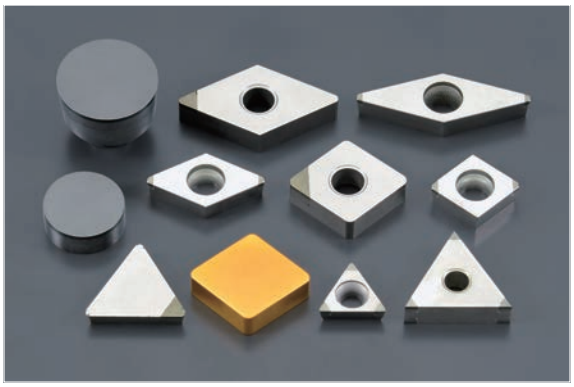
PD2



NTK : PD2	10,000 pcs./corner
Competitor's PCD product	5,000 pcs./corner

PD2, excellent in wear resistance, achieved twice the life of competitor's product.

High-pressure sintered compact



CBN grade inserts are composed mainly of CBN (Cubic Boron Nitride) particles with a special ceramic binder. The material has excellent cutting material properties including high hardness at normal and highly elevated temperatures, little chemical reactions with work materials, making it a material suitable for cutting tools

CBN inserts can be used for machining of cemented materials and high speed machining of cast iron

B16 Best for high efficiency machining of cast iron !

Features

- ***Solid CBN with multiple corners available***
- ***The coating allows easy checking of used cutting edges***

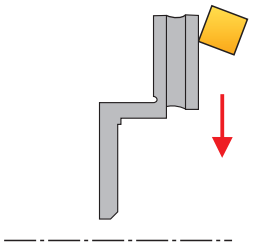
Material grade	Main binder	CBN content	Major application
B16	TiN coating + special ceramic	82%	Roughing and finishing of normal cast iron at high speed/rolling rolls

【Actual machining examples】

Rough cutting of disc brake

Work material : FC250
Cutting speed (m/min) = 1,000
Feed rate (mm/rev) = 0.7
Depth of cut (mm) = 1.0
Cutting oil : WET

B16



NTK : **B16**	800 pcs./corner
Competitor's CBN product	650 pcs./corner

B16 produced tool life of 1. 2 times the competitor's product.

B22 Best for machining of rolls of high hardness !

Features

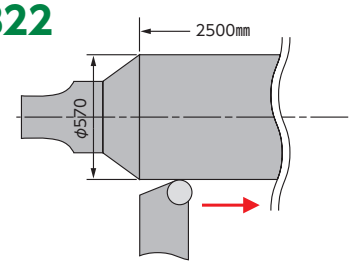
- ***Top layer of CBN with a carbide base offereing multiple cutting edges***
- ***High hardness due to the use of the special binder***

Material grade	Main binder	CBN content	Major application
B22	TiN-base	80%	Turning of very hard rolls

Machining of roll

Work material : High chrome cast iron
Cutting speed (m/min) = 60
Feed rate (mm /rev) = 0.2
Depth of cut (mm) = 2.0
Cutting oil : WET

B22

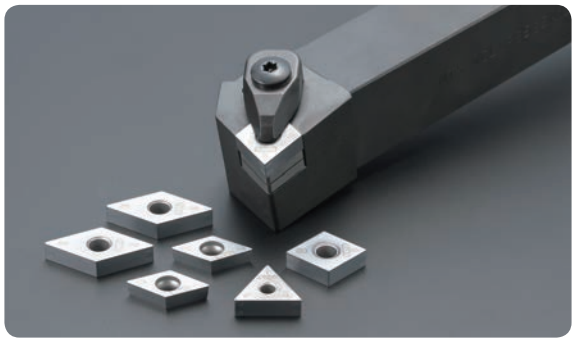


NTK : **B22**	2 passes
Competitor's CBN product	1 pass

B22 produces twice the life of the competitor product.

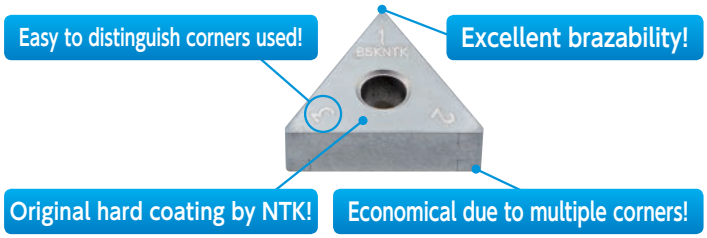
EZCUBE

CBN inserts offer high performance, low price and versatility !



Features

- *Seven grades available for different component materials*
- *Large range for various applications*
- *Multiple corners on both insert sides contributes to cost reduction*



NEW CBN (Cubic Boron Nitride)

●NTK *EZCUBE* / EZ CUBE

Material grade	Main binder	CBN content	Major application
B5K※	TiC-base	50%	Continuous to semi-interrupted machining of hardened steels Finishing of ductile cast iron
B6K※	TiCN-base	65%	Semi-interrupted to interrupted machining of hadened steels
B23	Ti-base	90%	High-speed semi roughing of cast iron/sintered alloys
B30	Ti-base	95%	High-speed finishing of cast iron
B36	TiCN-base	65%	semi-interrupted to interrupted machining of hardened materials
B40	TiN-base	65%	Interrupted machining of highly hardened materials
B52	TiC-base	50%	Finishing of ductile cast iron and continuous machining of highly hardened materials

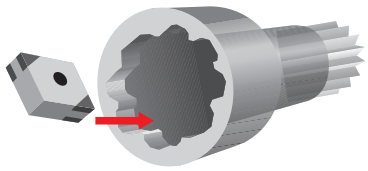
※PVD coating CBN

【Actual machining examples】

Interrupted boring of continuous-velocity universal joint

Work material:S55C(HRC62)
Cutting speed(m/min)=110
Feed rate(mm/rev)=0.14
Depth of cut(mm)=0.15
Cutting oil : DRY

B40



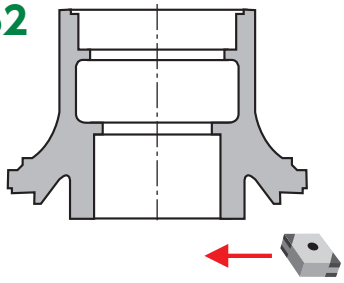
NTK : **B40**	2,300 pcs./corner
Competitor's CBN product	1,500 pcs./corner

B40 grade inserts showed a prolonged life without chipping in the interrupted boring operation.

Arial Narrow Bolg

Work material : FCD600
Cutting speed(m/min)=350~400
Feed rate(mm/rev)=0.08
Depth of cut(mm)=0.2
Cutting oil : WET

B52



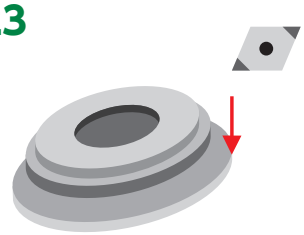
NTK : **B52**	60 pcs./corner
Competitor's CBN product	30 pcs./corner

The life of B52 grade inserts was twice that of the competitor product.

Cutting of outer side of oil pump housing

Work material : FC250
Cutting speed(m/min)=250
Feed rate(mm/rev)=0.2
Depth of cut(mm)=2.0
Cutting oil : WET

B23



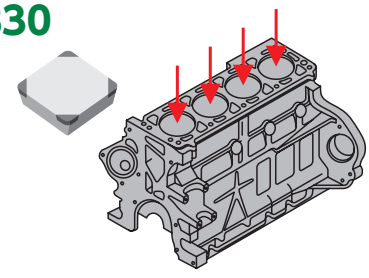
NTK : **B23**	210 pcs./corner
Competitor's CBN product	70 pcs./corner

The life of B23 grade inserts was 3 times as long as the competitor's product.

Continuous boring on cylinder block

Work material : FC material
Cutting speed(m/min)=800
Feed rate(mm/rev)=0.3
Depth of cut(mm)=0.1
Cutting oil : WET

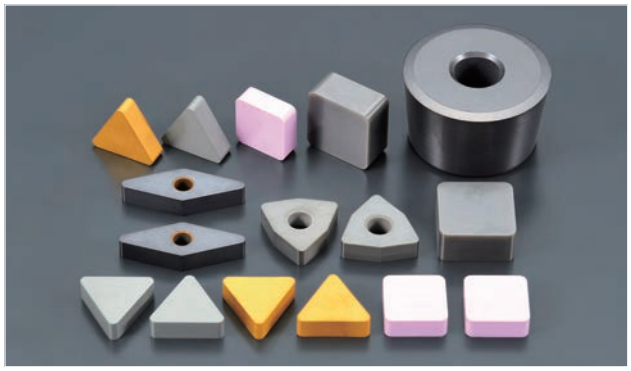
B30



NTK : **B30**	800 pcs./corner
Competitor's CBN product	500 pcs./corner

The life of B30 grade inserts was 1.6 times as long as the competitor's product.

Ceramics



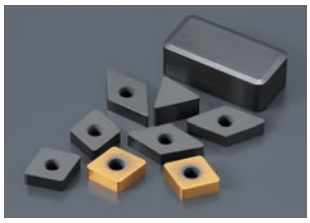
NTK Ceramic Tools ensure highly efficient machining with their superior high temperature hardness, heat resistance and chemical stability
NTK offers various types of ceramic tool material (silicon-nitride-base, alumina-base and whisker-base) in many different shapes to meet the respective requirements of applications for higher efficiency and at higher cutting speed.

● *Alumina-based Ceramics (White ceramics)*

Can be used for high-speed finishing of normal cast iron thanks to its excellent wear resistance

● *Silicon nitride-based ceramics*

Best for high-speed roughing of normal cast iron
Machining up to V_c = 1,000m/min is possible



● *Alumina TiC-based ceramics (Black ceramics)*

The toughness of this type is improved by adding TiC
Can be used for semi-finishing to finishing for normal cast iron and hardened materials

● *Whisker-based ceramics*

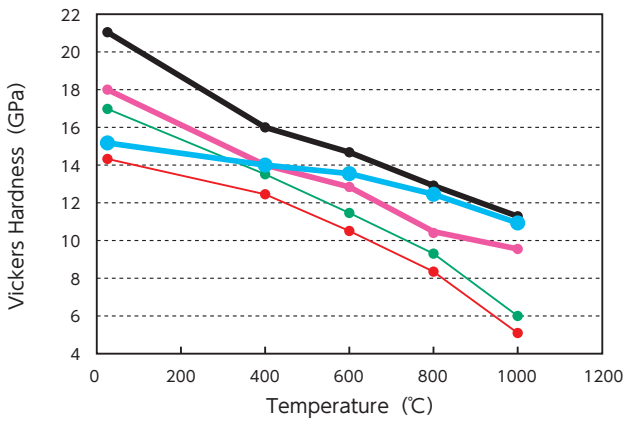
Wear resistance and fracture resistance are strengthened by adding SiC whisker
First choice for machining of heat-resistant alloys and rolls made of cemented materials

■ Advantages of ceramic cutting tools①

The material retains high hardness even at elevated temperatures !!

Excellent wear resistance at high cutting speed !

【Hardness at high temperature by tool material】

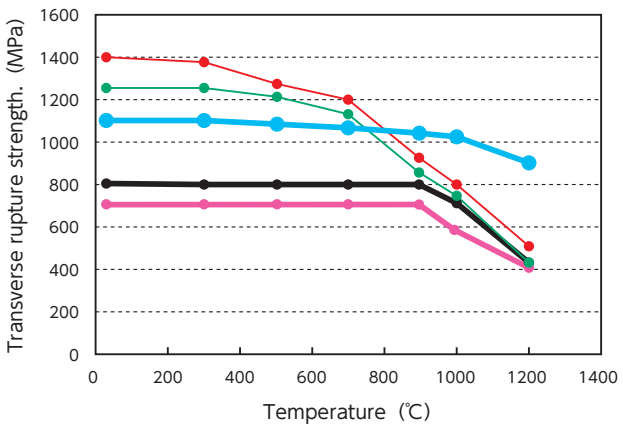


■ Advantages of ceramic cutting tools②

Material breaking strength is not greatly affected by high temperature conditions !!

Stable machining is possible in the high speed range

【Breaking strength at high temperature by tool material 】



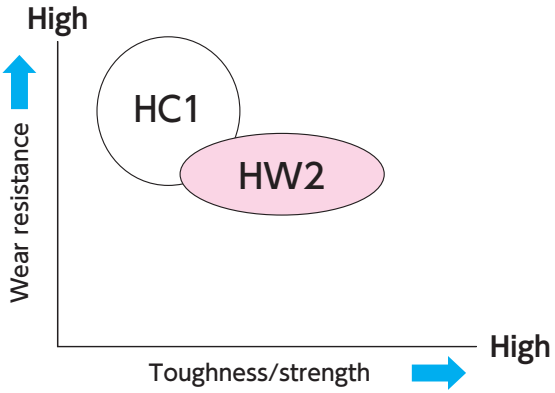
	Material code name / Coating		Applications / Features	Physical properties※ Density g/cm³	Hardness HRA	Transverse intensity MPa	Young's modulus GPa	Thermal expansion coefficient X10⁻⁶/K	Therma conductivity W/m・K	Applications and ceramic property map
White ceramics Alumina - based ceramics	**HC1**	Al_2O_3	●Semi-finishing to finishing and grooving of cast iron ●Tube Scarfing	4.0	94.0	700	400	7.8	17	[Normal cast iron, Finishing, DRY, White ceramics]
	HW2	Al_2O_3	●Semi-finishing to finishing of cast iron ●Cylinder Liner machining ●Excellent fracture resistance	4.1	94.0	750	390	7.8	19	
Black ceramics Alumina + TiC-based ceramics	**HC2**	Al_2O_3+TiC	●Semi-finishing to finishing of cast iron	4.3	94.5	800	420	7.9	21	[Normal cast iron, Finishing, WET, Black ceramics]
	HC6	TiC+Al_2O_3	●Semi-finishing to finishing of ductile cast iron ●Semi-finishing to finishing of cast iron with coolant	4.7	94.0	800	450	7.6	29	
	HC7	Al_2O_3+TiC	●Cutting of hardened materials (removal of carburized layer) ※Substitute for HC5	4.6	95.0	1,100	420	7.9	23	【Cutting of hardened materials】
	ZC7	Al_2O_3+TiC TiN coat	●Recommended for cutting of hardened materials (removal of carburized layer)	4.6	95.0	1,100	420	7.9	23	
Silicon nitride - based ceramics	**SX3** NEW	SiAlON	●Rough / Semi-finish Best balance of toughness and hardness	3.3	93.0	1,100	290	3.4	12	
	SX6	Si_3N_4	●Normal cast iron turning ●Normal cast iron milling ●Resistance to insert flank wear ※Substitute for SX1	3.2	93.5	1,200	320	3.0	50	[Cutting of normal cast iron / Roughing]
	SX7	SiAlON	●Heat resistant alloy turning ●Heat resistant alloy milling ●High wear resistance	3.3	93.0	900	290	3.4	11	
	SX9	SiAlON	●Heat resistant alloy turning ●Rough turning of normal cast iron ●High fracture resistance	3.3	93.5	1,200	330	3.0	15	
	SP9	SiAlON	●Heat resistant alloy turning ●Rough turning of normal cast iron ※Substitute for SP2 ●Special edge treatment for lower cutting forces + high precision cutting with coated inserts	3.3	93.5	1,200	330	3.0	15	[Heat-resistant alloy / Roughing]
Whisker - based ceramics	**WA1**	Al_2O_3+SiC	●Heat resistant alloy turning ●High efficiency cutting of normal cast iron	3.7	94.5	1,200	400	7.0	35	
	WA5	Al_2O_3+SiC	●Heat resistant alloy turning ●High efficiency cutting of normal cast iron ●High fracture resistance	3.8	94.5	1,200	400	7.1	35	

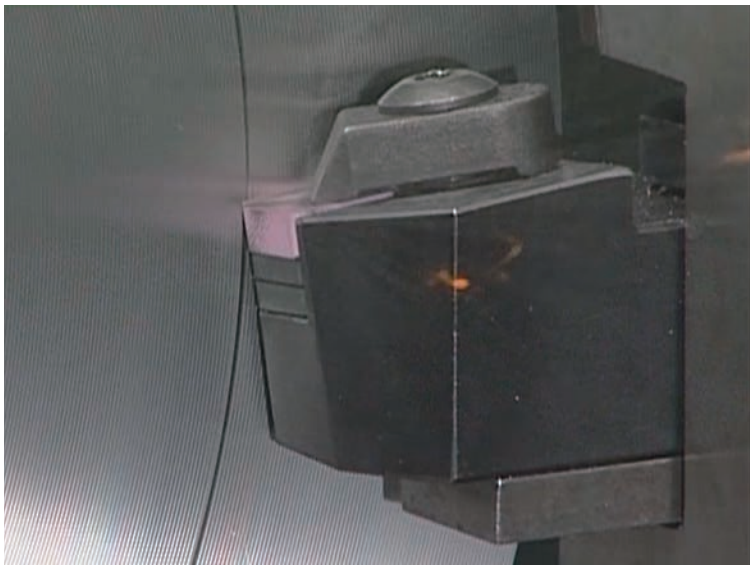
※ For coated products, the values of the base material are indicated.

Alumina-based ceramics (White ceramics)

- Characterized by high oxidation resistance as well as deposition resistance, these ceramics utilise alumina that is thermally and chemically stable. They are best suited for high-speed cutting applications where the temperature at the edges may become high.

[Normal cast iron, Finishing, Dry cutting, White ceramic]



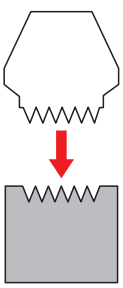


HC1 Ideal material for high-speed finishing of cast iron !

Features

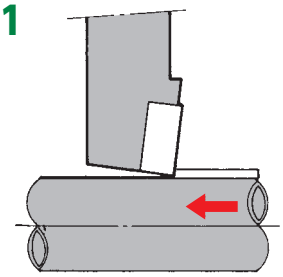
- ***Outstanding wear resistance for high-speed cutting of cast iron, especially semi-finishing or finishing without coolant***
- ***Most suitable for high-speed and high-temperature cutting thanks to the high heat resistance, using high-purity alumina as the main component***
- ***Usable even for finishing of special cast iron and for tube scarfing***

Pulley machining

Work material : FC250	HC1 
Cutting speed (m/min) =500	
Feed rate (mm /rev) =0.15→0.10→0.05	
Cutting oil : DRY	
NTK : **HC1**	600 pcs./corner
Competitor's black ceramic	300 pcs./corner

HC1 achieved double the tool life of the competitor product.

Tube Scarfing

Work material : SPHT4	HC1 
Cutting speed (m/min) =70	
Depth of cut (mm) =3.0	
Cutting width (mm) =5.0	
Cutting oil : DRY	
NTK : **HC1**	70 min./corner
Competitor's black ceramic	30 min./corner

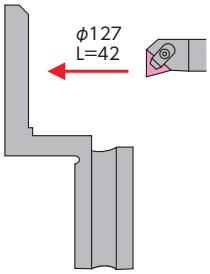
With its outstanding wear resistance characteristic, HC1 produced double the competitors tool life.

HW2 Highly tough alumina-based ceramic tool !

Features

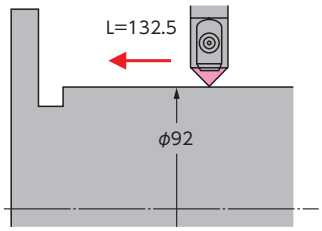
- ***Exhibits high strength and high toughness through the addition of zirconium to high purity alumina***
- ***Suitable for semi-interrupted finishing applications for normal cast iron and roughing and finishing of special cast iron (such as lining materials)***

Brake Disc machining

Work material : FC250	**HW2** 
Cutting speed (m/min) = 359	
Feed rate (mm/rev) = 0.3	
Depth of cut (mm) = 0.5	
Cutting oil : DRY	
NTK : **HW2**	130 pcs./corner
Competitor's black ceramic	65 pcs./corner

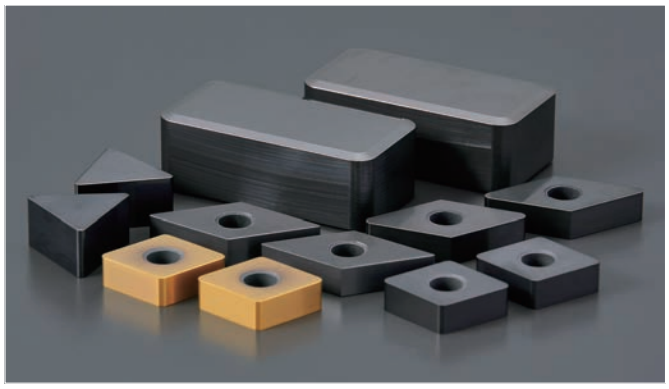
HW2 achieved twice the tool life of the competitor's product, due to its superior strength.

Cylinder liner machining

Work material : special cast iron	**HW2** 
Cutting speed (m/min) = 600	
Feed rate (mm/rev) = 0.32	
Depth of cut (mm) = 3.0	
Cutting oil : DRY	
NTK : **HW2**	70 pcs./corner
Competitor's black ceramic	30 pcs./corner

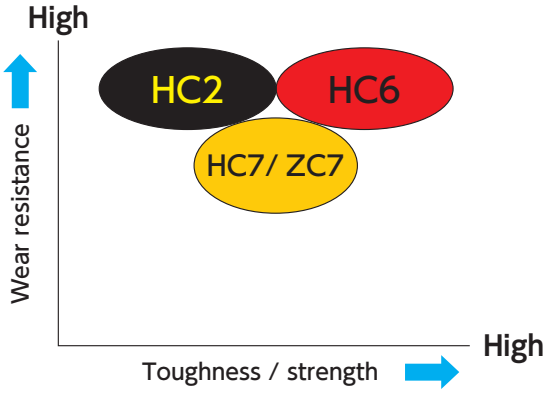
HW2 produced finished surfaces of excellent quality in addition to the life being double that of the competitor's product.

Alumina TiC-based ceramics (Black ceramics)

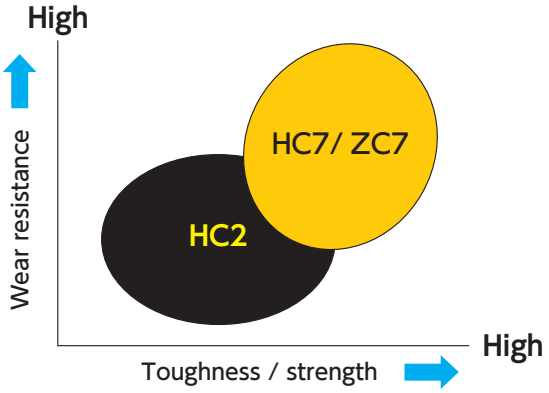


This material group are alumina TiC-based ceramics strengthened by adding hard carbide to high-purity alumina. These tool materials exhibit excellent performance in high-speed finishing of cast iron, applications under either WET or DRY cutting, or even in partially interrupted machining, having improved hardness and strength.
Excellent at finishing of hardened materials due to the high hardness and low plasticity in high temperature ranges.

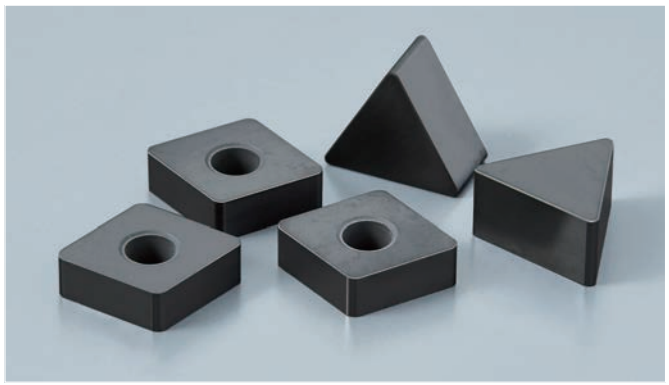
【Normal cast iron, Finishing, WET, Black ceramic】



【Machining of hardened materials】



HC2 The standard tool material for machining cast iron and hardened materials !

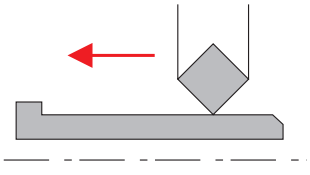


Features

- ***Excellent performance in machining of cast iron and hardened materials thanks to its high hardness and low plasticity in high temperature ranges***

Machining of lining material	● Work material : FC material	
	Conventional cutting tool	NTK
Material grade	Competitor's carbide	HC2
Cutting speed (m/min)	400	600
Feed rate (mm/rev)	0.50	←
Depth of cut (min)	0.70	←
Cutting oil	DRY	←
Life (pcs./corner)	40	110

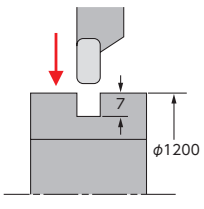
HC2



HC2 produced 1.35 times higher machining efficiency and almost 3 times the tool life of the competitor's product.

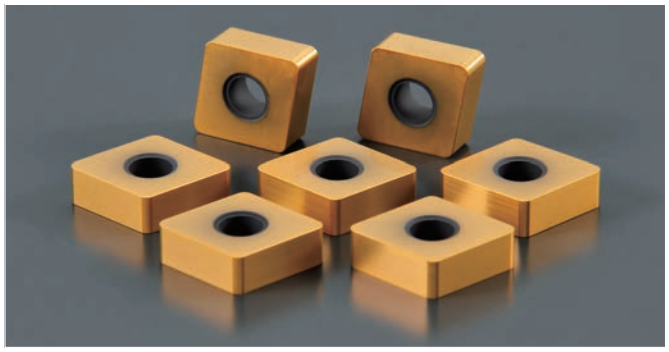
Machining of roller bearing	● Work material : SNCM (HRC58)	
	Conventional cutting tool	NTK
Material grade	Competitor's carbide	HC2
Cutting speed (m/min)	23	112
Feed rate (mm/rev)	0.06	0.06
Cutting oil	DRY	←
Life (No. of grooves)	4	6

HC2



HC2 produced approximately twice the machining efficiency and 1.5 times longer tool life than the competitor's product.

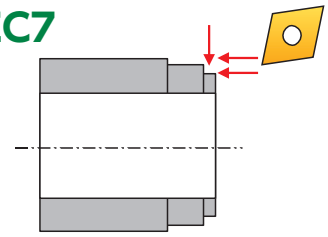
ZC7 For machining of hardened parts with varying levels of hardness!



Features

- ***Covers a wide range of hardened materials (HRC45 – 60)***
- ***ZC7 coated with TiN provided as standard stocked product***
- ***Inserts are available with both wiper facets and chipbreakers to further improve machining efficiency***

Gear cutting

Work material : Case carburizing steel	ZC7 
Cutting speed=200m/min	
Feed rate=0.20mm/rev	
Depth of cut=0.70mm	
Cutting oil : DRY	
NTK : **ZC7** (w/ 4 corners)	70 pcs./corner
Competitor's CBN (w/ 2 corners)	50 pcs./corner

ZC7 realized significant cost reduction, through longer tool life as compared with the competitor's CBN product.

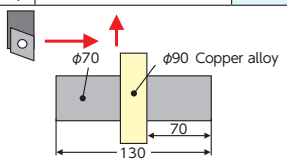
HC6 For machining of ductile cast iron!

Features

- ***World's first TiC-based ceramic put into practical use***
- ***Ideal for semi-finishing and finishing of ductile cast iron at low to high-speed levels***
- ***Also produces excellent dimension stability in machining of cast iron under WET cutting conditions***

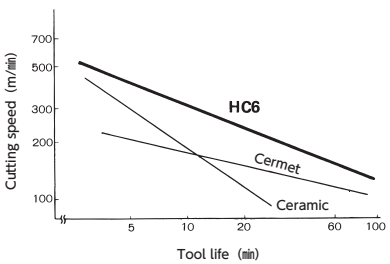
Gear cutting ●Work material : Equivalent to FCD450 + copper alloy

	Conventional cutting tool	NTK
Material grade	Competitor's cermet	HC6
Cutting speed (m/min)	300	←
Feed rate (mm/rev)	0.05	←
Depth of cut (min)	0.5	←
Cutting oil	WET	←
Life (pcs/corner)	20	**50**

HC6 

HC6 produced remarkably long life, less dimensional variations and better wear resistance compared with the competitor's product.

■ Cutting performance : V-T curve

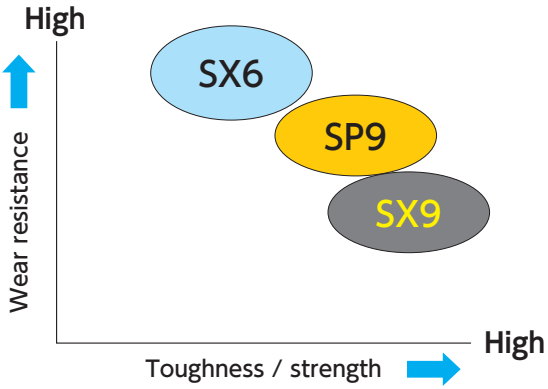


Cutting conditions
Work material : FCD550(HB240～260)
Insert : SNGN120408
Depth of cut : 0.5mm
Feed rate : 0.2mm/rev
Reference life : Amount of VB wear=0.4mm

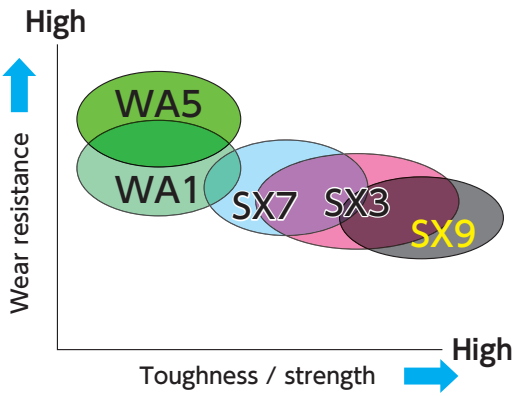
Silicon nitride-based ceramics

The silicon nitride-based ceramics have approximately twice the fracture toughness of alumina-based, having high fracture resistance equal to some carbide tools. These grades allow efficient machining in high speed ranges where traditional ceramic tools were not able to perform well, including milling of cast iron and interrupted cutting in poor surface conditions.

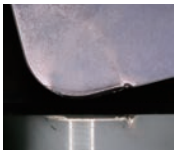
【Normal cast iron, Roughing】



【High Temperature Alloy, Roughing】



NEW SX3 Best balance of toughness and wear resistance

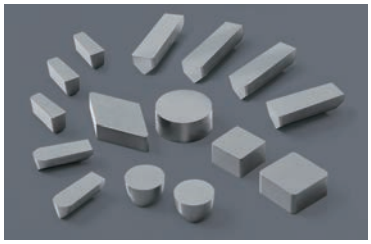
Rough turning (Rene130) with Scale		
Shape : SNGN190724	Competitor's SiAlON Ceramic	SX3
Cutting speed (m/min) : 115		
Feed (mm/rev) : 0.15		
Various depth of cut		
WET		
NTK : **SX3**	10 min	
Competitor's SiAlON	10 min * Was chipping a lot	

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 (m/min)	Feed (mm/rev)	Depth of cut (mm)	DRY	WET
SX3	Heat resistant alloy	Turning	Rough scale	180-270	0.15-0.3	1.0-5.0		●
			Rough no scale	180-270	0.15-0.35	1.0-2.5		●
			Semi finish / profiling	180-270	0.15-0.3	1.0-2.0		●
		Milling	-	600-1200	0.08-0.15	1.0-2.5	●	

SX7 Wear resistant SiAlON ceramic

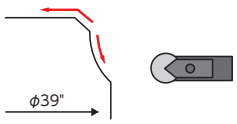


Features

- *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)

Shape : RPGX120700
Cutting speed(m/min) : 240
Feed(mm/rev) : 0.3
Various depth of cut
WET



NTK : SX7	7.2 min
Competitor's Whisker ceramic	5.3 min * Broken

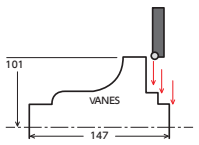
SX9 Best grade for roughing Inco 718 with scale

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	RCGX120700	←
Cutting speed (m/min)	180	←
Feed (mm/rev)	0.13	0.2
Depth of cut (mm)	2.5	←
	WET	←



NTK : SX9	* High productivity
Competitor's Whisker ceramic	

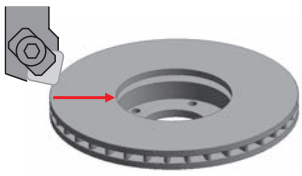
SX6 Premium Silicon Nitride

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*

Brake rotor

Gray cast iron
Cutting speed(m/min):1,100
Feed(mm/rev) : 0.5
Depth of cut (mm):2.0 ~ 3.0
WET



NTK : SX6	75 pcs
Competitor's silicon nitride ceramic	50a pcs

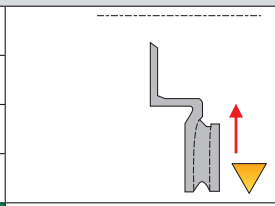
SP9 High Speed machining with low cutting forces

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*

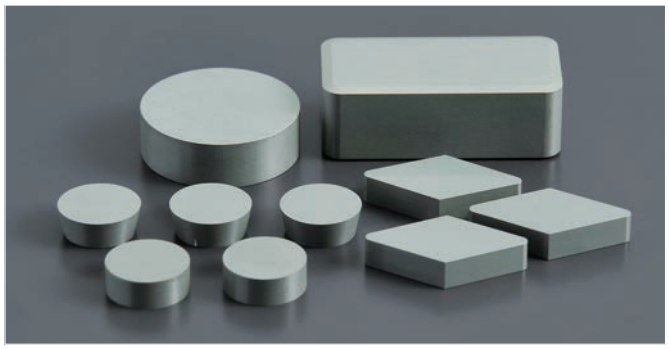
Brake rotor

Gray cast iron
Cutting speed(m/min) : 550
Feed(mm/rev) : 0.4
DRY



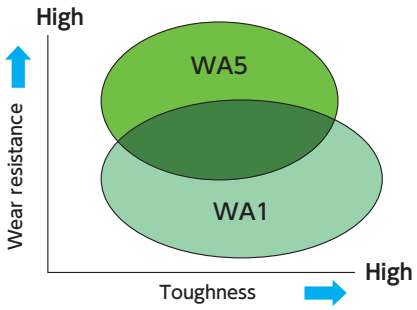
NTK : SP9	120 pcs
Competitor's silicon nitride	80 pcs

Whisker-based ceramics

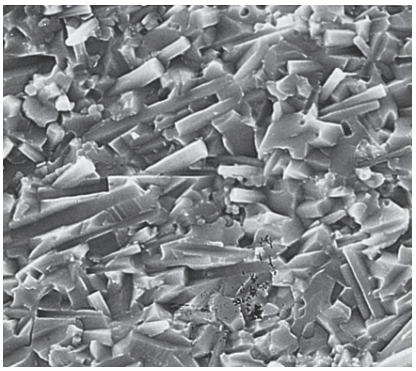


This material grade realize a higher level of wear resistance, toughness and flaking resistance by adding SiC whiskers to alumina, the major component.
This grade enables high speed and high feed in cutting normal cast iron, heat-resistant alloys and hardened rolls, with its excellent thermal shock resistance.

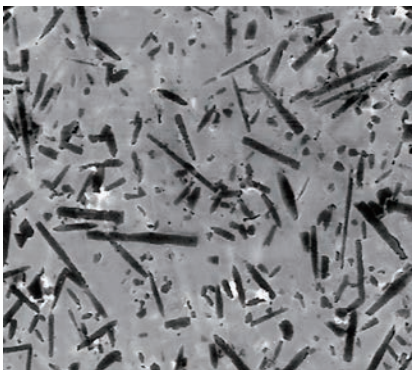
【Heat-resistant alloy】



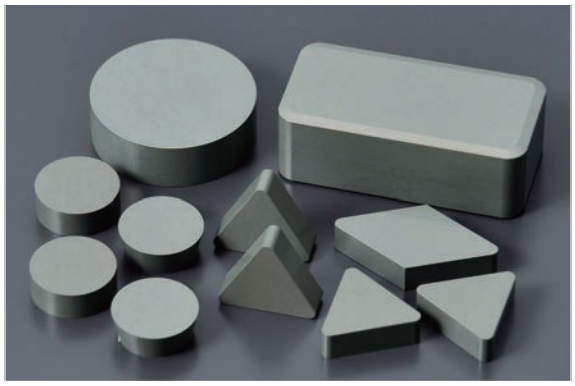
【Photo of WA1 structure】



【Photo of WA5 structure】



WA5 A new generation for machining of heat-resistant alloys !



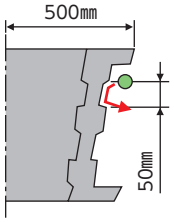
Features

- ***New material grade for machining of heat-resistant alloys including inconel and waspaloy***
- ***Improved wear resistance and flaking resistance by optimizing the amount of whisker content***

【External profiling of heat-resistant alloy with WA5】

Machining of jet engine component ● Work material : Inconel 718		
	Conventional cutting tool	NTK
Material	Competitor's whisker-based ceramic	WA5
Cutting speed (m/min)	200	←
Feed rate (mm/rev)	0.10	←
Depth of cut (mm)	0.30	←
Cutting oil	WET	←
Life (mm/corner)	80	←
Criterion for end of life	Wear marks on the processed surface	Replacement by specified qty of work pieces

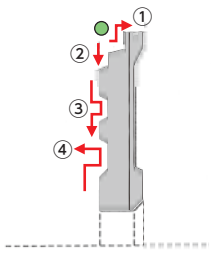
WA5



WA5 achieved stable machining compared with the competitor's product.

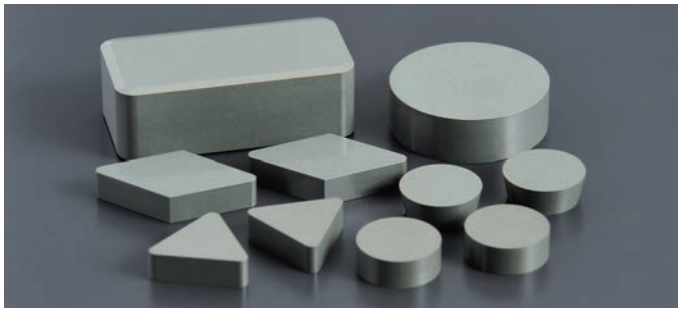
Machining of jet engine turbine disc ● Work material : Inconel 718		
	Conventional cutting tool	NTK
Material	Competitor's whisker-based ceramic	WA5
Cutting speed (m/min)	400	←
Feed rate (mm/rev)	0.15	←
Depth of cut (mm)	0.25 ~ 0.75	←
Cutting oil	WET	←
Life (mm/corner)	2	4

WA5



WA5 produced twice the tool life of the competitor's product.

WA1 Ultra high-speed machining of heat-resistant alloys and cast iron !



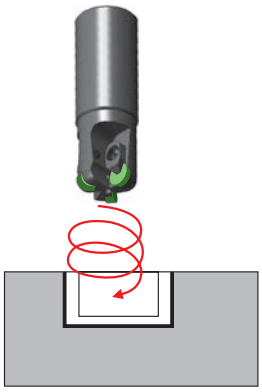
Features

- ***Excellent thermal shock resistance enables to machine high temperature alloy with high speed*** V_c ***= ~500m/min***
- ***Superior wear resistance allows high speed cutting*** V_c ***= ~ 1,000m/min on cast iron.***
- ***Wet machining is feasible by high thermal shock resistance***

【Actual machining example : Gas turbine material】

Case machining	● Work material : Inconel 718	
	Conventional cutting tool	**NTK**
Material grade	Competitor's carbide end mill cutter	WA1
Holder	Solid	RPIW125E125R03
Cutting speed (m/min)	50	800
Feed rate (mm /edge)	0.14	0.10
Depth of cut (mm)	2	←
Cutting oil	WET	DRY
Life (mm /corner)	1 pass = 60 min.	**1 pass = 2 min.**

WA1

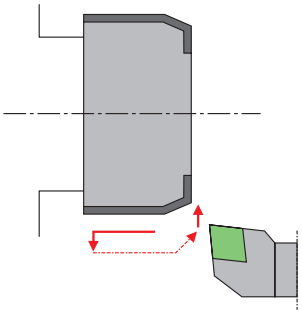


WA1 gave 1.6 times better machining efficiency than the competitor's product.

【Semi-finishing of planetary gear】

Machining of planetary gear	● Work material : FCD700	
	Conventional cutting tool	**NTK**
Material grade	Competitor's carbide	WA1
Cutting speed (m/min)	100	300
Feed rate (mm /rev)	0.4	←
Depth of cut (mm)	1.5	←
Cutting oil	DRY	←
Life (mm /corner)	45	**100**

WA1



WA1 produced better machining efficiency when compared to the competitor's product.

For technical data of machining heat-resistant alloys with ceramic cutting tools, please go to page L6

MEMO

D

Micro-grain Carbide, PVD / CVD-coated Carbide

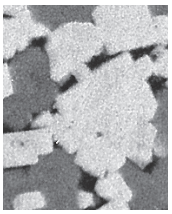
- Overview ····· D2
- PVD-coated Carbide ····· D4
- Micro-grain Carbide ····· D6
- CVD-coated Carbide ····· D6
- PVD Coatings ····· D7

Micro-grain Carbide and PVD/CVD-coated Carbide

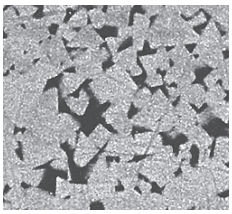
Excellence in precision machining and machining of hard-to-cut materials

These material grades use WC micro-grain carbide, the hard layer of which is granulated to a micro size 1 μm 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.

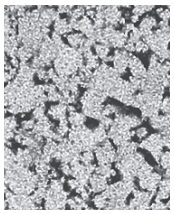
Carbide grade



General carbide structure



Micro-grain carbide structure

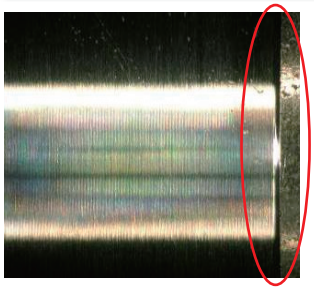


Super micro-grain carbide structure

The result of intensive research and development for improving carbide grades

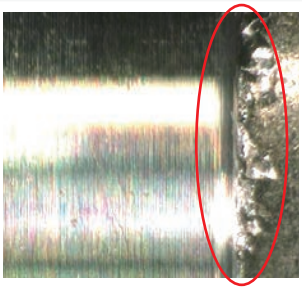
The NTK carbide grade series shows very stable performance under a wide range of conditions. NTK uses micro-grain carbide substrate with a balance of wear resistance and toughness.

Features Superior cutting performance



No burrs

Machined with NTK insert with a sharp cutting edge



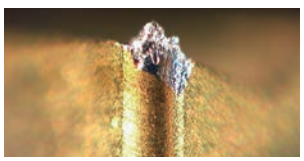
Burrs

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

Relentless pursuit of better cutting performance

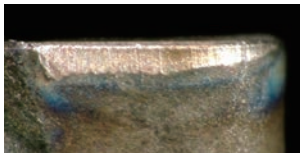
NTK takes pride in its carbide grade series.
Their outstanding cutting performance is due to the grinding of ultra sharp cutting edges. Sharper cutting edges provide for better burr control, lower tool pressure, holding tighter tolerances and reducing work hardening.

Features Precise analysis on insert wear patterns



Build-up edge

Chipping / fracture

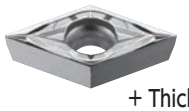
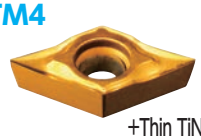
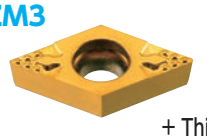
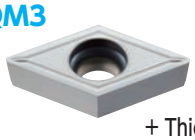
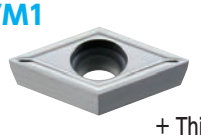
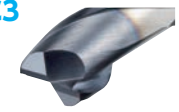
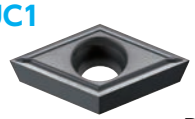
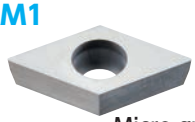
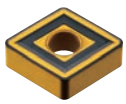
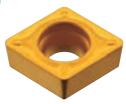


Flank wear

Wear on rake

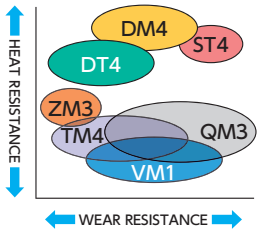
Continuous research on insert tool life

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 offer various coatings developed to improve their resistance characteristics including wear, fracture, adhesion and oxidation, by utilizing state of the art technology.

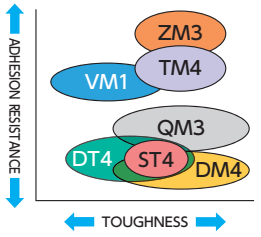
	Grade / Coating	Applications / Features	Physical properties* Density g/cm³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10⁻⁶/K	Thermal conductivity W/m・K
PVD coated	**ST4** NEW  Micro-grain carbide + Thick CrAlN coat	P M S H ●Best grade for Stainless Steel	14.4	91.0	3000	580	5.8	63
	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 TiACrN-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_2O_3-TiCN coat	K ●Good balance of wear resistance and toughness for cast iron machining	14.9	92.0	2400	640	—	—
	CP7  Carbide + Thick film Al_2O_3-TiCN coat	P ●Roughing and semi-finishing of steel	13.8	90.1	2200	580	—	—

Applications map

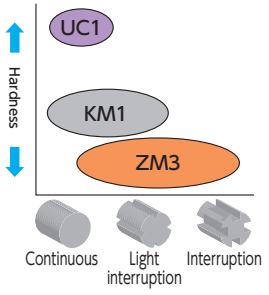
■Correlation chart 1



■Correlation chart 2



■Aluminum / Brass



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

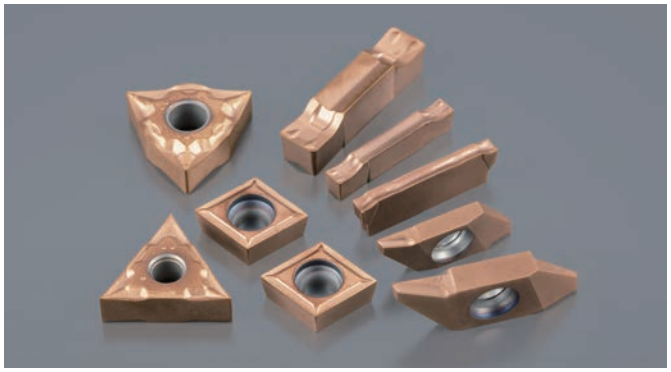
NEW ST4 — Best grade for stainless steel

Features

- ***Best grade for SUS304 thanks to New ST coating***
- ***Excellent adhesion and wear resistance***

Best for	Optimized for	Excellent in
● Stainless steels	Conventional lathes Swiss-type lathes	Adhesion resistance

DM4 — Excellent oxidation resistance

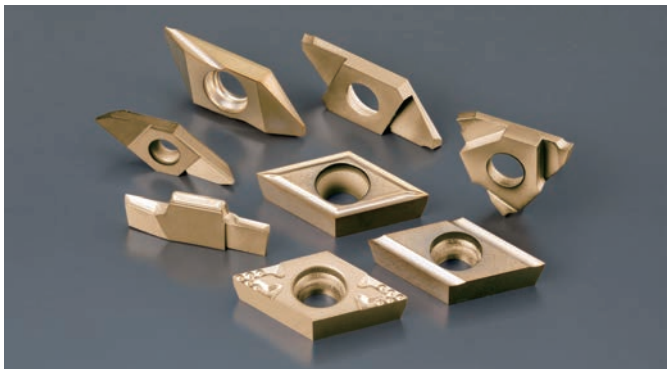


Features

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

Best for	Optimized for	Excellent in
● 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

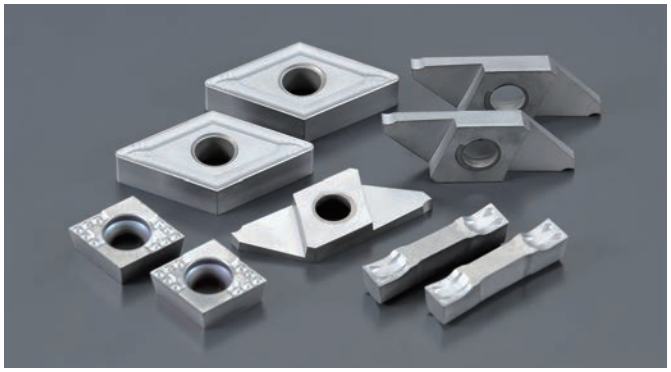


Features

- ***Excellent oxidation resistance for Swiss-type lathes***

Best for	Optimized for	Excellent in
● 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
● Carbon steels ● Stainless steels ● Alloy steels ● Heat resistant alloys	Swiss-type lathes Conventional lathes	Wear resistance

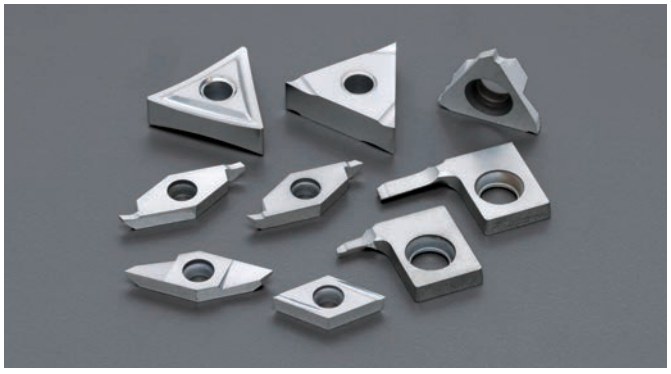
TM4 Next generation standard insert grade for Swiss-type lathes

Features

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

Best for	Optimized for	Excellent in
● Carbon steels ● Stainless steels ● Alloy steels	Swiss-type lathes	Balance

VM1 High precision machining of small diameter parts

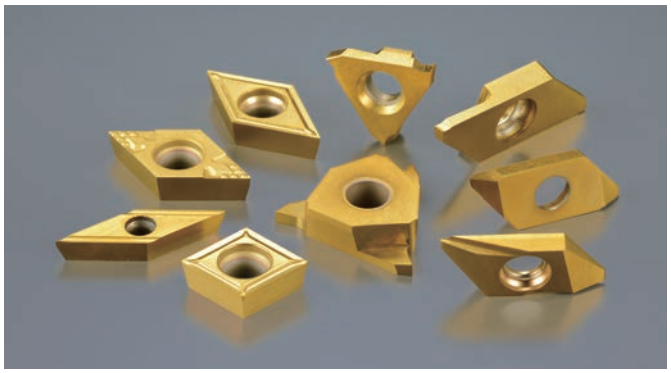


Features

- ***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
● 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
● Carbon steels ● Stainless steels ● Alloy steels ● Non-ferrous materials	Swiss-type lathes Conventional lathes	Adhesion resistance

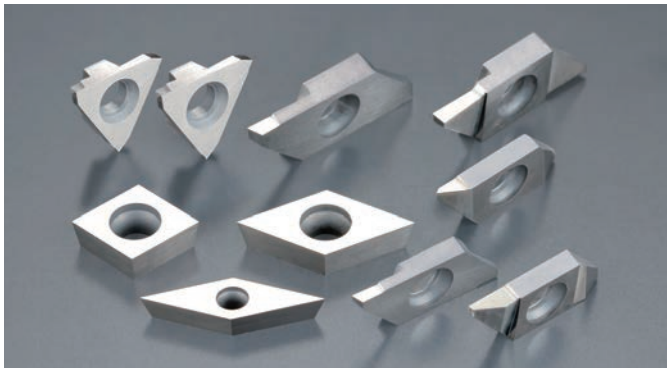
NEW AC3 Developed for soilid carbide endmill

Features

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

KM1

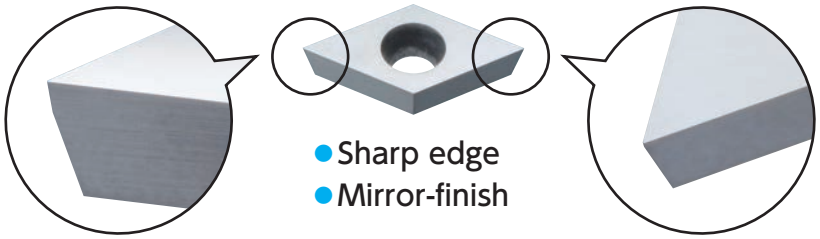
Good for non-ferrous materials like PEEK, Brass, Aluminum and Copper



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***

Best for	Optimized for	Excellent in
● Aluminium ● Plastic (PEEK) ● Non-ferrous materials	Swiss-type lathes	Edge sharpness



● Sharp edge
● Mirror-finish

CP1

For roughing cast iron and ductile cast iron

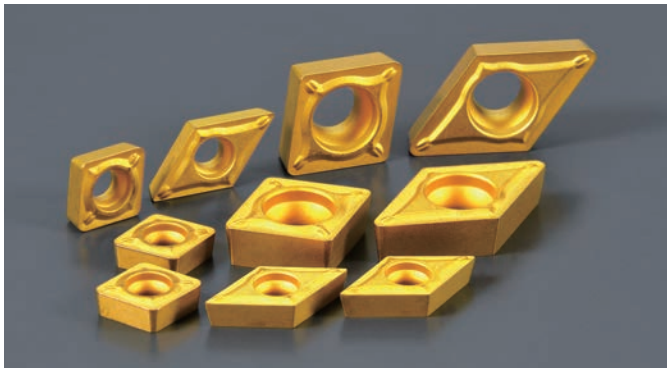
Features

- ***High wear resistance achieved by laminating thick film TiCN layer and Al_2O_3 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
● Ductile cast iron ● Gray cast iron	Conventional lathes	Wear resistance

CP7

For roughing at high speed in steel machining !



Features

- ***High wear resistance and fracture resistance achieved by multi-layer coating of the base material by CVD method; used for a wide range of cutting conditions***
- ***Recommended for high-speed machining of alloy steel and general steels***
- ***Best for machining of automotive components on automatic lathes***

Best for	Optimized for	Excellent in
● High-speed machining of alloy steels	Conventional lathes	Wear resistance

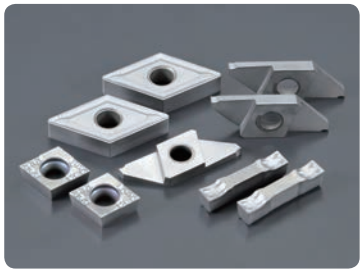
PVD Coatings for Turning

NEW ST4 — ST-Coat

Best grade for Stainless Steel

- *Stainless steel*

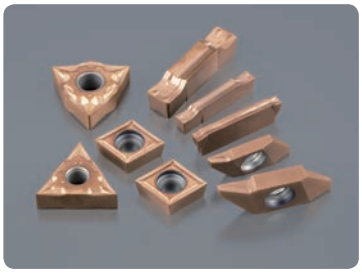
QM3 — Q-Coat



Best wear resistance

- *Stainless steel*
- *Carbon steel*
- *Alloy steel*

DM4 — DM-Coat



Best heat resistance

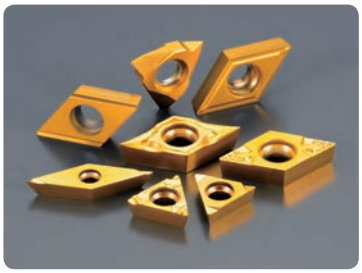
- *Heat resistant alloy*
- *Stainless steel*
- *Hardened material*

DT4 — DT-Coat

Best balance of heat resistance and sharp edges

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

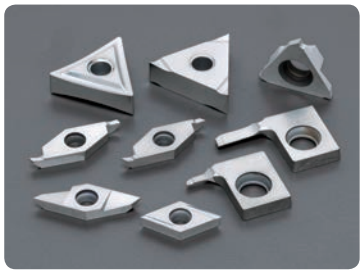
TM4 — TM-Coat



Best balance of wear resistance and adhesion resistance

- *For small part machining in general*

VM1 — V-Coat



Best edge sharpness

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

ZM3 — Z-Coat

Best adhesion resistance

- *General purpose machining*

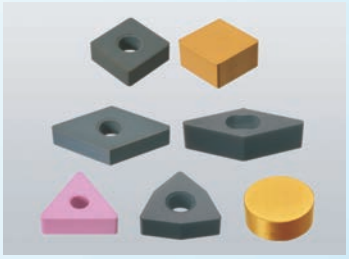
Coating Specifications

	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

- ISO / INCH Insert Nomenclature ····· E2
- Part No. for BIDEMICS, Ceramics and CBN insert / Specifications of cutting edge treatment ·· E4
- BIDEMICS • Ceramics ····· E6
- BIDEMICS (Brazed) • CBN • PCD ·····E20
- Carbide·····E36

ISO / INCH Insert Nomenclature

①Code for shape

Classification	Code	Shape	Apex angle (degree)	Symbol
Regular polygons	H	Regular hexagon	120	⬡
	O	Regular octagon	135	⯃
	P	Regular pentagon	108	⬠
	S	Square	90	□
	T	Equilateral triangle	60	△
Rhomboids and equilateral unequal-angles	C	Rhomboids	80	◇
	D		55	
	E		75	
	F		50	
	M		86	
	V		35	
	W	Hexagon	80	⬡
Rectangles	L	Rectangle	90	□
Parallelograms	A	Parallelograms	85	▱
	B		82	
	K		55	
Circles	R	Circle	–	○

Note : The smaller of the apex angles is used.

③Codes for accuracy

Code	Diameter of inscribed circle d (mm)	Thickness s (mm)	Corner height m (mm)
A*	± 0.025	± 0.025	± 0.005
F*	± 0.013		± 0.013
C*	± 0.025		
H	± 0.013		
E	± 0.025	± 0.13	± 0.025
G			
J*	± 0.05 ~ ± 0.13**	± 0.025	± 0.005
K*			± 0.013
L*			± 0.025
M	± 0.05 ~ ± 0.13**	± 0.13	± 0.08 ~ ± 0.18**
N		± 0.025	
U	± 0.08 ~ ± 0.25**	± 0.13	± 0.13 ~ ± 0.38**

Notes : The asterisk (*) indicates that the accuracy range is, basically, applied to inserts equipped with a flat drag. The double asterisk (**) indicates that the accuracy range is determined by the size of the insert.

Tolerances for each insert size

Except for inserts with 55, 50 or 35 degrees in apex angle

Diameter. of inscribed circle d (mm)	Inscribed circle diameter tolerance d		Corner height tolerance m	
	Class J, L, K, M, N	Class U	Class M or N	Class U
6.35 9.525	± 0.05	± 0.08	± 0.08	± 0.13
12.70	± 0.08	± 0.13	± 0.13	± 0.20
15.875 19.05	± 0.10	± 0.18	± 0.15	± 0.27
25.40	± 0.13	± 0.25	± 0.18	± 0.38

The tolerances for class M inserts with 55 degrees in apex angle are as follows

Diameter. of inscribed circle d (mm)	Inscribed circle diameter tolerance (mm) d	Corner height tolerance (mm) m
6.35 9.525	± 0.05	± 0.11
12.70	± 0.08	± 0.15
15.875 19.05	± 0.10	± 0.18

Note : The accuracy range of "m" can be spread for inserts with apex angles smaller than 55 degrees.

Type of insert material	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Metric	QM3	D	N	M	G	12	04	T	N
Inch	QM3	D	N	M	G	4	3	1	T	N

②Codes for relief angles

Relief angle (degree)	Code
3	A
5	B
7	C
15	D
20	E
25	F
30	G
0	N
11	P
Other relief angles	O

Note : The relief angle must be that of the major cutting edge.

④Codes for grooved holes

For normal series				
Code	Provision of holes	Shape of hole	Chipbreaker	Pattern
N	No	——	None	
R			Single-sided	
F			Double-sided	
A	Yes	Cylindrical	None	
M			Single-sided	
G			Double-sided	
W		Partially cylindrical Single-sided: 40 - 60 deg	None	
T			Single-sided	
Q		Partially cylindrical Double-sided: 40 - 60 deg.	None	
U			Double-sided	
B		Partially cylindrical Single-sided: 70 - 90 deg.	None	
H			Single-sided	
C		Partially cylindrical Double-sided: 70 - 90 deg.	None	
J			Double-sided	
X		——	——	——

Note : Only the normal series is to be used for the metric system. Always use code X for scalene inserts. However, X must not be used for inserts of shapes not defined in the table (1) above.

For small-size series		
Code	Provision of holes	Chipbreaker
E	No	None
S		Single-sided
L		Double-sided
D	Yes	None
P		Single-sided
K		Double-sided
X	——	——

Note : Use the smaller size series for the inch system when inscribed circle diameter is 7.94 mm or less. However, use normal series only when the diameter is 6.35 mm giving priority to the small-size series.

⑦Codes for corner radii

For corner R		
Corner-R nominal value (mm)	Inch system	Metric system
Sharp corner		
r_ε : 0.2	Y	02
0.4	1	04
0.8	2	08
1.2	3	12
1.6	4	16
2.0	5	20
2.4	6	24
3.2	8	32
Other radii		X
For circular inserts	0	00*
		M0*

Notes : "00" (double zero) is used for insert circle diameter indicated in inches. "M0" is used for insert circle diameter indicated in millimeters.

⑤Codes for cutting edge lengths or for inscribed circle diameters

Diameter of inscribed circle d (mm)	Inch system		Metric system												
	Normal series	Small-size series	Shapes												
			H	O	P	S	T	C	D	E	F	M	V	W	R
3.97	—	5					06			T3					
4.76	—	6					08			04					
5.56	—	7				05	09	05	06	05	07	05	09	03	
6.35	2	(8)	03	02	04	06	11	06	07	06	08	06	11	04	06
7.94	—	0	04	03	05	07	13	08	09	08	10	07	13	05	07
9.525	3	—	05	04	07	09	16	09	11	09	12	09	16	06	09
12.70	4	—	07	05	09	12	22	12	15	13	16	12	22	08	12
15.875	5	—	09	06	11	15	27	16	19	16	20	15	27	10	15
19.05	6	—	11	07	13	19	33	19	23	19	24	19	33	13	19
25.40	8	—	14	10	18	25	44	25	31	26	33	25	44	17	25
31.75	0	—	18	13	23	31	54	32	38	32	41	31	54	21	31

⑥Codes for thickness

Thickness S (mm)	Inch system		Metric system
	Inscribed circle series		
	Normal series	Small-size series	
1.59	—	2	01
2.38	—	3	02
3.18	2	4	03
3.97	—	5	T3
4.76	3	6	04
5.56	—	—	05
6.35	4	—	06
7.94	5	—	07
9.52	6	—	09
12.70	8	—	12

⑩	⑪
•	G
•	G

⑧Codes for major cutting edges

Without honing (Tool nose processing)	F
Angular honing	T
Round honing	E
Angular honing + round honing	S
Special honing	K
Special honing + round honing	P

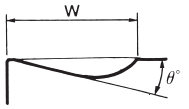
⑨Codes for left/right handed inserts

Type	Code
Right-handed	R
Left-handed	L
Not specified	N

⑪Codes for chipbreaker shapes

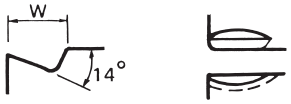
Parallel-honing type (mm)

Code	W	θ°
A	1.0	14
B	1.5	14
C	2.2	14
D	2.8	10
E	3.5	10



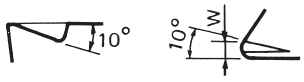
Type N (Double-positive type) (mm)

Code	W
N1	1.5
N2	2.2



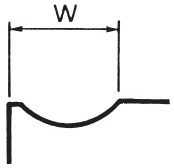
Type P (Angle type) (mm)

Code	W
P1	0.9
P2	1.25



Full-arc embossed type (mm)

Code	W
F	1.5
G	2.2
H	2.8



C	N	G	A	12	04	12

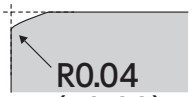
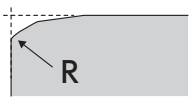
Part No. Designation Code for Inserts → Refer to page E2.

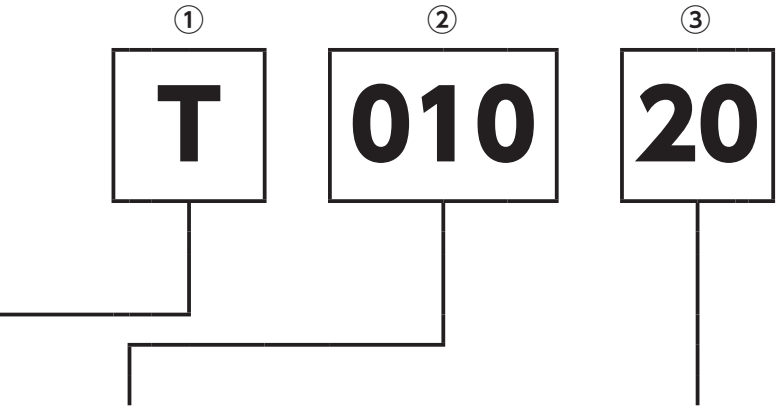
① Codes for major cutting edges

Cutting edge treatment : Chamfering or honing of the cutting edge in order to strengthen the edge or to adjust the cutting performance

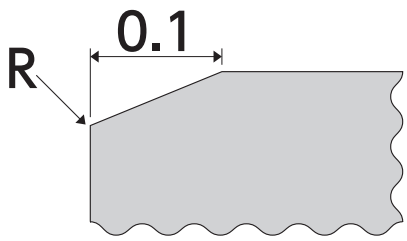
Cutting performance

Strength of cutting edge

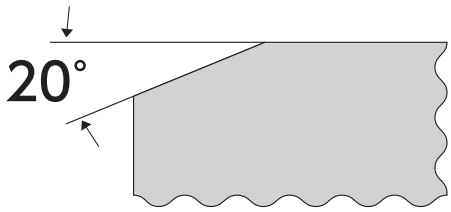
	Code	Shape
Sharp edge	F	
Round honing	E	
Angular grinding	T	
Angular grinding + round honing	Z	
	S	
2-step chamfering + round honing	P	



② Edge condition - width and hone.



③ Angle of treatment



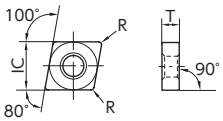
Codes for cutting edges and the shapes

Code	Shape of the cutting edge
E002	Round honing with R = 0.02
E004	Round honing with R = 0.04
E007	Round honing with R = 0.07
EX0004	Round honing with R = 0.02
S01015	Chamfering 0.10 mm x 15 deg. + round honing with R = 0.04 (∗R0.03)
S01020	Chamfering 0.10 mm x 20 deg. + round honing with R = 0.04 (∗R0.03)
S01325	Chamfering 0.13 mm x 25 deg. + round honing with R = 0.04 (∗R0.03)
S01535	Chamfering 0.15 mm x 35 deg. + round honing with R = 0.04 (∗R0.03)
S02025	Chamfering 0.20 mm x 25 deg. + round honing with R = 0.04 (∗R0.03)
T00320	Chamfering 0.03 mm x 20 deg.
T00520	Chamfering 0.05 mm x 20 deg.
T00525	Chamfering 0.05 mm x 25 deg.
T00820	Chamfering 0.08 mm x 20 deg.
T01015	Chamfering 0.10 mm x 15 deg.
T01020	Chamfering 0.10 mm x 20 deg.
T01025	Chamfering 0.10 mm x 25 deg.
T01515	Chamfering 0.15 mm x 15 deg.
T01520	Chamfering 0.15 mm x 20 deg.
T01525	Chamfering 0.15 mm x 25 deg.
T02020	Chamfering 0.20 mm x 20 deg.
T02025	Chamfering 0.20 mm x 25 deg.
Z01015	Chamfering 0.10 mm x 15 deg. + round honing with R = 0.02
Z01025	Chamfering 0.10 mm x 25 deg. + round honing with R = 0.02
Z01030	Chamfering 0.10 mm x 30 deg. + round honing with R = 0.02
Z01520	Chamfering 0.15 mm x 20 deg. + round honing with R = 0.02
Z02025	Chamfering 0.20 mm x 25 deg. + round honing with R = 0.02

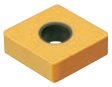
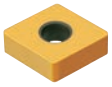
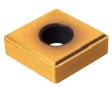
∗CBN=R0.03

Item Number	IC	T
CN_1204_	12.7	4.76

⟨80 degree Rhombic Negative type⟩



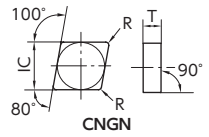
Steel	P	● : 1st Choice
Stainless Steel	M	● : 2nd choice
Cast Iron	K	
Non-Ferrous Material	N	
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics: Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	CNGA 120404 S02025	CNGA431-SNF	0.4								●								F9 F11 G40 K34
	120404 T01025	431-TN	0.4								●								
	120404 Z02025	431-ZNF	0.4						●										
	120408 S02025	432-SNF	0.8								●								
	120408 T00520	—	0.8												●		●		
	120408 T01020	—	0.8													●	●		
	120408 T01025	432-TN	0.8					●		●	●								
	120408 T02020	—	0.8									●							
	120408 T02025	432-TNF	0.8												●				
	120408 Z02025	432-ZNF	0.8						●										
	120412 S02025	433-SNF	1.2								●								
	120412 T00520	—	1.2												●		●		
	120412 T01020	—	1.2													●	●		
	120412 T01025	433-TN	1.2			●		●		●	●								
	120412 T02020	—	1.2									●							
	120412 T02025	433-TNF	1.2												●				
	120416 T00520	—	1.6												●		●		
	120416 T01020	—	1.6													●			
	120416 T02020	—	1.6									●							
	120416 T02025	434-TNF	1.6												●				
 Wiper	CNGA 120408 WL T01025	CNGA432WL-TN	0.8								●								F9 K34
	120412 WL T01025	433WL-TN	1.2								●								
 with chipbreaker	CNGG 120408 Z01030 AG	CNGG432-ZNCGAG	0.8								●								F9 F11 G40 K34
	120412 Z01030 AG	433-ZNCGAG	1.2								●								

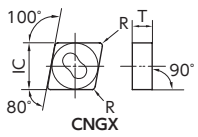
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
CN_1204_	12.7	4.76
CN_1207_	12.7	7.94
CN_1607_	15.875	7.94

⟨80 degree Rhombic Negative type⟩



CNGN



CNGX

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

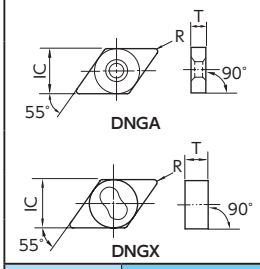
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS		Ceramics												For applicable holder, see pages:
						Alumina-based						Silicon nitride-based					Whisker-based	
				JX1	JX3	HC1	HW2	HC2	HC4	HC6	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	CNGN 120404 T01025	CNGN431-TN	0.4					●		●									F9 F11 K34
	120408 S02025	432-SNF	0.8								●								
	120408 T00520	—	0.8												●		●		
	120408 T00820	—	0.8															●	
	120408 T01020	—	0.8													●	●		
	120408 T01025	432-TN	0.8					●		●	●								
	120408 T02020	—	0.8									●							
	120408 T02025	432-TNF	0.8			●									●		●		
	120408 Z02025	432-ZNF	0.8						●										
	120412 S02025	433-SNF	1.2								●								
	120412 T00520	—	1.2												●		●		
	120412 T00820	—	1.2															●	
	120412 T01020	—	1.2													●	●		
	120412 T01025	433-TN	1.2			●		●		●	●						●		
	120412 T02020	—	1.2									●							
	120412 T02025	433-TNF	1.2			●									●		●		
	120412 Z02025	433-ZNF	1.2						●										
	120416 T00520	—	1.6														●		
	120416 T02020	—	1.6									●							
	120416 T01020	—	1.6													●			
	120416 T02025	434-TNF	1.6												●				
	120420 T01025	435-TN	2.0							●									
	CNGN 120708 T00520	—	0.8														●		
	120708 T02025	CNGN452-TN	0.8					●											
	120712 T02025	453-TN	1.2					●											
	CNGN 160716 T00520	—	1.6														●		
	CNGX 120712 T02025	—	1.2													●			F9 K34
	120716 T02025	—	1.6													●			

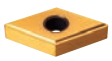
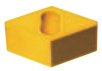
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
DN_1504_	12.7	4.76
DN_1507_	12.7	7.94

⟨55 degree Rhombic Negative type⟩



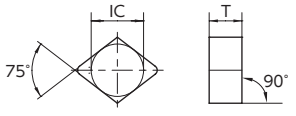
Steel	P	
Stainless Steel	M	
Cast Iron	K	● : 1st Choice
Non-Ferrous Material	N	● : 2nd choice
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics: Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	DNGA 150404 S02025	DNGA431-SNF	0.4								●								F13 F15 G41 K35
	150404 T01025	431-TN	0.4					●		●	●								
	150404 Z02025	431-ZNF	0.4						●										
	150408 S02025	432-SNF	0.8					●			●								
	150408 T00520	—	0.8												●		●		
	150408 T01020	—	0.8													●			
	150408 T01025	432-TN	0.8					●		●	●								
	150408 T02020	—	0.8									●							
	150408 T02025	432-TNF	0.8												●				
	150408 Z02025	432-ZNF	0.8						●										
	150412 S02025	433-SNF	1.2								●								
	150412 T01020	—	1.2													●	●		
	150412 T01025	433-TN	1.2				●				●								
	150412 T02020	—	1.2									●							
	150412 T02025	433-TNF	1.2												●				
	DNGN 150404 T01025	DNGN431-TN	0.4					●											F13 F15
	150408 S02025	432-SNF	0.8								●								
	150408 T01025	432-TN	0.8							●	●								
	150408 Z02025	432-ZNF	0.8						●										
	150412 T00520	—	1.2														●		
	150412 T02025	433-TNF	1.2														●		
	DNGN 150712 T02025	DNGN453-TN	1.2														●		
 with chipbreaker	DNGG 150408 Z01030 AG	DNGG432-ZNCGAG	0.8								●								F13 F15 G41 K35
	150412 Z01030 AG	433-ZNCGAG	1.2								●								
	DNGX 150716 T02025	—	1.6													●			F13 F15 K35

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨75 degree Rhombic Negative type⟩

Item Number	IC	T
EN_1307_	12.7	7.94



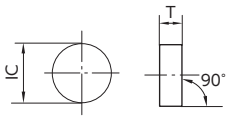
Steel	P	
Stainless Steel	M	
Cast Iron	K	● : 1st Choice
Non-Ferrous Material	N	● : 2nd choice
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics: Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	ENGN 130708 T02025	ENGN452-TN	0.8					●											—
	130712 T02025	453-TN	1.2					●											

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
RN_1204_	12.7	4.76
RN_1207_	12.7	7.94
RN_1507_	15.875	7.94
RN_1907_	19.05	7.94
RN_2507_	25.4	7.94

⟨Round Negative type⟩



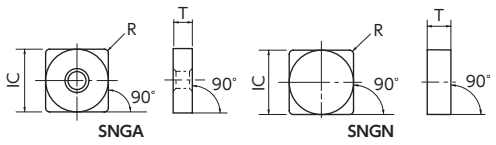
Steel	P	● : 1st Choice
Stainless Steel	M	● : 2nd choice
Cast Iron	K	
Non-Ferrous Material	N	
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS		Ceramics: Alumina-based						Ceramics: Silicon nitride-based					Ceramics: Whisker-based		For applicable holder, see pages:
				JX1	JX3	HC1	HW2	HC2	HC4	HC6	HC7	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	RNGN 120400 S02025	RNGN430-SNF	–									●								F30 N9 L23 L30
	120400 T00520	—	–												●			●		
	120400 T00820	—	–																●	
	120400 T00525	430-TNB	–													●		●		
	120400 T01020	—	–													●		●		
	120400 T01025	430-TN	–					●				●								
	120400 T02020	—	–										●							
	120400 T02025	430-TNF	–													●				
	120400 Z02025	430-ZNF	–						●											
	RNGN 120700 E002	—	–													●				
	120700 E004	—	–	●	●									●	●					
	120700 E007	RNGN450-ENC	–					●												
	120700 S02025	450-SNF	–									●								
	120700 T00520	—	–												●	●		●		
	120700 T00525	450-TNB	–													●		●		
	120700 T00820	—	–	●	●									●					●	
	120700 T01020	—	–															●		
	120700 T02025	450-TN	–					●				●								
	120700 Z01520	—	–															●		
	120700 Z02025	450-ZNF	–						●											
	120700 K20015	—									★								★	
	RNGN 150700 T00520	—	–													●				—
	150700 T00525	RNGN550-TNB	–													●		●		
	150700 T00820	—	–																●	
	RNGN 190700 T00520	—	–													●				
	190700 T00525	RNGN650-TNB	–													●				
	190700 T00820	—	–																●	
	190700 T01020	—	–															●		
	190700 K20015	—																	●	
	RNGN 250700 T00520	—	–													●		●		
	250700 T00820	—	–																●	

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

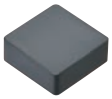
Item Number	IC	T
SN_0903_	9.525	3.18
SN_0904_	9.525	4.76
SN_1204_	12.7	4.76

⟨90 degree Square Negative type⟩



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

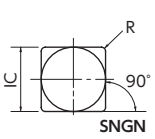
● : 1st Choice
● : 2nd choice

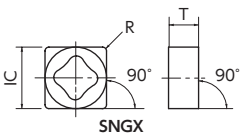
Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics: Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	SNGA 120408 S02025	SNGA432-SNF	0.8								●								F17 F19 K36
	120408 T01025	432-TN	0.8								●								
	120408 T02020	—	0.8									●							
	120412 S02025	433-SNF	1.2								●								
	120412 T01025	433-TN	1.2								●								
	120412 T02020	—	1.2									●							
	120416 T02020	—	1.6									●							
	SNGN 090308 T01025	SNGN322-TN	0.8					●											—
	090316 T01025	324-TN	1.6			●		●											
	SNGN 090408 T01025	SNGN332-TN	0.8					●											
	SNGN 120404 T01025	SNGN431-TN	0.4					●											F17 F19 F21 K36 N12 N14 N16
	120408 S02025	432-SNF	0.8								●								
	120408 T00520	—	0.8														●		
	120408 T00820	—	0.8															●	
	120408 T01020	—	0.8													●			
	120408 T01025	432-TN	0.8			●		●		●	●						●		
	120408 T02020	—	0.8									●							
	120408 T02025	432-TNF	0.8												●				
	120408 Z02025	432-ZNF	0.8						●										
	120412 S02025	433-SNF	1.2								●								
	120412 T00520	—	1.2														●		
	120412 T00820	—	–															●	
	120412 T01020	—	1.2													●	●		

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
SN_1204_	12.7	4.76
SN_1207_	12.7	7.94
SN_1507_	15.875	7.94
SN_1906_	19.05	6.35
SN_1907_	19.05	7.94

⟨90 degree Square Negative type⟩





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

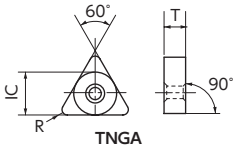
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS		Ceramics											For applicable holder, see pages:
						Alumina-based						Silicon nitride-based					Whisker-based	
				JX1	JX3	HC1	HW2	HC2	HC4	HC6	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	SNGN 120412 T01025	SNGN433-TN	1.2			●		●		●	●						●		
	120412 T02020	—	1.2									●				●			
	120412 T02025	433-TNF	1.2												●				
	120412 Z02025	433-ZNF	1.2						●										
	120416 S02025	434-SNF	1.6								●								
	120416 T00520	—	1.6														●		
	120416 T01020	—	1.6													●	●		
	120416 T01025	434-TN	1.6			●		●		●	●						●		
	120416 T02020	—	1.6									●							F17
	120416 T02025	434-TNF	1.6												●				F19 F21
	120416 Z02025	434-ZNF	1.6						●										K36
	120420 T01025	435-TN	2					●		●									N12 N14
	120420 T01020	—	2													●			N16
	120420 T02020	—	2									●							
	120420 T02025	435-TNF	2			●											●		
	120424 T01025	436-TN	2.4					●											
	120424 T02020	—	2.4									●							
	SNGN 120708 T02025	SNGN452-TN	0.8			●		●											
	120712 S02025	453-SNF	1.2					●											
	120712 T02025	453-TN	1.2					●											
	120716 T02025	454-TN	1.6				●												
	SNGN 150716 T02025	SNGN554-TN	1.6														●		—
	SNGN 190616 T00525	SNGN644-TNB	1.6												●				
	SNGN 190724 T00525	SNGN656-TNB	2.4												●				
	SNGX 120712 T02025	—	1.2													●			F17
	120716 T02025	—	1.6													●			K36

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

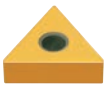
Item Number	IC	T
TN_1103_	6.35	3.18
TN_1603_	9.525	3.18
TN_1604_	9.525	4.76

⟨60 degree Triangle Negative type⟩



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

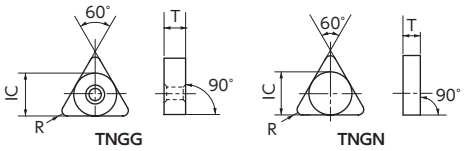
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics: Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	TNGA 160404 S02025	TNGA331-SNF	0.4								●								F23 F25 G39
	160404 T01025	331-TN	0.4								●								
	160404 Z02025	331-ZNF	0.4						●										
	160408 S02025	332-SNF	0.8								●								
	160408 T01025	332-TN	0.8					●		●	●								
	160408 T02020	—	0.8									●							
	160408 T02025	332-TNF	0.8												●				
	160408 Z02025	332-ZNF	0.8						●										
	160412 S02025	333-SNF	1.2								●								
	160412 T01025	333-TN	1.2					●		●	●								
	160412 T02020	—	1.2									●							
	160412 T02025	333-TNF	1.2												●				
	160416 T02025	334-TNF	1.6												●				
	TNGN 110308 T00525	TNGN222-TN	0.8					●											—
	TNGN 160304 T01025	TNGN321-TN	0.4					●											
	TNGN 160404 T01025	TNGN331-TN	0.4					●											
	160404 Z02025	331-ZNF	0.4						●										
	160408 S02025	332-SNF	0.8								●								
	160408 T00820	—	0.8															●	
	160408 T01020	—	0.8													●	●		
	160408 T01025	332-TN	0.8			●		●		●	●						●		
	160408 T02020	—	0.8									●							
	160408 T02025	332-TNF	0.8												●				F23 F25
	160408 Z02025	332-ZNF	0.8						●										
	160412 S02025	333-SNF	0.8								●								
	160412 T00820	—	1.2															●	
	160412 T01020	—	1.2													●			
	160412 T01025	333-TN	1.2			●		●		●	●						●		
	160412 T02020	—	1.2									●							
	160412 T02025	333-TNF	1.2												●				
	160412 Z02025	333-ZNF	1.2						●										

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
TN_1604_	9.525	4.76
TN_1607_	9.525	7.94
TN_2204_	12.7	4.76
TN_2207_	12.7	7.94

〈60 degree Triangle Negative type〉



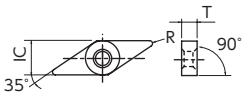
Steel	P																
Stainless Steel	M																
Cast Iron	K			●	●	●	•	●	•	●	•	•	•	●	●	●	● : 1st Choice
Non-Ferrous Material	N																• : 2nd choice
Heat Resistant Alloy	S	●	●								●	●	●		●	●	
Hardened Material	H					•	●		●						•	•	

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	TNGN 160416 T01020	—	1.6													●			F23 F25
	160416 T01025	TNGN334-TN	1.6			●	●	●											
	160416 T02020	—	1.6									●							
	160416 T02025	334-TNF	1.6												●				
	160420 T01025	335-TN	1.6			●		●											
	160420 T02020	—	2									●							
	TNGN 160708 T02025	TNGN352-TN	0.8					●											
	160712 T02025	353-TN	1.2					●											
	TNGN 220416 T00520	—	1.6														●		
	TNGN 220716 T00520	—	1.6														●		
with chipbreaker	TNGG 160408 Z01030 AG	TNGG332-ZNCGAG	0.8								●								F23 F25 G39
	160412 Z01030 AG	333-ZNCGAG	1.2								●								

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
VN_1604_	9.525	4.76
VN_2204_	12.7	4.76

⟨35 degree Rhombic Negative type⟩



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

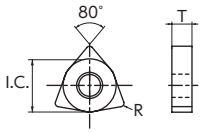
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics: Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	VNGA 160404 S02025	VNGA331-SNF	0.4								●								F27
	160404 T01020	—	0.4									●							
	160404 T01025	331-TN	0.4					●		●	●								
	160404 Z02025	331-ZNF	0.4						●										
	160408 S02025	332-SNF	0.8								●								
	160408 T00520	—	0.8														●		
	160408 T01020	—	0.8									●				●			
	160408 T01025	332-TN	0.8					●		●	●								
	160408 Z02025	332-ZNF	0.8						●										
	160412 S02025	333-SNF	1.2								●								
	160412 T01020	—	1.2									●				●			
	160412 T01025	333-TN	1.2								●								
	160412 Z02025	333-ZNF	1.2						●										
	VNGA 220424 T01020	—	2.4														●		

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

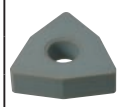
Item Number	IC	T
WN_0804_	12.7	4.76

⟨80 degree Hexagon Negative type⟩



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

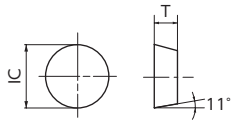
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS JX1	BIDEMICS JX3	Ceramics: Alumina-based HC1	HW2	HC2	HC4	HC6	ZC7	Silicon nitride-based SX6	SX7	SX3	SX9	SP9	Whisker-based WA1	WA5	For applicable holder, see pages:
	WNGA 080408 T00520	—	0.8														●		F29 K37
	080408 T01020	—	0.8													●			
	080408 T02020	—	0.8									●							
	080412 T00520	—	1.2														●		
	080412 T01020	—	1.2													●			
	080412 T02020	—	1.2									●							
	080416 T02020	—	1.6									●							

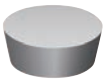
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T	Relief angle
RP_0602_	6.35	2.38	11°
RP_0903_	9.525	3.18	11°
RP_1204_	12.70	4.76	11°

⟨Round Positive type⟩



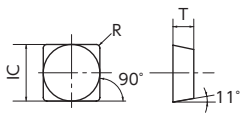
Steel	P	● : 1st Choice
Stainless Steel	M	● : 2nd choice
Cast Iron	K	
Non-Ferrous Material	N	
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS	Ceramics: Alumina-based						Ceramics: Silicon nitride-based					Ceramics: Whisker-based		For applicable holder, see pages:
				JX1	JX3	HC1	HW2	HC2	HC4	HC6	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	RPGN 060200 T00520	—	–														●		N8
	RPGN 090300 T00520	—	–														●		
	RPGN 120400 E004	—	–										●						
	120400 EX0004	—	–												●				
	120400 T00520	—	–														●		
	120400 T00525	RPGN430-TNB	–												●				
	120400 T00820	—	–										●						
	120400 T01020	—	–												●		●		

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T	Relief angle
SP_0903_	9.525	3.18	11°
SP_1203_	12.7	3.18	11°
SP_1204_	12.7	4.76	11°

⟨90 degree Square Positive type⟩



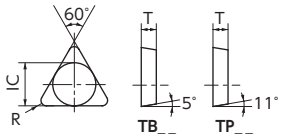
Steel	P	● : 1st Choice
Stainless Steel	M	● : 2nd choice
Cast Iron	K	
Non-Ferrous Material	N	
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS	Ceramics: Alumina-based						Ceramics: Silicon nitride-based					Ceramics: Whisker-based		For applicable holder, see pages:
				JX1	JX3	HC1	HW2	HC2	HC4	HC6	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	SPGN 090308 T01025	SPGN322-TN	0.8					●											—
	SPGN 120308 T01025	SPGN422-TN	0.8					●											
	SPGN 120408 T01025	SPGN432-TN	0.8					●											
	120412 T01025	433-TN	1.2					●											

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T	Relief angle
TB_0601_	3.97	1.59	5°
TP_0902_	5.56	2.38	11°
TP_1103_	6.35	3.18	11°
TP_1603_	9.525	3.18	11°

⟨60 degree Triangle Positive type⟩



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

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	BIDEMICS		Ceramics												For applicable holder, see pages:
						Alumina-based						Silicon nitride-based					Whisker-based	
				JX1	JX3	HC1	HW2	HC2	HC4	HC6	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	TBGN 060104 T00525	TBGE521-TN	0.4					●											—
	060108 T00525	522-TN	0.8					●											
	TPGN 090204 T00525	TPGE731-TN	0.4					●											
	090208 T00525	732-TN	0.8					●											
	TPGN 110304 T00525	TPGN221-TN	0.4					●											
	110304 T01025	221-TNC	0.4								●								
	110308 T00525	222-TN	0.8					●											
	110308 T01025	222-TNC	0.8								●								
	TPGN 160304 T01025	TPGN321-TN	0.4					●			●								
	160304 Z01025	321-ZNC	0.4						●										
	160308 T01025	322-TN	0.8					●		●	●								
	160308 Z01025	322-ZNC	0.8						●										
	160312 T01025	323-TN	1.2				●												

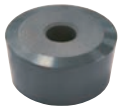
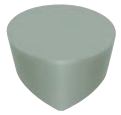
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨For Machining Mill Rolls and Heat-Resistant Alloys⟩

※For details of insert mesurement, please go to page **L18, L22, L26, L27, L31.**

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

● : 1st Choice
● : 2nd choice

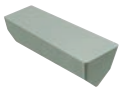
Shape	ISO Item Number	R	BIDEMICS		Ceramics													For applicable holder, see pages:
					Alumina-based							Silicon nitride-based					Whisker-based	
			JX1	JX3	HC1	HW2	HC2	HC4	HC6	HC7	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	CDH 22 PN	–					●												F31 L26
	CDH 33 PN	–					●												
	RCGX 060400 T00520	–															●	●	F32 L19~21 L27~29
	060400 T00820		●	●															
	060400 T02020	–								★								★	
	RCGX 060600 P07015	–																★	
	RCGX 060700 T00520	–															●		
	RCGX 090700 E004	–	●	●															
	090700 T00520	–												●	●		●		
	090700 T00820	–	●	●														●	
	090700 T01020	–															●		
	090700 K20015	–								★								★	
	RCGX 0908 PN	–					●												
	0908 TNB	–													●		●		
	RCGX 120700 E004	–	●	●															
	120700 T00520	–												●	●		●		
	120700 T00820	–	●	●														●	
	120700 T01020	–															●		
	120700 Z01520	–															●		
	120700 K20015	–								★								★	
	RCGX 1208 PN	–					●												
	1208 TNB	–													●				
	RPGX 060400 T00520	–															●		
	RPGX 090700 E004	–	●	●															
	090700 T00520	–												●	●		●		
	090700 T00820	–	●	●									●					●	
	RPGX 0908 TNB	–													●				
	RPGX 120700 E004	–	●	●															
	120700 T00520	–												●	●		●		
	120700 T00820	–	●	●									●					●	
	120700 T01020	–															●		
	RPGX 1208 TNB	–													●				
	RCGY 090603 TNB	–															●		L22
	RCGY 120603 TNB	–															●		
	RBGX 16S PN	–					●												—
	16S SN2	–															●		
	RBGX 20S PN	–					●												
	RBGX 26S PN	–					●												
	26 SSN3	–															●		

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨For Machining Mill Rolls and Heat-Resistant Alloys⟩

※For details of insert mesurement, please go to page **L13, L31.**

Steel	P	
Stainless Steel	M	
Cast Iron	K	● : 1st Choice
Non-Ferrous Material	N	● : 2nd choice
Heat Resistant Alloy	S	
Hardened Material	H	

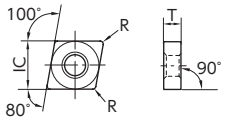
Shape	ISO Item Number	R	BIDEMICS		Ceramics													For applicable holder, see pages:
					Alumina-based							Silicon nitride-based					Whisker-based	
			JX1	JX3	HC1	HW2	HC2	HC4	HC6	HC7	ZC7	SX6	SX7	SX3	SX9	SP9	WA1	WA5	
	LNM 6688 PNX8	3.2																●	—
	6688 SN2	3.2															●		
	6688 SNX6	3.2								●									
	VGW 4125-1 E004	0.4	●	●															L15~17
	4125-2 E004	0.8	●	●															
	4125-2 EX0001	0.8															●	●	
	VGW 4156-1 E004	0.4	●	●															
	4156-2 E004	0.8	●	●															
	4156-2 EX0001	0.8															●	●	
	VGW 4187-1 E004	0.4	●	●															
	4187-2 E004	0.8	●	●															
	4187-2 EX0001	0.8															●	●	
	VGW 6250-1 E004	0.4	●	●															
	6250-2 E004	0.8	●	●															
	6250-3 E004	1.2	●	●															
	6250-2 EX0001	0.8															●	●	
	VGW 8375-2 EX0001	0.8															●	●	
Full radius style	VGW 4125-R E004	1.59	●	●															
	4125-R EX0001	1.59															●	●	
	VGW 4156-R E004	1.98	●	●															
	4156-R EX0001	1.98															●	●	
	VGW 4187-R E004	2.38	●	●															
	4187-R EX0001	2.38															●	●	
	VGW 6250-R EX0001	3.18															●	●	
	VGW 8375-R EX0001	4.76																●	

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

MEMO

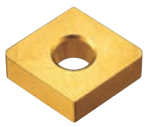
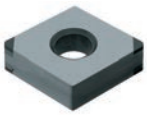
Item Number	IC	T
CN_1204_	12.7	4.76

⟨80 degree Rhombic Negative type⟩



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

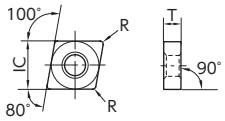
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 4 corners available	CNGA 120404 BQ	CNGA431BQ	T00520	0.4	●													
	120408 BQ	432BQ	T00520	0.8	●													
	120412 BQ	433BQ	T00520	1.2	●													
 4 corners available	CNGA 120402 PQ SCD	CNGA4308PQS0415	S01015	0.2								●	●	●				F9 F11 G40 K34
	120402 PQ SXF	4308PQS0525	S01325	0.2								●	●	●				
	120402 PQ SEH	4308PQS0635	S01535	0.2								●	●	●				
	120402 PQ TCE	4308PQT0420	T01020	0.2							●							
	120404 PQ F	431PQFNX	None	0.4							●			●				
	120404 PQ SCD	431PQS0415	S01015	0.4			●	●				●	●	●				
	120404 PQ SCE	431PQS0420	S01020	0.4						●								
	120404 PQ SXF	431PQS0525	S01325	0.4			●	●				●	●	●				
	120404 PQ SEH	431PQS0635	S01535	0.4			●	●				●	●	●				
	120404 PQ TCE	431PQT0420	T01020	0.4							●							
	120408 PQ F	432PQFNX	None	0.8							●			●				
	120408 PQ SCD	432PQS0415	S01015	0.8			●	●				●	●	●				
	120408 PQ SCE	432PQS0420	S01020	0.8						●								
	120408 PQ SXF	432PQS0525	S01325	0.8			●	●				●	●	●				
	120408 PQ SEH	432PQS0635	S01535	0.8			●	●				●	●	●				
	120408 PQ TBD	432PQT0215	T00515	0.8								●						
	120408 PQ TCE	432PQT0420	T01020	0.8							●							
	120412 PQ F	433PQFNX	None	1.2							●			●				
	120412 PQ SCD	433PQS0415	S01015	1.2			●	●				●	●	●				
	120412 PQ SCE	433PQS0420	S01020	1.2						●								
	120412 PQ SXF	433PQS0525	S01325	1.2			●	●				●	●	●				

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

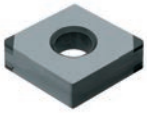
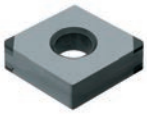
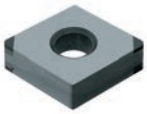
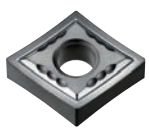
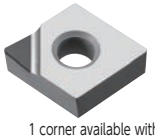
Item Number	IC	T
CN_1204_	12.7	4.76

⟨80 degree Rhombic Negative type⟩



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

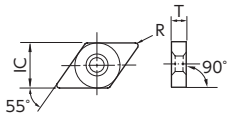
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 4 corners available	CNGA 120412 PQ SEH	CNGA433PQS0635	S01535	1.2			●	●				●	●	●				
	120412 PQ TBD	433PQT0215	T00515	1.2								●						
	120412 PQ TCE	433PQT0420	T01020	1.2							●							
	120416 PQ SCD	434PQS0415	S01015	1.6								●	●	●				
	120416 PQ SCE	434PQS0420	S01020	1.6						●								
	120416 PQ SXF	434PQS0525	S01325	1.6				●				●	●	●				
	120416 PQ SEH	434PQS0635	S01535	1.6								●	●	●				
	120416 PQ TCE	434PQT0420	T01020	1.6							●							
	120420 PQ SCD	435PQS0415	S01015	2								●	●	●				
	120420 PQ SCE	435PQS0420	S01020	2						●								
	120420 PQ SXF	435PQS0525	S01325	2				●				●	●	●				
	120420 PQ SEH	435PQS0635	S01535	2								●	●	●				
	120420 PQ TCE	435PQT0420	T01020	2							●							
 one side 2 corners available	CNGA 120404 PD F	CNGA431PDFNX	None	0.4							●			●				F9 F11 G40 K34
	120408 PD F	432PDFNX	None	0.8							●							
	120412 PD F	433PDFNX	None	1.2							●							
 4 corners available with wiper	CNGA 120404 PQ W SCD	CNGA431PQWS0415	S01015	0.4								●	●	●				
	120404 PQ W SEH	431PQWS0635	S01535	0.4								●	●	●				
	120408 PQ W SCD	432PQWS0415	S01015	0.8								●	●	●				
	120408 PQ W SEH	432PQWS0635	S01535	0.8								●	●	●				
	120412 PQ W SCD	433PQWS0415	S01015	1.2								●	●	●				
	120412 PQ W SEH	433PQWS0635	S01535	1.2								●	●	●				
 4 corners available	CNMG 120404 FN ZP	CNMG431-FN--ZP	None	0.4											●			
	120408 FN ZP	432-FN--ZP	None	0.8											●			
 1 corner available with chipbreaker (rake angle 10°)	CNMX 120404 P F		None	0.4													●	
	120408 P F		None	0.8													●	

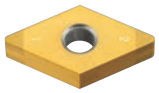
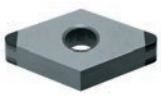
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
DN_1504_	12.7	4.76
DN_1506_	12.7	6.35

⟨55 degree Rhombic Negative type⟩



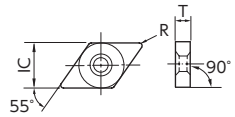
Steel	P	● : 1st Choice
Stainless Steel	M	● : 2nd choice
Cast Iron	K	
Non-Ferrous Material	N	
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 4 corners available	DNGA 150404 BQ	DNGA431BQ	T00520	0.4	●													
	150408 BQ	432BQ	T00520	0.8	●													
	150412 BQ	433BQ	T00520	1.2	●													
 4 corners available	DNGA 150402 PQ SCD	DNGA4308PQS0415	S01015	0.2									●	●				F13 F15 G41 K35
	150402 PQ SXF	4308PQS0525	S01325	0.2									●	●				
	150402 PQ SEH	4308PQS0635	S01535	0.2									●	●				
	150402 PQ TCE	4308PQT0420	T01020	0.2							●							
	150404 PQ F	431PQFNX	None	0.4							●			●				
	150404 PQ SCD	431PQS0415	S01015	0.4			●	●				●	●	●				
	150404 PQ SCE	431PQS0420	S01020	0.4						●								
	150404 PQ SXF	431PQS0525	S01325	0.4			●	●				●	●	●				
	150404 PQ SEH	431PQS0635	S01535	0.4			●	●				●	●	●				
	150404 PQ TCE	431PQT0420	T01020	0.4							●							
	150408 PQ F	432PQFNX	None	0.8							●			●				
	150408 PQ SCD	432PQS0415	S01015	0.8			●	●				●	●	●				
	150408 PQ SCE	432PQS0420	S01020	0.8						●								
	150408 PQ SXF	432PQS0525	S01325	0.8			●	●				●	●	●				
	150408 PQ SEH	432PQS0635	S01535	0.8			●	●				●	●	●				
	150408 PQ TCE	432PQT0420	T01020	0.8							●							
	150412 PQ F	433PQFNX	None	1.2										●				
	150412 PQ SCD	433PQS0415	S01015	1.2			●	●				●	●	●				
	150412 PQ SCE	433PQS0420	S01020	1.2						●								
	150412 PQ SXF	433PQS0525	S01325	1.2			●	●				●	●	●				
	150412 PQ SEH	433PQS0635	S01535	1.2			●	●				●	●	●				
	150412 PQ TCE	433PQT0420	T01020	1.2							●							
	150416 PQ SCD	434PQS0415	S01015	1.6			●	●				●	●	●				
	150416 PQ SCE	434PQS0420	S01020	1.6						●								
	150416 PQ SXF	434PQS0525	S01325	1.6			●	●				●	●	●				
	150416 PQ SEH	434PQS0635	S01535	1.6			●	●				●	●	●				
	150416 PQ TCE	434PQT0420	T01020	1.6							●							
	150420 PQ SCD	435PQS0415	S01015	2				●										
	150420 PQ SXF	435PQS0525	S01325	2				●				●						
	150420 PQ SEH	435PQS0635	S01535	2				●										
	DNGA 150602 PQ SCD	4408PQS0415	S01015	0.2										●				
	150604 PQ SCD	441PQS0415	S01015	0.4										●				
	150604 PQ SXF	441PQS0525	S01325	0.4								●						

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

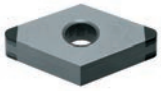
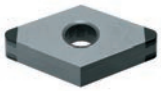
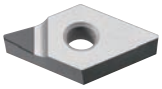
Item Number	IC	T
DN_1504_	12.7	4.76
DN_1506_	12.7	6.35

⟨55 degree Rhombic Negative type⟩



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

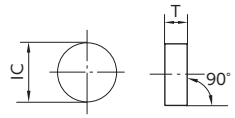
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)		CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 4 corners available	DNGA 150604 PQ TCE	DNGA441PQT0420	T01020	0.4							●							F13 F15 G41 K35
	150608 PQ SCD	442PQS0415	S01015	0.8										●				
	150608 PQ SXF	442PQS0525	S01325	0.8								●						
	150608 PQ TCE	442PQT0420	T01020	0.8							●							
	150612 PQ SCD	443PQS0415	S01015	1.2										●				
	150612 PQ SXF	443PQS0525	S01325	1.2								●						
	150612 PQ TCE	443PQT0420	T01020	1.2							●							
	150616 PQ SCD	444PQS0415	S01015	1.6										●				
	150616 PQ SXF	444PQS0525	S01325	1.6								●						
	150616 PQ TCE	444PQT0420	T01020	1.6							●							
 one side 2 corners available	DNGA 150404 PD F	DNGA431PDFNX	None	0.4							●							
	150408 PD F	432PDFNX	None	0.8							●							
	150412 PD F	433PDFNX	None	1.2							●							
 1 corner available with chipbreaker (rake angle 10°)	DNMX 150404 P F		None	0.4													●	
	150408 P F		None	0.8													●	

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

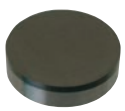
Item Number	IC	T
RN_1203_	12.7	3.18
RN_1204_	12.7	4.76

⟨Round Negative type⟩



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

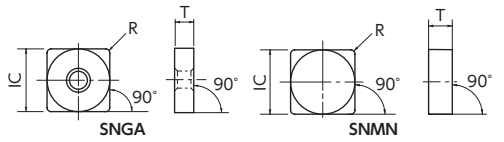
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)		CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 (top full-face CBN)	RNGN 120400 S	RNGN430S	Z01015	–					●									F30 N9 L23 L30
(Solid CBN)	RNMN 120300 S TN	RNMN420STN	T01025	–		●												—
	RNMN 120400 S TN	RNMN430STN	T01025	–		●												F30 N19 L23 L30

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

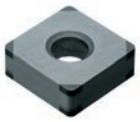
Item Number	IC	T
SN_0903_	9.525	3.18
SN_1203_	12.7	3.18
SN_1204_	12.7	4.76

〈90 degree Square Negative type〉



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

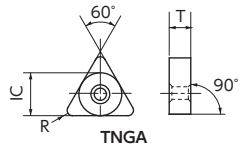
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated) JP2	CBN (Brazed) (Coated) B16	B5K	B6K	CBN (Brazed) B22	B23	B30	B36	B40	B52	Diamond Coating UC1	PCD PD1	PD2	For applicable holder, see pages:
 8 corners available	SNGA 120402 PE SXF	SNGA4308PES0525	S01325	0.2								●	●	●				F17 F19 K36
	120404 PE SCD	431PES0415	S01015	0.4									●	●				
	120404 PE SCE	431PES0420	S01020	0.4						●								
	120404 PE SXF	431PES0525	S01325	0.4								●						
	120404 PE SEH	431PES0635	S01535	0.4									●	●				
	120404 PE TCE	431PET0420	T01020	0.4							●							
	120408 PE SCD	432PES0415	S01015	0.8									●	●				
	120408 PE SCE	432PES0420	S01020	0.8						●								
	120408 PE SXF	432PES0525	S01325	0.8								●						
	120408 PE SEH	432PES0635	S01535	0.8									●	●				
	120408 PE TCE	432PET0420	T01020	0.8							●							
	120412 PE SCD	433PES0415	S01015	1.2							●		●	●				
	120412 PE SCE	433PES0420	S01020	1.2						●								
	120412 PE SXF	433PES0525	S01325	1.2								●						
	120412 PE SEH	433PES0635	S01535	1.2									●	●				
	120412 PE TCE	433PET0420	T01020	1.2							●							
	120416 PE SCD	434PES0415	S01015	1.6										●				
	120416 PE SXF	434PES0525	S01325	1.6								●						
	120416 PE TCE	434PET0420	T01020	1.6							●							
(Solid CBN)	SNMN 090308 S TNB	SNMN322STNB	T00525	0.8		●												—
	090312 S TN	323STN	T01025	1.2		●												
	SNMN 120308 S TN	SNMN422STN	T01025	0.8		●												
	120312 S TN	423STN	T01025	1.2		●												
	SNMN 120408 S TN	SNMN432STN	T01025	0.8		●												F17 F19 F21 K36 N12 N14 N16
	120412 S TNF	433STNF	T02025	1.2		●												
	120416 S TNF	434STNF	T02025	1.6		●												

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
TN_1604_	9.525	4.76
TN_2204_	12.7	4.76

⟨60 degree Triangle Negative type⟩



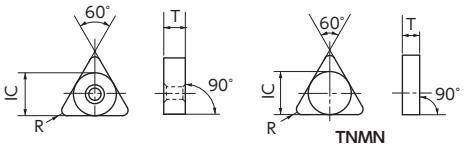
Steel	P	● : 1st Choice
Stainless Steel	M	● : 2nd choice
Cast Iron	K	
Non-Ferrous Material	N	
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
6 corners available	TNGA 160401 PH F	TNGA3304PHFNX	None	0.1										●				F23 F25 G39
	160401 PH SCD	3304PHS0415	S01015	0.1			●	●					●	●				
	160401 PH SXF	3304PH0525	S01325	0.1			●	●					●	●				
	160401 PH SEH	3304PHS0635	S01535	0.1									●	●				
	160402 PH F	3308PHFNX	None	0.2							●			●				
	160402 PH SCD	3308PHS0415	S01015	0.2			●	●				●	●	●				
	160402 PH SXF	3308PHS0525	S01325	0.2			●	●				●	●	●				
	160402 PH SEH	3308PHS0635	S01535	0.2			●					●	●	●				
	160404 PH F	331PHFNX	None	0.4										●				
	160404 PH SCD	331PHS0415	S01015	0.4			●	●				●	●	●				
	160404 PH SCE	331PHS0420	S01020	0.4						●								
	160404 PH SXF	331PHS0525	S01325	0.4			●	●				●	●	●				
	160404 PH SEH	331PHS0635	S01535	0.4			●	●			●	●	●	●				
	160404 PH TCE	331PHT0420	T01020	0.4							●							
	160408 PH F	332PHFNX	None	0.8										●				
	160408 PH SCD	332PHS0415	S01015	0.8			●	●				●	●	●				
	160408 PH SCE	332PHS0420	S01020	0.8						●								
	160408 PH SXF	332PHS0525	S01325	0.8			●	●				●	●	●				
	160408 PH SEH	332PHS0635	S01535	0.8			●	●			●	●	●	●				
	160408 PH TCE	332PHT0420	T01020	0.8							●							
	160412 PH F	333PHFNX	None	1.2							●			●				
	160412 PH SCD	333PHS0415	S01015	1.2			●	●				●	●	●				
	160412 PH SCE	333PHS0420	S01020	1.2						●								
	160412 PH SXF	333PHS0525	S01325	1.2			●	●				●	●	●				
	160412 PH SEH	333PHS0635	S01535	1.2			●	●			●	●	●	●				
	160412 PH TCE	333PHT0420	T01020	1.2							●							
	160416 PH SCD	334PHS0415	S01015	1.6			●	●						●				
	160416 PH SXF	334PHS0525	S01325	1.6			●	●				●						
	160416 PH SEH	334PHS0635	S01535	1.6			●	●				●						
	160416 PH TCE	334PHT0420	T01020	1.6							●							
	220412 PH SCD	433PHS0415	S01015	1.2									●					
	220412 PH SEH	433PHS0635	S01535	1.2									●					

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T
TN_1103_	6.35	3.18
TN_1604_	9.525	4.76

⟨60 degree Triangle Negative type⟩



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

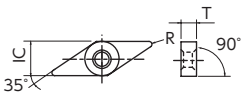
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
one side 3 corners available	TNGA 160402 PT F	TNGA3308PTFNX	None	0.2							●							
	160404 PT F	331PTFNX	None	0.4							●							
	160408 PT F	332PTFNX	None	0.8							●							
	160412 PT F	333PTFNX	None	1.2							●							
6 corners available	TNMG 160402 FN ZP	TNMG33Y-FN--ZP	None	0.2											●			F23 F25 G39
	160404 FN ZP	331-FN--ZP	None	0.4											●			
	160408 FN ZP	332-FN--ZP	None	0.8											●			
1 corner available with chipbreaker (rake angle 10°)	TNMX 160404 P F	TNMX331PF	None	0.4													●	
	160408 P F	332PF	None	0.8													●	
(Solid CBN)	TNMN 110312 S TNC	TNMN223STNC	T01025	1.2		●												F23 F25
	160408 S TN	332STN		0.8		●												
	160412 S TNC	333STN		1.2		●												
	160412 S TNF	333STNF	T02025	1.2		●												

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

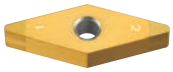
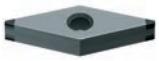
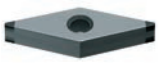
Item Number	IC	T
VN_1604_	9.525	4.76

⟨35 degree Rhombic Negative type⟩



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

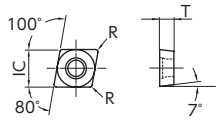
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
	VNGA 160404 BQ	VNGA331BQ	T00520	0.4	●													
	160408 BQ	332BQ	T00520	0.8	●													
	160412 BQ	333BQ	T00520	1.2	●													
 4 corners available	VNGA 160401 PQ SCD	VNGA3304PQS0415	S01015	0.1										●				F27
	160401 PQ SEH	3304PQS0635	S01535	0.1									●					
	160402 PQ F	3308PQFNX	None	0.2							●							
	160402 PQ SCD	3308PQS0415	S01015	0.2			●					●	●	●				
	160402 PQ SXF	3308PQS0525	S01325	0.2			●					●	●	●				
	160402 PQ SEH	3308PQS0635	S01535	0.2			●					●	●	●				
	160402 PQ TCE	3308PQT0420	T01020	0.2							●							
	160404 PQ F	331PQFNX	None	0.4							●			●				
	160404 PQ SCD	331PQS0415	S01015	0.4			●	●				●	●	●				
	160404 PQ SXF	331PQS0525	S01325	0.4			●	●				●	●	●				
	160404 PQ SEH	331PQS0635	S01535	0.4			●	●				●	●	●				
	160404 PQ TCE	331PQT0420	T01020	0.4							●							
	160408 PQ F	332PQFNX	None	0.8							●			●				
	160408 PQ SCD	332PQS0415	S01015	0.8			●	●				●	●	●				
	160408 PQ SXF	332PQS0525	S01325	0.8			●	●				●	●	●				
	160408 PQ SEH	332PQS0635	S01535	0.8			●	●				●	●	●				
	160408 PQ TCE	332PQT0420	T01020	0.8							●							
	160412 PQ SCD	333PQS0415	S01015	1.2			●	●				●	●	●				
	160412 PQ SXF	333PQS0525	S01325	1.2			●	●				●	●	●				
	160412 PQ SEH	333PQS0635	S01535	1.2			●	●				●	●	●				
	160412 PQ TCE	333PQT0420	T01020	1.2							●							
 one side 2 corners available	VNGA 160402 PD F	VNGA3308PDFNX	None	0.2							●							
	160404 PD F	331PDFNX	None	0.4							●							
	160408 PD F	332PDFNX	None	0.8							●							
	160412 PD F	333PDFNX	None	1.2							●							

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

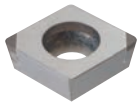
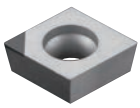
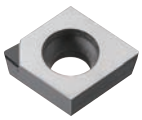
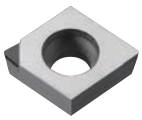
Item Number	IC	T	Relief angle
CC_0602_	6.35	2.38	7°
CC_09T3_	9.525	3.97	7°

⟨80 degree Rhombic Positive type⟩



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

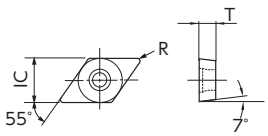
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 2 corners available	CCGW 060202 PD F	CCGW21.508PDFNX	None	0.2							●			●				G23 K28
	060202 PD SCD	21.508PDS0415	S01015	0.2								●	●	●				
	060202 PD SXF	21.508PDS0525	S01325	0.2								●		●				
	060202 PD SEH	21.508PDS0635	S01535	0.2								●		●				
	060204 PD F	21.51PDFNX	None	0.4							●							
	060204 PD SCD	21.51PDS0415	S01015	0.4								●	●	●				
	060204 PD SXF	21.51PDS0525	S01325	0.4								●		●				
	060204 PD SEH	21.51PDS0635	S01535	0.4								●		●				
	060208 PD F	21.52PDFNX	None	0.8										●				
	060208 PD SCD	21.52PDS0415	S01015	0.8								●	●	●				
	060208 PD SXF	21.52PDS0525	S01325	0.8								●	●	●				
	060208 PD SEH	21.52PDS0635	S01535	0.8								●	●	●				
	060208 PD TEE	21.52PDT0620	T01520	0.8								●						
	CCGW 09T302 PD F	CCGW32.508PDFNX	None	0.2							●			●				
	09T302 PD SCD	32.508PDS0415	S01015	0.2								●	●	●				
	09T302 PD SXF	32.508PDS0525	S01325	0.2								●	●	●				
	09T302 PD SEH	32.508PDS0635	S01535	0.2								●	●	●				
	09T304 PD F	32.51PDFNX	None	0.4							●			●				
	09T304 PD SCD	32.51PDS0415	S01015	0.4								●	●	●				
	09T304 PD SXF	32.51PDS0525	S01325	0.4								●	●	●				
	09T304 PD SEH	32.51PDS0635	S01535	0.4								●	●	●				
	09T308 PD F	32.52PDFNX	None	0.8							●							
	09T308 PD SCD	32.52PDS0415	S01015	0.8									●	●				
	09T308 PD SXF	32.52PDS0525	S01325	0.8								●	●	●				
	09T308 PD SEH	32.52PDS0635	S01535	0.8								●	●	●				
	09T312 PD F	32.53PDFNX	None	1.2										●				
	09T312 PD SCD	32.53PDS0415	S01015	1.2										●				
	09T312 PD SXF	32.53PDS0525	S01325	1.2								●						
 1 corner available	CCMW 09T301	—	None	0.1												●		
	09T302	—	None	0.2												●		
	09T304	—	None	0.4												●		
	09T308	—	None	0.8												●		
 1 corner available with 3D chipbreaker (rake angle 10°)	CCMT 060201 PB F		None	0.1													●	G23 K28
	060202 PB F		None	0.2													●	
	060204 PB F		None	0.4													●	
	09T301 PB F		None	0.1													●	
	09T302 PB F		None	0.2													●	
	09T304 PB F		None	0.4													●	
 1 corner available with chipbreaker (rake angle 10°)	09T302 P F		None	0.2													●	
	09T304 P F		None	0.4													●	

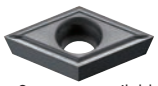
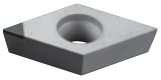
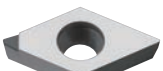
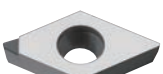
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T	Relief angle
DC_0702_	6.35	2.38	7°
DC_11T3_	9.525	3.97	7°

⟨55 degree Rhombic Positive type⟩



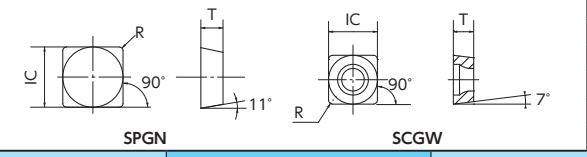
Steel	P	
Stainless Steel	M	
Cast Iron	K	● : 1st Choice
Non-Ferrous Material	N	● : 2nd choice
Heat Resistant Alloy	S	
Hardened Material	H	

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
2 corners available	DCGW 070202 PD F	DCGW21.508PDFNX	None	0.2										●				G25 G27
	070202 PD SCD	21.508PDS0415	S01015	0.2										●				
	070202 PD SEH	21.508PDS0635	S01535	0.2									●					
	070204 PD F	21.51PDFNX	None	0.4							●			●				
	070204 PD SCD	21.51PDS0415	S01015	0.4										●				
	070204 PD SEH	21.51PDS0635	S01535	0.4									●					
	070208 PD F	21.52PDFNX	None	0.8										●				
	070208 PD SCD	21.52PDS0415	S01015	0.8									●	●				
	070208 PD SXF	21.52PDS0525	S01325	0.8									●					
	070208 PD SEH	21.52PDS0635	S01535	0.8									●					
	DCGW 11T301 PD SCD	DCGW32.504PDS0415	S01015	0.1										●				
	11T302 PD F	32.508PDFNX	None	0.2							●			●				
	11T302 PD SCD	32.508PDS0415	S01015	0.2			●					●	●	●				
	11T302 PD SXF	32.508PDS0525	S01325	0.2								●	●	●				
	11T302 PD SEH	32.508PDS0635	S01535	0.2								●	●	●				
	11T304 PD F	32.51PDFNX	None	0.4							●			●				
	11T304 PD SCD	32.51PDS0415	S01015	0.4			●					●	●	●				
	11T304 PD SXF	32.51PDS0525	S01325	0.4								●	●	●				
	11T304 PD SEH	32.51PDS0635	S01535	0.4								●	●	●				
	11T304 PD TCD	32.51PDT0415	T01015	0.4								●						
	11T308 PD F	32.52PDFNX	None	0.8										●				
	11T308 PD SCD	32.52PDS0415	S01015	0.8									●	●				
	11T308 PD SXF	32.52PDS0525	S01325	0.8									●	●				
	11T308 PD SEH	32.52PDS0635	S01535	0.8									●	●				
	11T312 PD SCD	32.53PDS0415	S01015	1.2										●				
 2 corners available	DCMT 11T301 FN AM3	—	None	0.1											●			
	11T302 FN AM3	—	None	0.2											●			
	11T304 FN AM3	—	None	0.4											●			
 1 corner available	DCMW 11T301	—	None	0.1												●		
	11T302	—	None	0.2												●		
	11T304	—	None	0.4												●		
	11T308	—	None	0.8												●		
 1 corner available with 3D chipbreaker (rake angle 10°)	DCMT 070201 PB F		None	0.1													●	
	070202 PB F		None	0.2													●	
	11T301 PB F		None	0.1													●	
	11T302 PB F		None	0.2													●	
	11T304 PB F		None	0.4													●	
 1 corner available with chipbreaker (rake angle 10°)	DCMT 070201 P F		None	0.1													●	
	070202 P F		None	0.2													●	
	11T302 P F		None	0.2													●	
	11T304 P F		None	0.4													●	

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

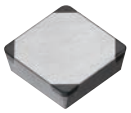
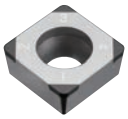
Item Number	IC	T	Relief angle
SP_0903_	9.525	3.18	11°
SC_09T3_	9.525	3.97	7°

⟨90 degree Square Positive type⟩



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

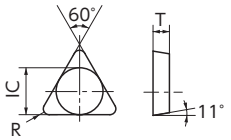
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 4 corners available	SPGN 090304 PQ SCD	SPGN321PQS0415	S01015	0.4									●	●				—
	090304 PQ SCE	321PQS0420	S01020	0.4						●								
	090304 PQ SEH	321PQS0635	S01535	0.4									●	●				
	090304 PQ TCE	321PQT0420	T01020	0.4							●							
	SPGN 090308 PQ SCD	SPGN322PQS0415	S01015	0.8									●	●				
	090308 PQ SCE	322PQS0420	S01020	0.8						●								
	090308 PQ SEH	322PQS0635	S01535	0.8									●	●				
	090308 PQ TCE	322PQT0420	T01020	0.8							●							
	SPGN 090312 PQ SCD	SPGN323PQS0415	S01015	1.2									●	●				
	090312 PQ SCE	323PQS0420	S01020	1.2						●								
	090312 PQ SEH	323PQS0635	S01535	1.2									●	●				
	090312 PQ TCE	323PQT0420	T01020	1.2							●							
	SCGW 09T304 PQ ZCD	SCGW32.51PQZ0415	Z01015	0.4							●							
	09T308 PQ ZCD	32.52PQZ0415	Z01015	0.8							●							

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

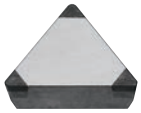
Item Number	IC	T	Relief angle
TP_1103_	6.35	3.18	11°
TP_1603_	9.525	3.18	11°

⟨60 degree Triangle Positive type⟩



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

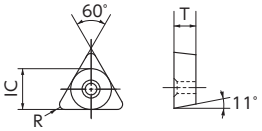
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 3 corners available	TPGN 110302 PT SCD	TPGN2208PTS0415	S01015	0.2										●				—
	110302 PT SCE	2208PTS0420	S01020	0.2									●					
	110302 PT SXF	2208PTS0525	S01325	0.2									●	●				
	110302 PT SEH	2208PTS0635	S01535	0.2									●	●				
	110304 PT SCD	221PTS0415	S01015	0.4									●	●				
	110304 PT SCE	221PTS0420	S01020	0.4									●					
	110304 PT SXF	221PTS0525	S01325	0.4									●	●				
	110304 PT SEH	221PTS0635	S01535	0.4									●	●				
	110304 PT TCE	221PTT0420	T01020	0.4							●							
	110308 PT SCD	222PTS0415	S01015	0.8									●	●				
	110308 PT SCE	222PTS0420	S01020	0.8									●					
	110308 PT SXF	222PTS0525	S01325	0.8									●	●				
	110308 PT SEH	222PTS0635	S01535	0.8									●	●				
	110308 PT TCE	222PTT0420	T01020	0.8							●							
	110312 PT SCD	223PTS0415	S01015	1.2									●	●				
	110312 PT SCE	223PTS0420	S01020	1.2									●					
	110312 PT SXF	223PTS0525	S01325	1.2									●	●				
	110312 PT SEH	223PTS0635	S01535	1.2									●	●				
	110312 PT TCE	223PTT0420	T01020	1.2							●							
	TPGN 160302 PT SCD	TPGN3208PTS0415	S01015	0.2									●	●				
	160302 PT SXF	3208PTS0525	S01325	0.2									●	●				
	160302 PT SEH	3208PTS0635	S01535	0.2									●	●				
	160304 PT SCD	321PTS0415	S01015	0.4									●	●				
	160304 PT SCE	321PTS0420	S01020	0.4									●					
	160304 PT SXF	321PTS0525	S01325	0.4									●	●				
	160304 PT SEH	321PTS0635	S01535	0.4									●	●				
	160304 PT TCE	321PTT0420	T01020	0.4							●							
	160308 PT SCD	322PTS0415	S01015	0.8									●	●				
	160308 PT SCE	322PTS0420	S01020	0.8									●					
	160308 PT SXF	322PTS0525	S01325	0.8									●	●				
	160308 PT SEH	322PTS0635	S01535	0.8									●	●				
	160308 PT TCE	322PTT0420	T01020	0.8							●							
	160312 PT SCD	323PTS0415	S01015	1.2									●	●				
	160312 PT SCE	323PTS0420	S01020	1.2									●					
	160312 PT SXF	323PTS0525	S01325	1.2									●	●				
	160312 PT SEH	323PTS0635	S01535	1.2									●	●				
	160312 PT TCE	323PTT0420	T01020	1.2							●							

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

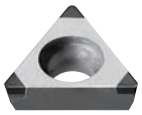
Item Number	IC	T	Relief angle
TP_0902_	5.56	2.38	11°
TP_1103_	6.35	3.18	11°

⟨60 degree Triangle Positive type⟩



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

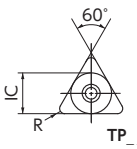
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated) JP2	CBN (Brazed) (Coated) B16	B5K	B6K	CBN (Brazed) B22	B23	B30	B36	B40	B52	Diamond Coating UC1	PCD PD1	PD2	For applicable holder, see pages:
 3 corners available	TPGW 090202 PT SCD	TPGD7308PTS0415	S01015	0.2								●		●				K30 K31 K32
	090202 PT SXF	7308PTS0525	S01325	0.2								●		●				
	090202 PT SEH	7308PTS0635	S01535	0.2								●		●				
	090204 PT SCD	731PTS0415	S01015	0.4								●		●				
	090204 PT SXF	731PTS0525	S01325	0.4								●		●				
	090204 PT SEH	731PTS0635	S01535	0.4								●		●				
	090208 PT SCD	732PTS0415	S01015	0.8								●		●				
	090208 PT SXF	732PTS0525	S01325	0.8								●		●				
	090208 PT SEH	732PTS0635	S01535	0.8								●		●				
	090312 PT SCD	743PTS0415	S01015	1.2								●		●				
	090312 PT SXF	743PTS0525	S01325	1.2								●		●				
	090312 PT SEH	743PTS0635	S01535	1.2								●		●				
	TPGW 110302 PT SCD	TPGW2208PTS0415	S01015	0.2								●	●	●				
	110302 PT SXF	2208PTS0525	S01325	0.2								●		●				
	110302 PT SEH	2208PTS0635	S01535	0.2								●	●	●				
	110302 PT TCE	2208PTT0420	T01020	0.2							●							
	110304 PT SCD	221PTS0415	S01015	0.4								●	●	●				
	110304 PT SXF	221PTS0525	S01325	0.4								●	●	●				
	110304 PT SEH	221PTS0635	S01535	0.4								●	●	●				
	110304 PT TCE	221PTT0420	T01020	0.4							●							
	110304 PT TED	221PTT0615	T01515	0.4						●	●							
	110308 PT SCD	222PTS0415	S01015	0.8								●	●	●				
	110308 PT SXF	222PTS0525	S01325	0.8								●	●	●				
	110308 PT SEH	222PTS0635	S01535	0.8								●	●	●				
	110308 PT TCE	222PTT0420	T01020	0.8							●							
	110308 PT TED	222PTT0615	T01515	0.8						●								
	110312 PT SCD	223PTS0415	S01015	1.2									●	●				
	110312 PT SXF	223PTS0525	S01325	1.2									●	●				
	110312 PT SEH	223PTS0635	S01535	1.2									●	●				
	110312 PT TCE	223PTT0420	T01020	1.2							●							
	110312 PT TED	223PTT0615	T01515	1.2						●								

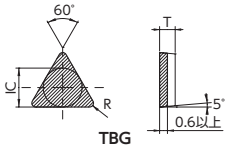
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

Item Number	IC	T	Relief angle
TP_0902_	5.56	2.38	11°
TP_1103_	6.35	3.18	11°
TB_0601_	3.97	1.59	5°

⟨60 degree Triangle Positive type⟩



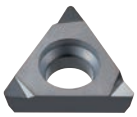
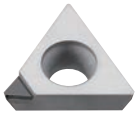
TP_ _



TBG

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

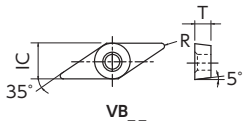
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated) JP2	CBN (Brazed) (Coated) B16	B5K	B6K	CBN (Brazed) B22	B23	B30	B36	B40	B52	Diamond Coating UC1	PCD PD1	PD2	For applicable holder, see pages:
 3 corners available	TPMH 110302 FR F1	TPMH22Y-FR--F1	None	0.2											●			
	110304 FR F1	221-FR--F1	None	0.4											●			
1 corner available with 3D chipbreaker (rake angle 10°)	TPMT 090201 PB F	—	None	0.1													●	K30 K31 K32
	090202 PB F	—	None	0.2													●	
	090204 PB F	—	None	0.4													●	
	110301 PB F	—	None	0.1													●	
	110302 PB F	—	None	0.2													●	
	110304 PB F	—	None	0.4													●	
 1 corner available with chipbreaker (rake angle 10°)	TPMT 090202 P F	—	None	0.2													●	
	090204 P F	—	None	0.4													●	
	110302 P F	—	None	0.2													●	
	110304 P F	—	None	0.4													●	
3 corners available	TBGN 060102 S SNCD	TBGN52YSSN0415	S01015	0.2										●				—
	060104 S SNCD	521SSN0415	S01015	0.4										●				
	060108 S SNCD	522SSN0415	S01015	0.8										●				

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

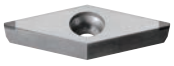
Item Number	IC	T	Relief angle
VB_1103_	6.35	3.18	5°
VB_1604_	9.525	4.76	5°
VC_0802_	4.76	2.38	7°

⟨35 degree Rhombic Positive type⟩



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

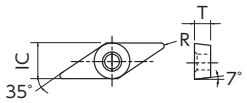
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated) JP2	CBN (Brazed) (Coated) B16	B5K	B6K	CBN (Brazed) B22	B23	B30	B36	B40	B52	Diamond Coating UC1	PCD PD1	PD2	For applicable holder, see pages:
 2 corners available	VBGW 110302 PD F	VBGW2208PDFNX	None	0.2							●							—
	110302 PD SCD	2208PDS0415	S01015	0.2								●		●				
	110302 PD SXF	2208PDS0525	S01325	0.2								●		●				
	110302 PD SEH	2208PDS0635	S01535	0.2								●		●				
	110304 PD F	221PDFNX	None	0.4							●							
	110304 PD SCD	221PDS0415	S01015	0.4								●		●				
	110304 PD SXF	221PDS0525	S01325	0.4								●		●				
	110304 PD SEH	221PDS0635	S01535	0.4								●		●				
	110304 PD TCE	221PDT0420	T01020	0.4							●							
	110308 PD SCD	222PDS0415	S01015	0.8										●				
	110308 PD SXF	222PDS0525	S01325	0.8										●				
	110308 PD SEH	222PDS0635	S01535	0.8										●				
	110308 PD TCE	222PDT0420	T01020	0.8							●							
	110312 PD SCD	223PDS0415	S01015	1.2										●				
	110312 PD SXF	223PDS0525	S01325	1.2										●				
	110312 PD SEH	223PDS0635	S01535	1.2										●				
	110312 PD TCE	223PDT0420	T01020	1.2							●							
	VBGW 160402 PD SCD	VBGW3308PDS0415	S01015	0.2										●				
	160402 PD SXF	3308PDS0525	S01325	0.2										●				
	160402 PD SEH	3308PDS0635	S01535	0.2										●				
	160404 PD SCD	331PDS0415	S01015	0.4										●				
	160404 PD SXF	331PDS0525	S01325	0.4										●				
	160404 PD SEH	331PDS0635	S01535	0.4										●				
	160408 PD SCD	332PDS0415	S01015	0.8								●		●				
	160408 PD SXF	332PDS0525	S01325	0.8								●		●				
	160408 PD SEH	332PDS0635	S01535	0.8								●		●				
	160412 PD SCD	333PDS0415	S01015	1.2										●				
	160412 PD SXF	333PDS0525	S01325	1.2										●				
	160412 PD SEH	333PDS0635	S01535	1.2										●				
	VCGW 080202 PD SCD	VCGW1.51.508PDS0415	S01015	0.2										●				
	080202 PD SXF	1.51.508PDS0525	S01325	0.2								●						
	080204 PD SCD	1.51.51PDS0415	S01015	0.4										●				
	080204 PD SXF	1.51.51PDS0525	S01325	0.4								●						
	080208 PD SCD	1.51.52PDS0415	S01015	0.8										●				
	080208 PD SXF	1.51.52PDS0525	S01325	0.8								●						

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

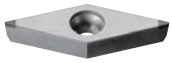
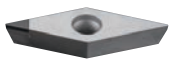
Item Number	IC	T	Relief angle
VC_1103_	6.35	3.18	7°
VC_1604_	9.525	4.76	7°

⟨35 degree Rhombic Positive type⟩



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

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
 2 corners available	VCGW 110302 PD SCD	VCGW2208PDS0415	S01015	0.2									●	●				G29 G31 G56
	110302 PD SEH	2208PDS0635	S01535	0.2									●	●				
	110304 PD SCD	221PDS0415	S01015	0.4									●	●				
	110304 PD SEH	221PDS0635	S01535	0.4									●	●				
	110308 PD SCD	222PDS0415	S01015	0.8									●	●				
	110308 PD SEH	222PDS0635	S01535	0.8									●	●				
	110312 PD SCD	223PDS0415	S01015	1.2									●	●				
	110312 PD SEH	223PDS0635	S01535	1.2									●	●				
	VCGW 160402 PD SCD	VCGW3308PDS0415	S01015	0.2									●					
	160402 PD SEH	3308PDS0635	S01535	0.2									●					
	160404 PD SCD	331PDS0415	S01015	0.4									●	●				
	160404 PD SEH	331PDS0635	S01535	0.4									●	●				
	160404 PD TCE	331PDT0420	T01020	0.4							●							
	160408 PD SCD	332PDS0415	S01015	0.8									●	●				
	160408 PD SEH	332PDS0635	S01535	0.8									●	●				
	160408 PD TCE	332PDT0420	T01020	0.8							●							
	160412 PD SCD	333PDS0415	S01015	1.2									●	●				
	160412 PD SEH	333PDS0635	S01535	1.2									●	●				
	160412 PD TCE	333PDT0420	T01020	1.2							●							
 1 corner available	VCMW 110301	—	None	0.1												●		
	110302	—	None	0.2												●		
	110304	—	None	0.4												●		

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨For Machining Mill Rolls⟩

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

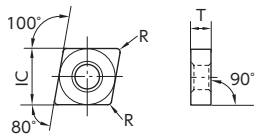
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	Edge Prep.	R	BIDEMICS (Coated)	CBN (Brazed) (Coated)			CBN (Brazed)						Diamond Coating	PCD		For applicable holder, see pages:
					JP2	B16	B5K	B6K	B22	B23	B30	B36	B40	B52	UC1	PD1	PD2	
(Top full-face CBN)	RBGX 16 S	—	S01015	–					●									—
	RBGX 20 S	—	S01015	–					●									

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

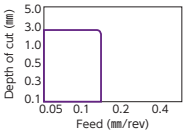
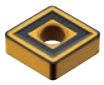
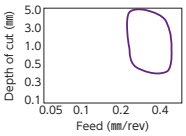
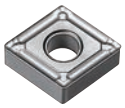
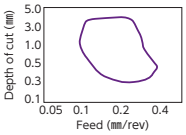
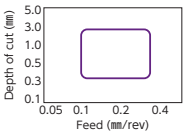
⟨80 degree Rhombic Negative type⟩

Item Number	IC	T
CN_1204	12.7	4.76



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

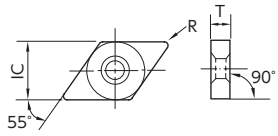
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
UL	CNGG 120404 FN UL	CNGG431FNUL	0.4			●		●		●					F9 F11 G40 K34
	120408 FN UL	432FNUL	0.8			●		●		●					
 G	CNMG 120408 G	CNMG432-G	0.8								●				
	120412 G	433-G	1.2								●				
	120416 G	434-G	1.6								●				
 Z5	CNMG 120408 TNB Z5	432-TNB-Z5	0.8			●				●					
ZP	CNGG 120404 FN ZP	CNGG431-FN--ZP	0.4		●	●				●					
	120408 FN ZP	432-FN--ZP	0.8		●	●				●					

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

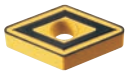
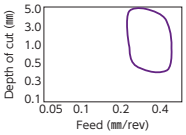
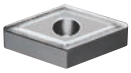
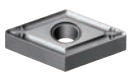
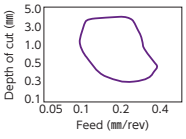
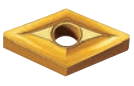
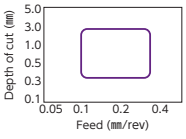
⟨55 degree Rhombic Negative type⟩

Item Number	IC	T
DN_1504	12.7	4.76



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

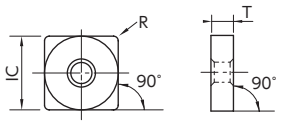
● : 1st Choice
● : 2nd choice

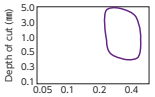
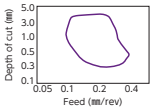
Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 G	DNMG 150404 G	DNMG431-G	0.4								●				F13 F15 G41 K35
	150408 G	432-G	0.8								●				
	150412 G	433-G	1.2								●				
 G	DNMG 150404 TN G	DNMG431-TN--G	0.4			●									
 Z5	DNMG 150408 TNB Z5	DNGG432-TNB-Z5	0.8			●				●					
 ZP	DNGG 150404 FN ZP	DNGG431-FN--ZP	0.4		●	●				●					
	150408 FN ZP	432-FN--ZP	0.8		●	●				●					

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨90 degree Square Negative type⟩

Item Number	IC	T
SN_1204	12.7	4.76

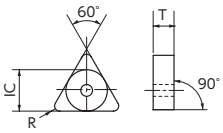


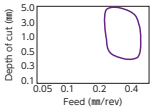
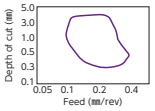
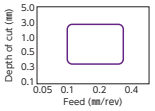
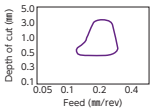
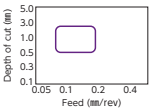
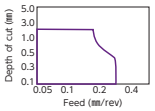
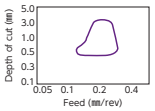
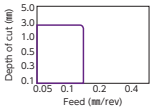
		P	ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel		P	●	●	●	●	●	●	●		●	●
Stainless Steel		M	●	●	●	●	●	●	●			●
Cast Iron		K								●		
Non-Ferrous Material		N		●		●	●					●
Heat Resistant Alloy		S	●		●		●	●	●			
Hardened Material		H	●		●			●	●			
Shape	ISO Item Number	Inch Item Number	R										Chip Control Range	For applicable holder, see pages:
G	SNMG 120408 G	SNMG432-G	0.8								●			F17 F19 K36
	SNMG 120412 G	SNMG433-G	1.2								●			
	SNMG 120416 G	SNMG434-G	1.6								●			
Z5	SNMG 120408 TNB Z5	SNMG432-TNB-Z5	0.8			●				●				

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨60 degree Triangle Negative type⟩

Item Number	IC	T
TN_1604	9.525	4.76



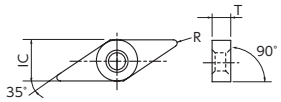
		P	ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel		P	●	●	●	●	●	●	●		●	●
Stainless Steel		M	●	●	●	●	●	●	●			●
Cast Iron		K								●		
Non-Ferrous Material		N		●		●	●					●
Heat Resistant Alloy		S	●		●		●	●	●			
Hardened Material		H	●		●			●	●			
Shape	ISO Item Number	Inch Item Number	R										Chip Control Range	For applicable holder, see pages:
G	TNMG 160408 G	TNMG332-G	0.8								●			F23 F25 G39
	160412 G	333-G	1.2								●			
Z5	TNMG 160404 TNB Z5	331-TNB-Z5	0.4			●				●				
	160408 TNB Z5	332-TNB-Z5	0.8			●				●				
ZP	TNGG 160402 FN ZP	TNGG33Y-FN--ZP	0.2		●	●	●	●		●				
	160404 FN ZP	331-FN--ZP	0.4		●	●	●	●		●				
	160408 FN ZP	332-FN--ZP	0.8		●	●	●			●				
C R-hand shown	TNGG 160402 FR/L C	TNGG33Y-FR/L--C	0.2		R									
D1 R-hand shown	TNEG 160402 FR/L D1		0.2					●						
	160404 FR/L D1		0.4					●						
	160408 FR/L D1		0.8					●						
DA R-hand shown	TNGG 160401 FR/L DA	TNGG331CFR/L--DA	0.1		R		R							
U2 R-hand shown	TNGG 160401 FR/L U2	TNGG331CFR/L--U2	0.1		R		R							
	160402 FR/L U2	33Y-FR/L--U2	0.2		●				●					
	160404 FR/L U2	331-FR/L--U2	0.4		●				●					
	160408 FR/L U2	332-FR/L--U2	0.8		●									
UL	TNGG 160401M FN UL	TNGG3304MFNUL	*0.08	●		●		●	●					
	160402M FN UL	3308MFNUL	*0.18	●		●		●	●					
	160404M FN UL	331MFNUL	*0.38	●		●		●	●					
	160408M FN UL	332MFNUL	*0.78	●		●		●	●					

*Inserts having 01M, 02M or 04M as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2 or R=0.4 respectively.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨35 degree Rhombic Negative type⟩

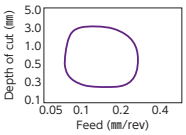
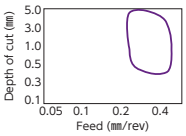
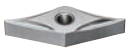
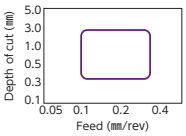
Item Number	IC	T
VN_1604	9.525	4.76



VN__

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

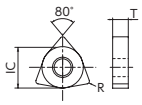
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
AM1	VNMG 160404 TNB AM1	331-TNB-AM1	0.4			●				●					F27
	160408 TNB AM1	332-TNB-AM1	0.8			●				●					
G	VNMG 160404 G	VNMG331-G	0.4								●				
	160408 G	332-G	0.8								●				
	160412 G	333-G	1.2								●				
 ZP	VNGG 160402 FN ZP	VNGG33Y-FN--ZP	0.2			●				●					
	160404 FN ZP	331-FN--ZP	0.4			●				●					
	160408 FN ZP	332-FN--ZP	0.8			●				●					

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨80 degree Hexagon Negative type⟩

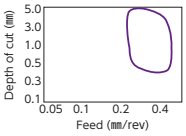
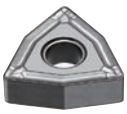
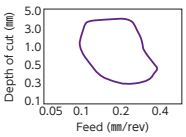
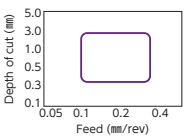
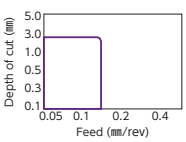
Item Number	IC	T
WN_0804	12.7	4.76



WN__

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

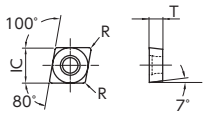
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
G	WNMG 080408 G	WNMG432-G	0.8								●				F29 K37
	080412 G	433-G	1.2								●				
 Z5	WNMG 080408 TNB Z5	WNMG432-TNB-Z5	0.8			●				●					
	080412 TNB Z5	433-TNB-Z5	1.2			●				●					
ZP	WNGG 080404 FN ZP	WNGG431-FN--ZP	0.4		●	●				●					
	080408 FN ZP	432-FN--ZP	0.8		●	●				●					
UL	WNGG 080404 FN UL	WNGG431FNUL	0.4			●		●		●					
	080408 FN UL	432FNUL	0.8			●		●		●					

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨80 degree Rhombic Positive type⟩

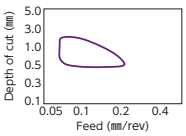
Item Number	IC	T	Relief angle
CC_0602	6.35	2.38	7°
CC_09T3	9.525	3.97	7°

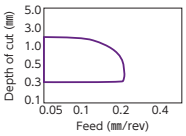


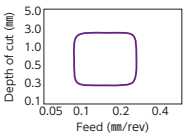
		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

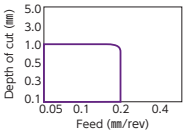
● : 1st Choice
● : 2nd choice

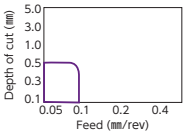
Shape	ISO Item Number	Inch Item Number	R	ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
	CCGT 060200 FN AM3		0.03				●	●	●						
	060202 FN AM3		0.2		●		●								
	060204 FN AM3		0.4		●										
	060201M FN AM3		*0.08	●		●		●	●						
	060202M FN AM3		*0.18	●		●		●	●						
	060204M FN AM3		*0.38	●		●		●	●						
	CCGT 09T300 FN AM3		0.03				●	●	●						
	09T302 FN AM3		0.2			●	●								
	09T304 FN AM3		0.4			●	●								
	09T301M FN AM3		*0.08	●	●	●	●	●	●						
	09T302M FN AM3		*0.18	●	●	●	●	●	●						
AM3	09T304M FN AM3		*0.38	●	●	●	●	●	●						
	CCMT 060202 FN AM3		0.2							●					
	060204 FN AM3		0.4							●					
	CCMT 09T302 FN AM3		0.2							●					
	09T304 FN AM3		0.4							●					
	09T308 FN AM3		0.8							●					
	CCGT 060200 AZ7		0.03			●									
	060201M AZ7		*0.08			●									
	060202M AZ7		*0.18			●									
	CCGT 09T300 AZ7		0.03		●	●		●	●						
	09T301M AZ7		*0.08		●	●		●	●						
AZ7	09T302M AZ7		*0.18		●	●		●	●						
	09T304M AZ7		*0.38		●	●		●	●						
	CCMT 060202 ENA AZ8		0.2									●			
	060204 ENB AZ8		0.4									●			
	060208 ENB AZ8		0.8									●			
	CCMT 09T302 ENA AZ8		0.2									●			
	09T304 ENB AZ8		0.4									●			
AZ8	09T308 ENB AZ8		0.8									●			
	CCGT 060201 FR/L F1		0.1	R		R		R							
	060202 FR/L F1		0.2	R		R		R							
	060204 FR/L F1		0.4	R		R		R							
	CCGT 09T302 FR/L F1		0.2	R		R		R							
F1 R-hand shown	09T304 FR/L F1		0.4	R		R		R							
	CCET 0602005 R/L KHG		0.05				●								
	0602008 R/L KHG		0.08				●								
	0602018 R/L KHG		0.18				●								
	060202 R/L KHG		0.2				●								
	CCET 09T3005 R/L KHG		0.05				●	R							
	09T3008 R/L KHG		0.08				●	R							
KHG	09T3018 R/L KHG		0.18				●	R							
	09T302 R/L KHG		0.2				●	R							











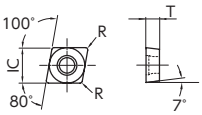
G23
K28

*Inserts having 01M, 02M or 04M as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2 or R=0.4 respectively.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

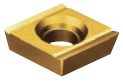
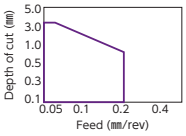
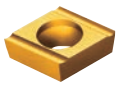
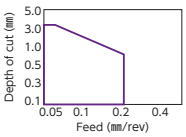
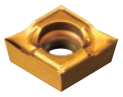
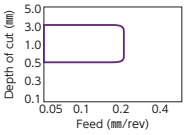
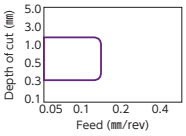
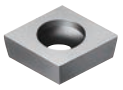
⟨80 degree Rhombic Positive type⟩

Item Number	IC	T	Relief angle
CC_0602	6.35	2.38	7°
CC_09T3	9.525	3.97	7°



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

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 S L-hand shown	CCGT 060200 R/L S		0.03		●		●		R						
	060201 R/L S		0.1		●		●								
	060202 R/L S		0.2		●		●								
	060201M R/L S		*0.08			R			R						
	060202M R/L S		*0.18			R			R						
	CCGT 09T300 R/L S		0.03		R		●	R	R						
	09T301 R/L S		0.1		●	R	●								
	09T302 R/L S		0.2		R	R	●								
	09T304 R/L S		0.4			R									
	09T301M R/L S		*0.08			R		R	R						
	09T302M R/L S		*0.18			R		R	R						
	09T304M R/L S		*0.38			R		R	R						
 U・U1 R-hand shown	CCGT 060200 R/L U		0.03		R				R						
	060201 R/L U		0.1		●				R						
	060202 R/L U		0.2		●				R						
	CCGT 09T300 R/L U1		0.03		●			R	R						
	09T301 R/L U1		0.1		●			R	R						
	09T302 R/L U1		0.2		●			R	R						
	09T304 R/L U1		0.4		●			R	R						
 CL ※2	CCGT 060201M CL		*0.08	●		●		●	●	●					G23 K28
	060202M CL		*0.18	●		●		●	●	●					
	09T300 CL		0.03					●	●						
	09T301M CL		*0.08	●		●		●	●	●					
	09T302M CL		*0.18	●		●		●	●	●					
	09T304M CL		*0.38	●		●		●	●	●					
YL	CCGT 09T300 YL		0.03					●	●						
	09T301M YL		0.08	●		●		●	●	●					
	09T302M YL		0.18	●		●		●	●	●					
	09T304M YL		0.38	●		●		●	●	●					
	09T308M YL		0.78	●		●		●	●	●					
 without chipbreaker	CCGW 060200 FN		0.03		●									—	
	060201 FN		0.1		●										
	060200 H Ⓜ		0.03										●		
	060201 H Ⓜ		0.1										●		
	060202 H Ⓜ		0.2										●		
	CCGW 09T300 FN		0.03		●										
	09T301 FN		0.1		●										
	09T300 H Ⓜ		0.03										●		
	09T301 H Ⓜ		0.1										●		
	09T302 H Ⓜ		0.2										●		
	09T302M P Ⓜ		*0.18						●						
	09T30 V Ⓜ		0.0				●								
	09T301 P Ⓜ		0.1				●								
	09T302 P Ⓜ		0.2				●								

* Inserts having 01M, 02M or 04M as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2 or R=0.4 respectively.

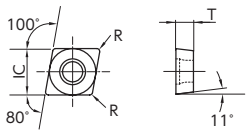
※2 The specifications of CL chipbreaker are slightly different from the above dimensions, but it has no problem for machining.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨80 degree Rhombic Positive type⟩

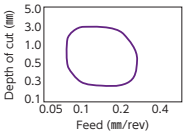
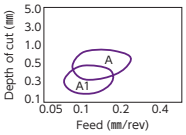
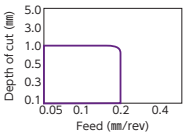
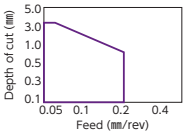
Item Number	IC	T	Relief angle
CP_0401	4.76	1.59	11°
CP_0602	6.35	2.38	11°

Item Number	IC	T	Relief angle
CP_0802	7.94	2.38	11°
CP_0903	9.525	3.18	11°



		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

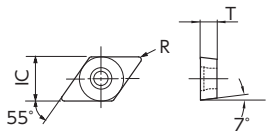
● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
AM5	CPGH 060202 FN AM5	CPGP83Y-FN--AM5	0.2		●			●							
	CPGH 080202 FN AM5	CPGP03Y-FN--AM5	0.2		●			●							
	CPGH 090302 FN AM5	CPGM32Y-FN--AM5	0.2		●			●							
	090304 FN AM5	321-FN--AM5	0.4		●			●							
	090308 FN AM5	322-FN--AM5	0.8		●			●							
A・A1 L-hand shown	CPGH 040102 FR/L A1	CPGP62Y-FR/L--A1	0.2		L			L							K28 K29
	040104 FR/L A1	621-FR/L--A1	0.4		L			L							
	CPGH 060202 FR/L A	CPGP83Y-FR/L--A	0.2		L			L							
	060204 FR/L A	831-FR/L--A	0.4		L			L							
	CPGH 080202 FR/L A	CPGP03Y-FR/L--A	0.2		L			L							
	080204 FR/L A	031-FR/L--A	0.4		L			L							
F1 R-hand shown	CPGH 040101 FR/L F1		0.1	R		R		R							
	040102 FR/L F1		0.2	R		R		R							
	040104 FR/L F1		0.4	R		R		R							
	CPGH 060202 FR/L F1		0.2	R		R		R							
	060204 FR/L F1		0.4	R		R		R							
S L-hand shown	CPGH 040101 R/L S		0.1			L		L							
	040102 R/L S		0.2			L		L							
	040104 R/L S		0.4			L		L							
	CPGH 060202 R/L S		0.2			L		L							
	060204 R/L S		0.4			L		L							

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

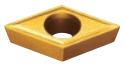
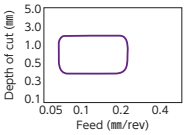
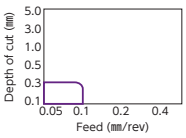
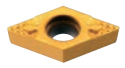
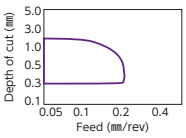
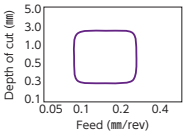
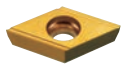
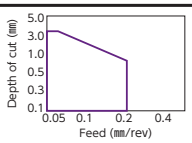
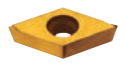
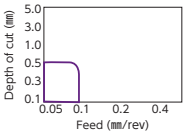
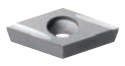
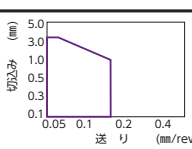
⟨55 degree Rhombic Positive type⟩

Item Number	IC	T	Relief angle
DC_0702	6.35	2.38	7°
DC_11T3	9.525	3.97	7°



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

● : 1st Choice
● : 2nd choice

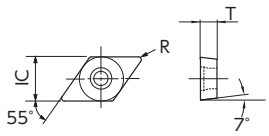
Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 AM3	DCGT 070200 FN AM3		0.03		●		●	●	●						
	DCGT 070201 FN AM3		0.1		●		●								
	DCGT 070202 FN AM3		0.2		●		●								
	DCGT 070204 FN AM3		0.4		●		●								
	DCGT 070201M FN AM3		*0.08	●		●		●	●						
	DCGT 070202M FN AM3		*0.18	●		●		●	●						
	DCGT 070204M FN AM3		*0.38	●		●		●	●						
	DCGT 11T300 FN AM3		0.03		●		●	●	●						
	DCGT 11T302 FN AM3		0.2		●	●	●								
	DCGT 11T304 FN AM3		0.4		●	●	●								
	DCGT 11T301M FN AM3		*0.08	●	●	●	●	●	●						
	DCGT 11T302M FN AM3		*0.18	●	●	●	●	●	●						
	DCGT 11T304M FN AM3		*0.38	●	●	●	●	●	●						
	DCMT 070202 FN AM3		0.2							●					
	DCMT 070204 FN AM3		0.4							●					
	DCMT 11T302 FN AM3		0.2							●					
	DCMT 11T304 FN AM3		0.4							●					
	DCMT 11T308 FN AM3		0.8							●					
AMX	DCGT 070201M AMX		*0.08					●	●	●					
	DCGT 070202M AMX		*0.18					●	●	●					
	DCGT 070204M AMX		*0.38					●	●	●					
	DCGT 11T301M AMX		*0.08					●	●	●					
	DCGT 11T302M AMX		*0.18					●	●	●					
	DCGT 11T304M AMX		*0.38					●	●	●					
 AZ7	DCGT 070200 AZ7		0.03			●									G25 G27
	DCGT 070201M AZ7		*0.08			●									
	DCGT 070202M AZ7		*0.18			●									
	DCGT 11T300 AZ7		0.03		●	●		●	●						
	DCGT 11T301M AZ7		*0.08		●	●		●	●						
	DCGT 11T302M AZ7		*0.18		●	●		●	●						
	DCGT 11T304M AZ7		*0.38		●	●		●	●						
	DCGT 11T308 AZ7		0.8		●	●			●						
AZ8	DCMT 070202 ENA AZ8		0.2									●			
	DCMT 070204 ENB AZ8		0.4									●			
	DCMT 070208 ENB AZ8		0.8									●			
	DCMT 11T302 ENA AZ8		0.2									●			
	DCMT 11T304 ENB AZ8		0.4									●			
	DCMT 11T308 ENB AZ8		0.8									●			
 AT	DCET 11T301M R/L AT		*0.08					R							
	DCET 11T302M R/L AT		*0.18					R							
 KHG	DCET 0702005 R/L KHG		0.05				●								
	DCET 0702008 R/L KHG		0.08				●								
	DCET 0702018 R/L KHG		0.18				●								
	DCET 070202 R/L KHG		0.2				●								
	DCET 11T3005 R/L KHG		0.05				●	R							
	DCET 11T3008 R/L KHG		0.08				●	R							
	DCET 11T3018 R/L KHG		0.18				●	R							
	DCET 11T302 R/L KHG		0.2				●	R							
 UHG R-hand shown	DCET 0702008 R/L UHG		0.08				R								
	DCET 11T3008 R/L UHG		0.08				R								

*Inserts having 01M, 02M or 04M as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2 or R=0.4 respectively.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

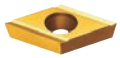
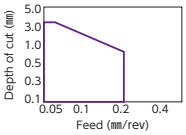
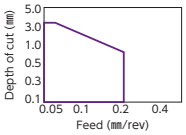
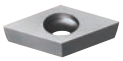
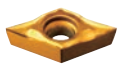
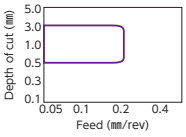
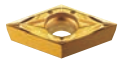
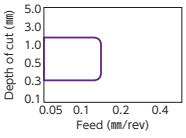
⟨55 degree Rhombic Positive type⟩

Item Number	IC	T	Relief angle
DC_0702	6.35	2.38	7°
DC_11T3	9.525	3.97	7°



		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 S R-hand shown	DCGT 070200 R/L S		0.03		●		●		R						
	DCGT 070201 R/L S		0.1		●		●								
	DCGT 070202 R/L S		0.2		●		●								
	DCGT 070204 R/L S		0.4-				R								
	DCGT 070201M R/L S		*0.08			R			R						
	DCGT 070202M R/L S		*0.18			R			R						
	DCGT 11T300 R/L S		0.03		R		●	R	R						
	DCGT 11T301 R/L S		0.1		R	R	●								
	DCGT 11T302 R/L S		0.2		R	R	●								
	DCGT 11T304 R/L S		0.4			R									
	DCGT 11T301M R/L S		*0.08			R		R	R						
	DCGT 11T302M R/L S		*0.18			R		R	R						
	DCGT 11T304M R/L S		*0.38			R		R	R						
U・U1 R-hand shown	DCGT 070200 R/L U		0.03		R		R								
	DCGT 070201 R/L U		0.1		R		R								
	DCGT 070202 R/L U		0.2		●		R								
	DCGT 11T300 R/L U1		0.03		●		R	R	R						
	DCGT 11T301 R/L U1		0.1		●		R	R	R						
	DCGT 11T302 R/L U1		0.2		●		R	R	R						
	DCGT 11T304 R/L U1		0.4		●		R	R	R						
 without chipbreaker	DCGW 070200 FN		0.03		●									—	G25 G27
	DCGW 070201 FN		0.1		●										
	DCGW 070200 H (M)		0.03										●		
	DCGW 070201 H (M)		0.1										●		
	DCGW 070202 H (M)		0.2										●		
	DCGW 07020 V (M)		0.0				●								
	DCGW 11T300 FN		0.03		●										
	DCGW 11T301 FN		0.1		●										
	DCGW 11T300 H (M)		0.03										●		
	DCGW 11T301 H (M)		0.1										●		
	DCGW 11T302 H (M)		0.2										●		
	DCGW 11T30 V (M)		0.0				●								
 CL ※2	DCGT 070201M CL		*0.08	●		●		●	●	●					
	DCGT 070202M CL		*0.18	●		●		●	●	●					
	DCGT 070204M CL		*0.38	●		●		●	●	●					
	DCGT 11T301M CL		*0.08	●		●		●	●	●					
	DCGT 11T302M CL		*0.18	●		●		●	●	●					
	DCGT 11T304M CL		*0.38	●		●		●	●	●					
 YL	DCGT 070201M YL		0.08			●				●					
	DCGT 070202M YL		0.18			●				●					
	DCGT 070204M YL		0.38			●				●					
	DCGT 11T300 YL		0.03					●	●						
	DCGT 11T301M YL		0.08	●		●		●	●	●					
	DCGT 11T302M YL		0.18	●		●		●	●	●					
	DCGT 11T304M YL		0.38	●		●		●	●	●					
	DCGT 11T308M YL		0.78	●		●		●	●	●					

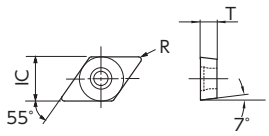
＊ Inserts having 01M, 02M or 04M as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2 or R=0.4 respectively.

※2 The specifications of CL chipbreaker are slightly different from the above dimensions, but it has no problem for machining.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

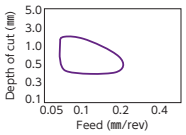
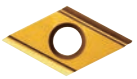
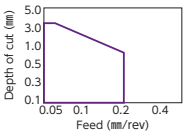
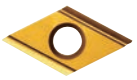
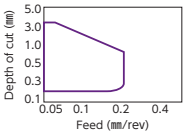
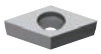
⟨TFD with Wiper edge⟩

Item Number	IC	T	Relief angle
TFD_07	6.35	2.38	7°
TFD_11	9.525	3.97	7°

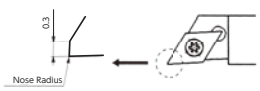


		P	M	K	N	S	H
Steel	P	●	●	●	●	●	●	●	●	●
Stainless Steel	M	●	●	●	●	●	●	●		●
Cast Iron	K							●		
Non-Ferrous Material	N		●		●	●				●
Heat Resistant Alloy	S	●		●		●	●	●		
Hardened Material	H	●		●			●	●		

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
AM3	TFD 11 FR 05 AM3	DCGT32.502AM3-WP	0.05			R			R	R					
	11 FR 15 AM3	32.506AM3-WP	0.15			R			R	R					
 S ※ R-hand shown	TFD 07 FR/L 05	DCGT21.502R/LS-WP	0.05		●	R	R								G25 G27
	07 FR/L 15	21.506R/LS-WP	0.15		●	R									
	TFD 11 FR 05	DCGT32.502RS-WP	0.05		R	R	R								
	11 FR 15	32.506RS-WP	0.15		R	R									
 U・U1 ※ R-hand shown	TFD 07 FR 05 U	DCGT21.502RU-WP	0.05		R	R	R								
	07 FR 15 U	21.506RU-WP	0.15		R	R									
	TFD 11 FR 05 U1	DCGT32.502RU1-WP	0.05		R	R	R								
	11 FR 15 U1	32.506RU1-WP	0.15		R	R									
 without chipbreaker	TFD 07 FR 05 H Ⓜ	DCGW21.502RH-WP	0.05										R	—	
	TFD 11 FR 05 H Ⓜ	DCGW32.502RH-WP	0.05										R		

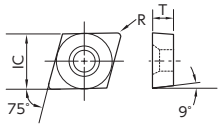
● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)



*Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.3mm 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, Y-SDJC, CH-SDUCL and DS-SDUL.

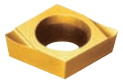
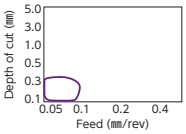
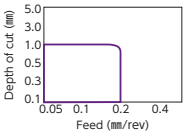
⟨75 degree Rhombic Positive type⟩

Item Number	IC	T	Relief angle
ER_T301	3.97	1.59	9°



		Carbide									
		PVD Coated							CVD Coated		
		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

● : 1st Choice
● : 2nd choice

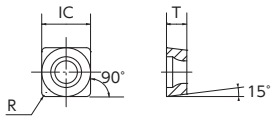
Shape	ISO Item Number	Inch Item Number	R	ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 A2 R-hand shown	ERGH T30102 FR/L A2	ERGP52Y-FR/L--A2	0.2		●		■	●							K27
	T30104 FR/L A2	521-FR/L--A2	0.4		L			●							
F1 ※ R-hand shown	ERGH T30101 FR/L F1	—	0.1	R		R		R							
	T30102 FR/L F1	—	0.2	R		R		R							
	T30104 FR/L F1	—	0.4	R		R		R							

※For F05, F1 and FG chipbreaker, right-hand inserts fit to right-hand toolholder.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

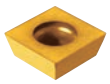
⟨90 degree Square Positive type⟩

Item Number	IC	T	Relief angle
SD_0602	6.35	2.38	15°



		Carbide									
		PVD Coated							CVD Coated		
		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

● : 1st Choice
● : 2nd choice

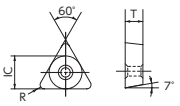
Shape	ISO Item Number	Inch Item Number	R	ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 without chipbreaker	SDEW 060202 FN		0.2		●									—	—

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨60 degree Triangle Positive type⟩

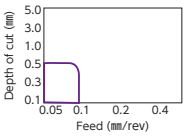
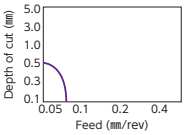
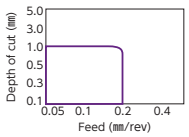
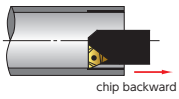
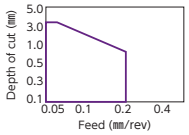
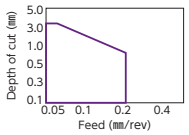
Item Number	IC	T	Relief angle
TC_0601	3.97	1.59	7°
TC_06T1	3.97	1.98	7°

Item Number	IC	T	Relief angle
TC_0902	5.56	2.38	7°
TC_1102	6.35	2.38	7°



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

● : 1st Choice
● : 2nd choice

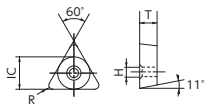
Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
K L-hand shown	TCGH 060102 F$^{R}_{L}$ K		0.2					L							
	060104 F$^{R}_{L}$ K		0.4					L							
B1 L-hand shown	TCGH 060102 F$^{R}_{L}$ B1	TCGP52Y-F$^{R}_{L}$--B1	0.2		L			L							K30 K31 K32
	060104 F$^{R}_{L}$ B1	521-F$^{R}_{L}$--B1	0.4		L			L							
F05 ※ R-hand shown	TCGH 060101 F$^{R}_{L}$ F05	TCGP521CF$^{R}_{L}$--F05	0.1	R		R		R						  chip backward	
	060102 F$^{R}_{L}$ F05	52Y-F$^{R}_{L}$--F05	0.2	R	●	R	■	●							
	060104 F$^{R}_{L}$ F05	521-F$^{R}_{L}$--F05	0.4	R	R	R	■	R							
S R-hand shown	TCGT 090201 $^{R}_{L}$ S		0.1		R		●								
	090202 $^{R}_{L}$ S		0.2		R										
	TCGT 110201 $^{R}_{L}$ S		0.1		R		●								
U R-hand shown	TCGT 090201 $^{R}_{L}$ U		0.1		R										G36
	090202 $^{R}_{L}$ U		0.2		R										
without chipbreaker	TCGW 06T108 FN		0.8		●									—	
	TCGW 090200 FN		0.03		●										
	090201 FN		0.1		●										
	TCGW 110200 FN		0.03		●										
	110201 FN		0.1		●										

※For F05 chipbreaker, right-hand inserts fit to right-hand toolholder.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

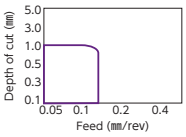
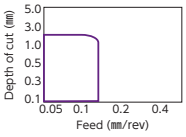
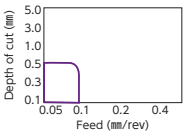
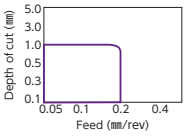
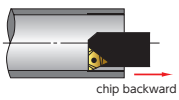
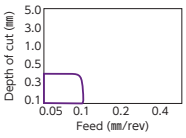
Item Number	IC	T	Relief angle
TP_0802	4.76	2.38	11°
TP_0902	5.56	2.38	11°
TP_1103	6.35	3.18	11°

〈60 degree Triangle Positive type〉



		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

● : 1st Choice
● : 2nd choice

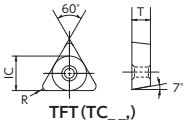
Shape	ISO Item Number	Inch Item Number	R	ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
B2・B3 L-hand shown	TPGH 090202 FR/L B2	TPGP73Y-FR/L--B2	0.2		L			L							
	090204 FR/L B2	731-FR/L--B2	0.4		L			L							
	090208 FR/L B2	732-FR/L--B2	0.8		L			L							
	TPGH 080202 FR/L B3	TPGP63Y-FR/L--B3	0.2		L			L							
	080204 FR/L B3	631-FR/L--B3	0.4		L			L							
K L-hand shown	TPGH 090202 FR/L K		0.2					L							K30 K31 K32
	090204 FR/L K		0.4					L							
	090208 FR/L K		0.8					L							
F1 ※ R-hand shown	TPGH 080202 FR/L F1	TPGP63Y-FR/L--F1	0.2		R		R	R						  chip backward	
	080204 FR/L F1	631-FR/L--F1	0.4		R		R	R							
	TPGH 090201 FR/L F1	TPGP731CFR/L--F1	0.1	R		R		R							
	090202 FR/L F1	73Y-FR/L--F1	0.2	R	R	R	R	R							
	090204 FR/L F1	731-FR/L--F1	0.4	R	R	R	R	R							
	090208 FR/L F1	732-FR/L--F1	0.8	R	R	R		R							
	TPGH 110302 FR/L F1	TPGH22Y-FR/L--F1	0.2	R	R	R	R	R							
	110304 FR/L F1	221-FR/L--F1	0.4	R	R	R	R	R							
	110308 FR/L F1	222-FR/L--F1	0.8	R	R	R		R							
FG ※ R-hand shown	TPGH 090202 R/L FG		0.2	R		R		R						 chip backward	
	090204 R/L FG		0.4	R		R		R							
	TPGH 110302 R/L FG		0.2	R		R		R							
	110304 R/L FG		0.4	R		R		R							

※For F1 and FG chipbreaker, right-hand inserts fit to right-hand toolholder.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨TFT with Wiper edge⟩

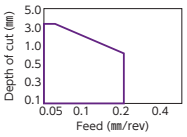
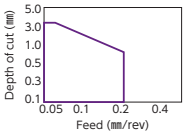
Item Number	IC	T	Relief angle
TFT_09	5.56	2.38	7°
TFT_11	6.35	2.38	7°



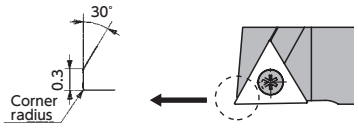
TFT (TC_ _)

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

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
S ※ R-hand shown	TFT 09 FR 05	TCGT7302RS-WP	0.05		●										G36
	09 FR 15	7306RS-WP	0.15		●										
	TFT 11 FR 05	TCGT21.502RS-WP	0.05		●										
	11 FR 15	21.506RS-WP	0.15		●										
	TFT 09 FL 05	TCGT7302LS-WP	0.05		●										
	09 FL 15	7306LS-WP	0.15		●										
U・U1 ※ R-hand shown	TFT 09 FR 05 U	TCGT7302RU-WP	0.05		●										
	09 FR 15 U	7306RU-WP	0.15		●										
	TFT 11 FR 05 U1	TCGT21.502RU1-WP	0.05		●										
	11 FR 15 U1	21.506RU1-WP	0.15		●										

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

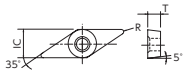


*Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.3mm flat on the cutting edge when the insert is set into the toolholder.
The flat on the cutting edge ensures a superior surface when feed rates are increased.
WP style inserts can be used in toolholders: STAC

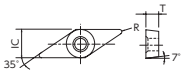
⟨35 degree Rhombic Positive type⟩

Item Number	IC	T	Relief angle
VB_1604	9.525	4.76	5°

Item Number	IC	T	Relief angle
VC_1103	6.35	3.18	7°
VC_1303	7.94	3.18	7°



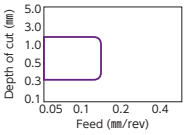
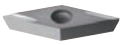
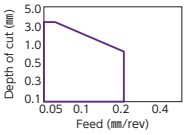
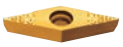
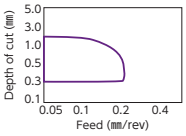
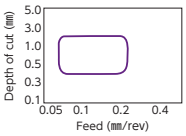
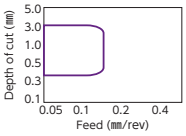
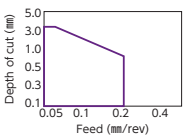
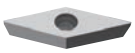
VB__



VC__

		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
YL	VBGT 160402 FN YL		0.2	●				●		●					—
	160404 FN YL		0.4	●				●		●					
	160408 FN YL		0.8	●				●		●					
 UHG R-hand shown	VCET 1103008 R/L UHG		0.08				R								G29 G31 G56
 AZ7	VCGT 110300 AZ7		0.03		●	●									
	110301M AZ7		*0.08		●	●									
	110302M AZ7		*0.18		●	●									
	110304M AZ7		*0.38		●	●									
AM3	VCGT 110300 FN AM3		0.03				●	●	●						
	110301 FN AM3		0.1		●		●								
	110302 FN AM3		0.2		●		●								
	110301M FN AM3		*0.08	●		●	●	●	●						
	110302M FN AM3		*0.18	●		●	●	●	●						
	110304M FN AM3		*0.38	●		●	●	●	●						
	VCMT 110302 FN AM3		0.2							●					
	110304 FN AM3		0.4							●					
2M R-hand shown	VCGT 130300 FR/L 2M		0.03							●					G29 G62
	130301 FR/L 2M		0.1							●					
U R-hand shown	VCGT 110300 R/L U		0.03		R		R								G29 G31 G56
	110301 R/L U		0.1		R		R								
	110302 R/L U		0.2		R		R								
	110301M R/L U		*0.08						R						
	110302M R/L U		*0.18						R						
 without chipbreaker	VCGW 110300 H Ⓜ		0.03										●		
	110301 H Ⓜ		0.1										●	—	
	110302 H Ⓜ		0.2										●		

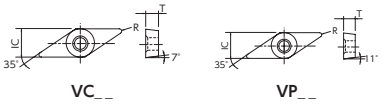
*Inserts having 01M, 02M or 04M as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2 or R=0.4 respectively.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨35 degree Rhombic Positive type⟩

Item Number	IC	T	Relief angle
VC_1102	6.35	2.38	7°
VC_1103	6.35	3.18	7°

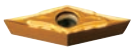
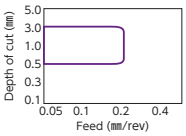
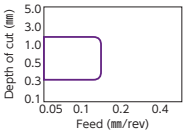
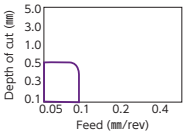
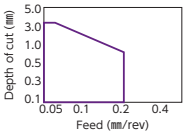
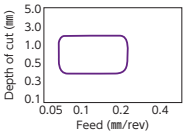
Item Number	IC	T	Relief angle
VP_0802	4.76	2.38	11°
VP_1103	6.35	3.18	11°



VC__ VP__

		ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CP1	CP7	KM1
Steel	P	●	●	●	●	●	●	●		●	●
Stainless Steel	M	●	●	●	●	●	●	●			●
Cast Iron	K								●		
Non-Ferrous Material	N		●		●	●					●
Heat Resistant Alloy	S	●		●		●	●	●			
Hardened Material	H	●		●			●	●			

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 CL ※2	VCGT 110202M CL		*0.18			●		●	●	●					G29
	VCGT 110301M CL		*0.08	●		●		●	●	●					
	110302M CL		*0.18	●		●		●	●	●					
YL	VCGT 110301M YL		0.08	●		●		●	●	●					G29 G31 G56
	110302M YL		0.18	●		●		●	●	●					
	110304M YL		0.38	●		●		●	●	●					
KHG R-hand shown	VPET 0802005 R/L KHG		0.05				●	R							
	0802008 R/L KHG		0.08				●	R	R						
	0802018 R/L KHG		0.18				●	R							
	080202 R/L KHG		0.2				●	R							
	VPET 1103005 R/L KHG		0.05				●	R							
	1103008 R/L KHG		0.08				●	R							
	1103018 R/L KHG		0.18				●	R							
	110302 R/L KHG		0.2				●	R							
UHG R-hand shown	VPET 0802008 R/L UHG		0.08						●						G33
AM3	VPGT 110300 FN AM3		0.03					●	●						
	110301M FN AM3		*0.08	●		●		●	●						
	110302M FN AM3		*0.18	●		●		●	●						

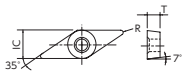
* Inserts having 01M, 02M or 04M as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2 or R=0.4 respectively.

※2 The specifications of CL chipbreaker are slightly different from the above dimensions, but it has no problem for machining.

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)

⟨TFV with Wiper edge⟩

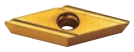
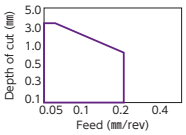
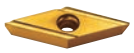
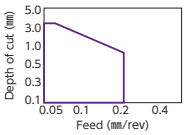
Item Number	IC	T	Relief angle
TFV_11	6.35	3.18	7°



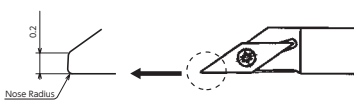
TFV(VC_ _)

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

● : 1st Choice
● : 2nd choice

Shape	ISO Item Number	Inch Item Number	R	Carbide: PVD Coated ST4	ZM3	QM3	VM1	TM4	DT4	DM4	CVD Coated CP1	CP7	KM1	Chip Control Range	For applicable holder, see pages:
 U	TFV 11 FR 05 U	VCGT2202RU-WP	0.05		●		●								G29 G31
	11 FR 10 U	2204RU-WP	0.10		●		●								
 Small flat on edge	TFV 11 FR 05 SX	VCGT2202RSX-WP	0.05		●		●								
	11 FR 10 SX	2204RSX-WP	0.10		●		●								

● : Standard stock ● : New standard stock ■ : Scheduled to be produced by order ★ : Standard stock (Specified)



*Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.2mm 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: SVJC

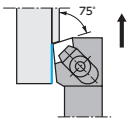
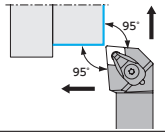
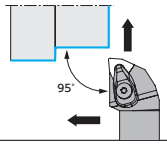
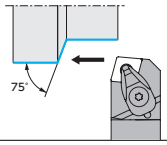
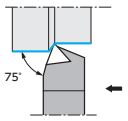
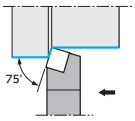
MEMO

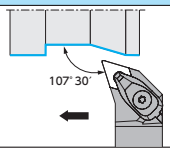
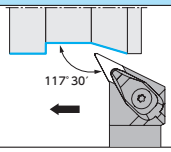
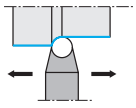
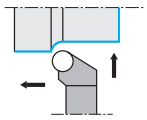
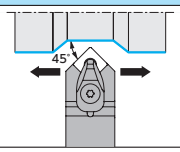
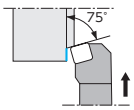
F

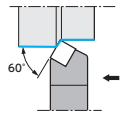
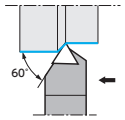
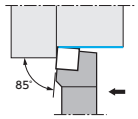
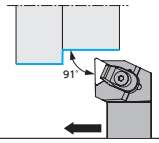
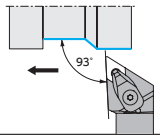
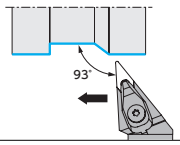
General Turning Toolholders

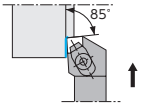
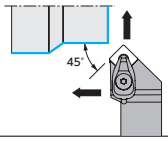
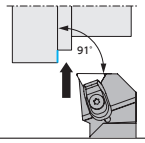
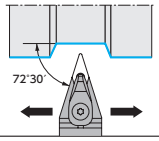
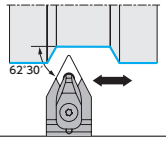
- Selection Guide ····· F2
- Holder Identification System ····· F4
- For CN.. Inserts ····· F8
- For DN.. Inserts ····· F12
- For SN.. Inserts ····· F16
- For TN.. Inserts ····· F22
- For VN.. Inserts ····· F26
- For WN.. Inserts ····· F28
- For RN.. Inserts ····· F30
- For CDH.. Inserts ····· F31
- For RCGX/RPGX.. Inserts ····· F32
- For RCGY.. Inserts ····· F33

Selection Guide

Lead Angle/ Insert shape		75° / CN□□	95° / CN□□	95° / WN□□	75° / CN□□	75° / TN□□	75° / SN□□
Tooling							
Perfect for Ceramic or CBN insert	Double clamp W Series		WCLN type ···**F8**	WWLM type ···**F28** WWLN-2 type ···**F28**	WCBN type ···**F10**		
	Clamp-on T Series		TCLN type ···**F8**		TCBN type ···**F10**		
	Dimple clamp H Series		HCLN type ···**F8**				
	Clamp-on C Series	CCKN type ···**F10**	C31 type /CCLN type ···**F8**		CCBN type ···**F10**	C23 type ···**F24**	C11 type ···**F18** C16 type ···**F18**
For insert in General	Lever lock P Series		PCLN type ···**F8**				PSBN type ···**F18**

Lead Angle/ Insert shape		107° 30' / DN	117° 30' / VN□□	Round R □□□		45° / SN□□	75° / SN□□
Tooling							
Perfect for Ceramic or CBN insert	Double clamp W Series	WDHN type ···**F14**	WVPN type ···**F26**			WSDN type ···**F16**	
	Clamp-on T Series					TSDN type ···**F16**	
	Dimple clamp H Series	HDHN type ···**F14**	HVPN type ···**F26**			HSDN type ···**F16**	
	Clamp-on C Series			C54 type /CRDN type ···**F30**	C55 type /CRGN type ···**F30**	C14 type /CSDN type ···**F16**	C15 type ···**F20**
For insert in General	Lever lock P Series					PSDN type ···**F16**	

60° / SN□□	60° / TN□□	85° / SN□□	91° / TN□□	93° / DN□□	93° / VN□□
					
			WTGN type ···**F22**	WDJN type ···**F12**	WVJN type ···**F26**
			TTGN type ···**F22**		
				HDJN type ···**F12**	HVJN type ···**F26**
C13 type ···**F18**	C24 type ···**F24**	CSHN type ···**F18**	C21 type ···**F22** C22 type ···**F22**	CDJN type ···**F12**	
				PDJN type ···**F12**	

85° / SN□□	45° / SN□□	91° / TN□□	72° 30' / VN□□	62° 30' / DN□□
				
	WSSN type ···**F16**	WTFN type ···**F24**	WVVN type ···**F26**	WDNN type ···**F14**
	TSSN type ···**F16**	TTFN type ···**F24**		
	HSSN type ···**F16**		HVVN type ···**F26**	HDNN type ···**F14**
C17 type ···**F20**	C12 type /CSSN type ···**F16**	C25 type ···**F24**		

Holder Identification System

Clamping System	Insert shape	Hand of tool	Shank Size (Height)	Shank Size (Width)	Other ID data
C : Clamp-on type (C type) P : Lever-lock type (P type) S : Screw-on type (S type) W : Double-clamp type (Multi Clamp Toolholders) T : Clamp-on type (Multi Clamp Toolholders) H : Dimple-clamp type (Multi Clamp Toolholders)	T : Triangle S : Square C : 80° rhombic D : 55° rhombic V : 35° rhombic R : Round	R : Right hand L : Left hand N : Neutral (Common for R and L)	Shank height indicated in "mm"	Shank width indicated in "mm"	Any ID symbol or number

C	C	L	N	R	25	25	M	12	

Approach Angle

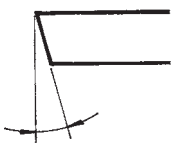
A	B	C	D	E	F
91°	75°	91°	45°	60°	91°

G	H	J	K	L	M
91°	107.5°	93°	75°	95° 95°	50°

N	P	R	S	T	U
62.5°	117.5°	75°	45°	60°	93°

V	W	X	Y
72.5°	60°	Special cutting edge	85°

Insert Relief Angle



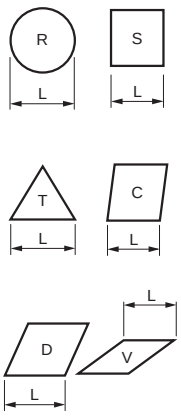
N : 0°	Negative
B : 5°	Positive
C : 7°	Positive
P : 11°	Positive
D : 15°	Positive
E : 20°	Positive

Length of toolholder

(mm)

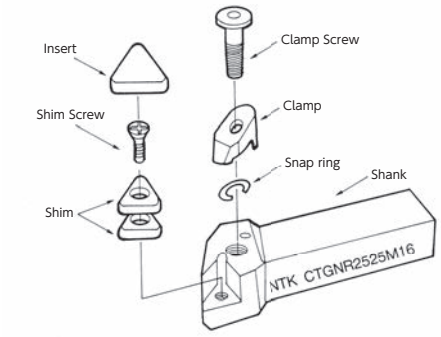
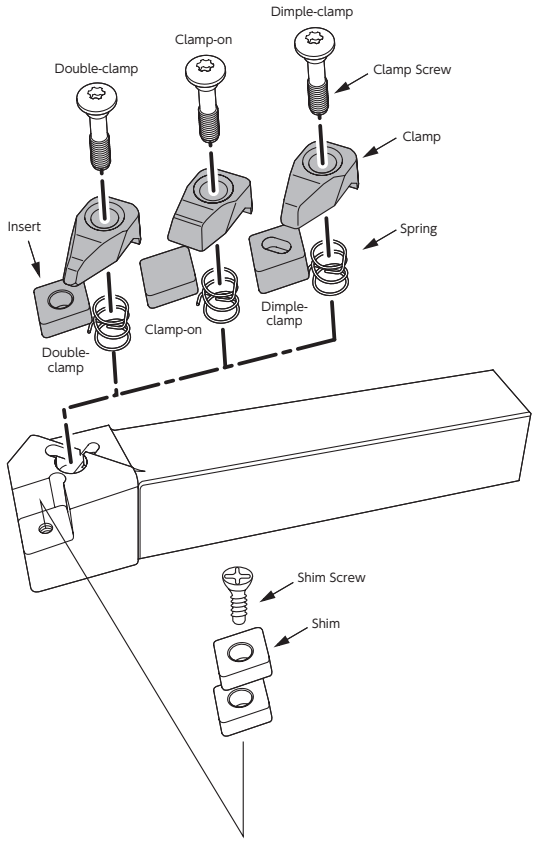
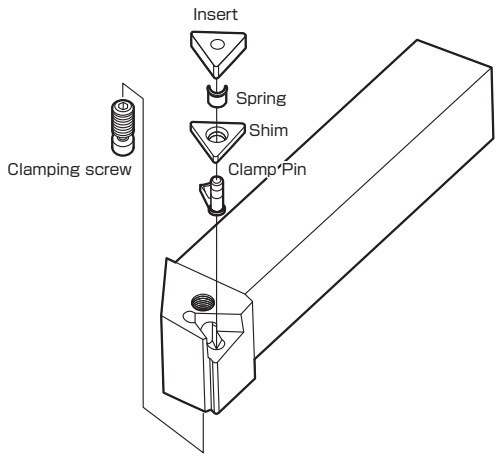
F: 80
H:100
K:125
L:140
M:150
N:160
P:170
Q:180
R:200
S:250

Insert size (cutting edge length)

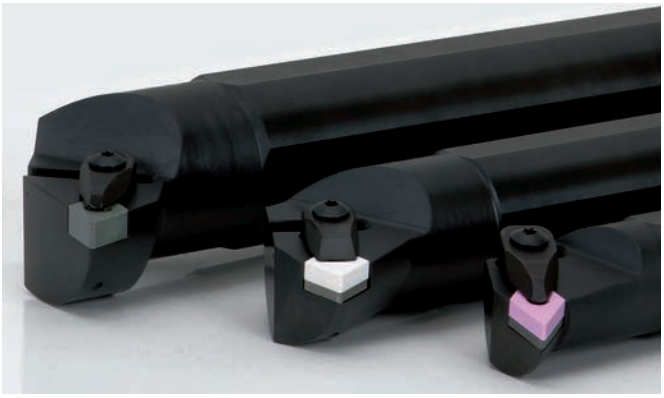


● The dimensions and specifications may be changed due to design improvement without notice.

Structures and Features of NTK Toolholders for General Turning

Series	Structure	Features
C type : Clamp-on		●Secures the insert with high clamping force ●Excellent in indexing accuracy ●Suitable for heavy-duty applications including interrupted cut machining ●Clamping system for ceramic cutting tools
W type : Double-clamp T type : Clamp-on H type : Dimple-clamp		●Shim screw clamping methods can be utilized by a simple clamp shim ●Best for ceramic tools, with stronger and more accurate clamping with the improved clamp system ●Prevents insert breakage by optimizing the clamping force ●Allows for highly accurate machining with highly repeatable accuracy ●Inserts can be easily changed as clamping is possible from the front and back of the tool
P type : Lever lock		●General-purpose toolholder ●Allows for smooth chip control without fouling any clamping mechanism ●For inserts of all material grades however not recommended for ceramics

Multi-Clamp Toolholders



Measurement result of clamping force by sheet.

Even and rigid clamping!!

	NTK's double clamp	Competitor's double clamp
Opposite side of cutting edge	Side	Side
Cutting edge side	Bottom	Bottom

(Tightening Torque 7.5Nm. Red part is clamped well.)

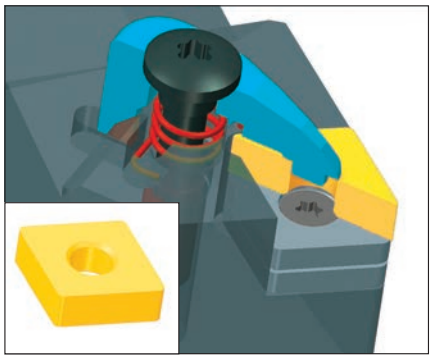
Features

- *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*

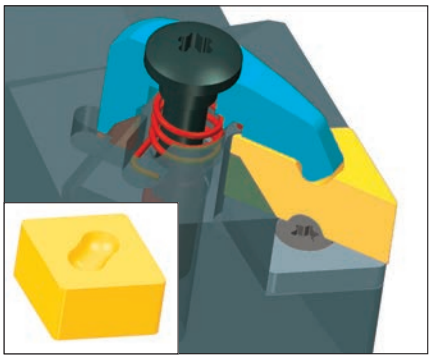
Clamp for various style of inserts available

Three types of inserts can be set by only changing the clamp.

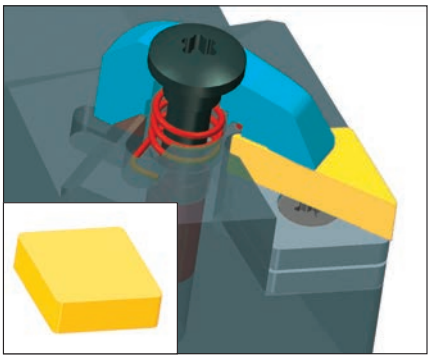
Double-clamp type



Dimple-clamp type



Clamp-on type



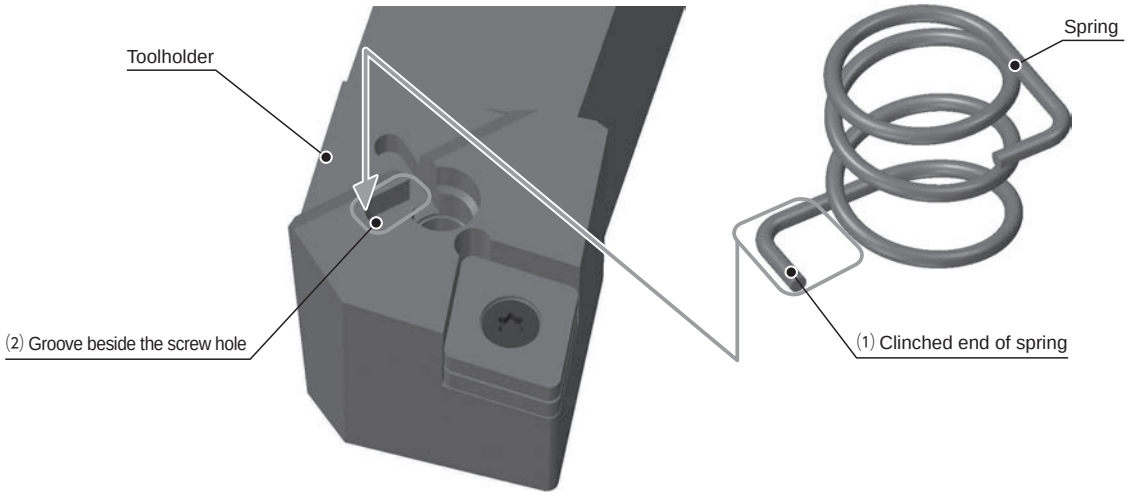
Instructions

▶Recommended tightening torque for setting insert is 7.5Nm when using Wrench LLR-T20 and 5.0Nm when using LLR-T15.
Excessive or insufficient tightening may result in inadequate clamping.

▶Change the clamp and remove one shim when using dimple insert as the thickness of compatible dimple insert is 7.94mm.

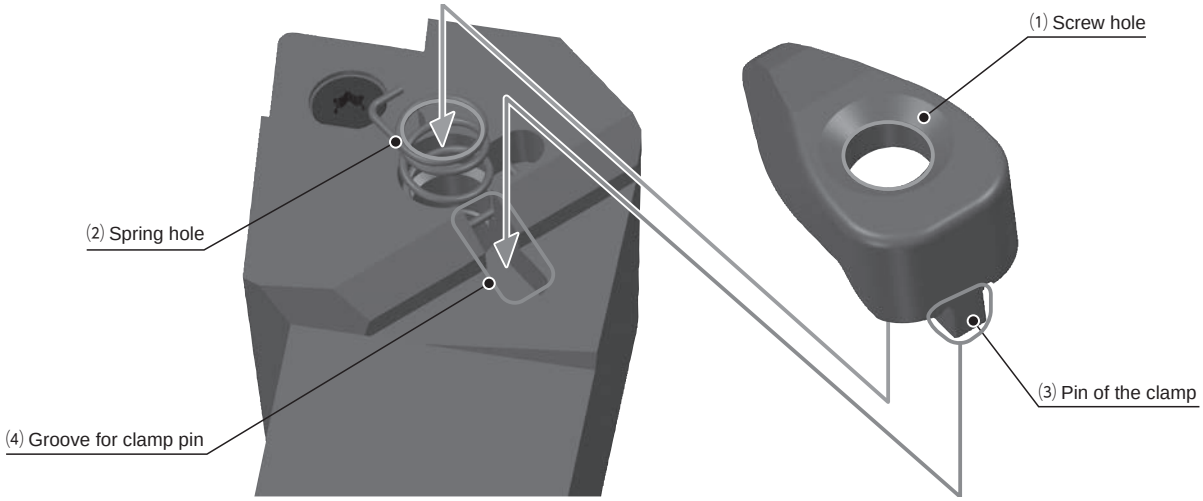
▼Follow the instructions below to put on a clamp.

1. Put the clinched end (1) of spring to the groove beside the screw hole (2).



2. To put the clamp on the toolholder, Put the pin (3) of the clamp into the groove (4) provided on the toolholder. Make sure that the screw hole (1) of the clamp and spring hole (2) on the toolholder are matched.

Caution : Confirm the clinching end of spring is in the groove 5 provided on underside of the clamp.

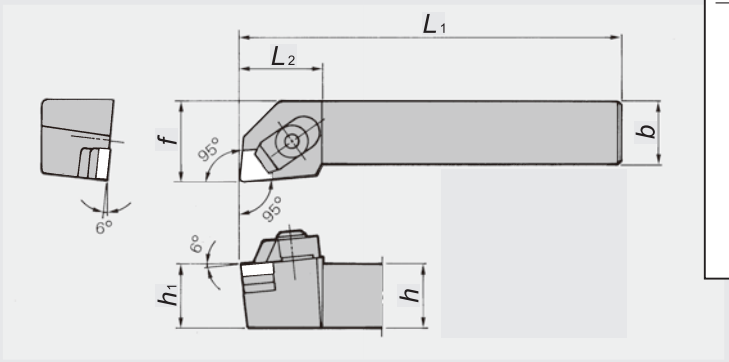


3. Finish up by tightening the screw.

CN.. Inserts

C31/CCLN

Clamp-on



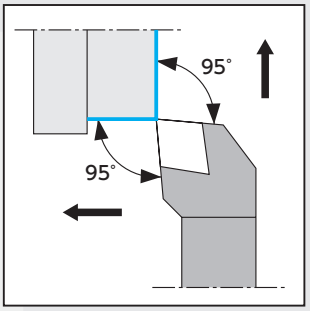
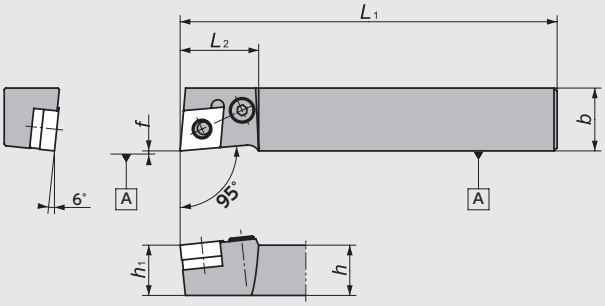


Figure-1

●Right-hand shown.

PCLN-N

Lever lock
Able to tighten both sides



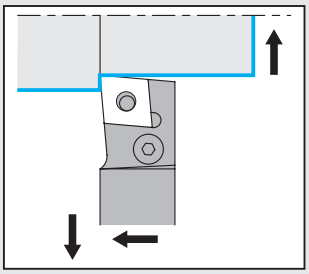
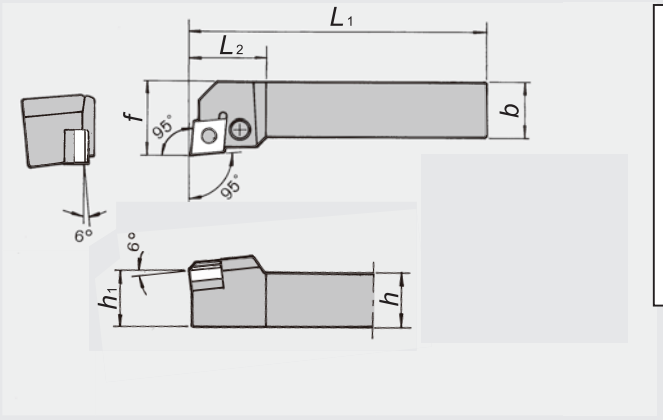


Figure-2

●Right-hand shown.

PCLN

Lever lock
Able to tighten both sides



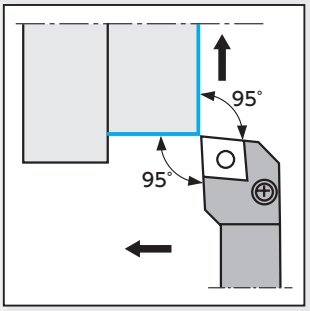


Figure-3

●Right-hand shown.

Multi-clamp holder

TCLN

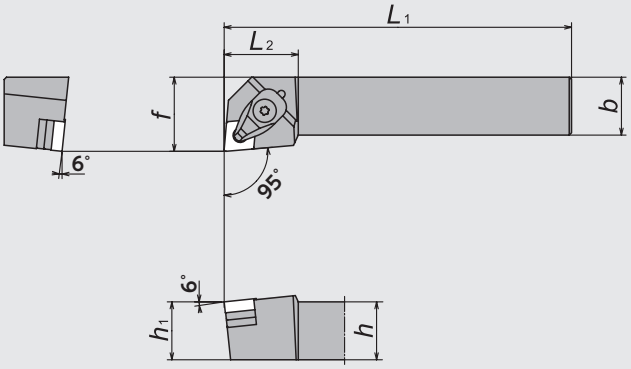
Clamp-on

WCLN

Double-Clamp

HCLN

Dimple-Clamp



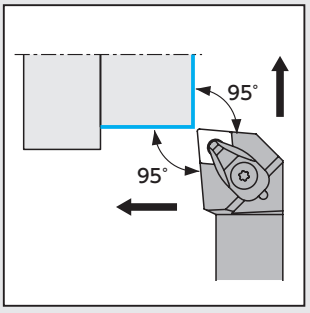


Figure-4

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1		5538293	C31R/L-33		●	19	19	140	19	25	32	CC08M※ (CC08W)	ACN422	BS0829W	M3＊12	LW-4	SR08
			-34			25	19	160	25	25	32			BS0835W			
	5538301	5538319	-44	●	●	25	25	160	25	32	32						
	5601422	5601430	-45	●	●	32	25	160	32	32	32						
	5700315	5700299	CCLNR/L3225P12	●	●	32	25	170	32	32	32						
2	5259056		PCLNR/L1620X43N	●		16	20	120	16	0.0	25	—	LSC42	Clamp Pin LCL4	Clamp Screw LCS4CA	LW-3	Spring LSP4
3	5321997	5322003	PCLNR/L2020K43	●	●	20	20	125	20	25	28	—	LSC42	Clamp Pin LCL4	Clamp Screw LCS4	LW-3	Spring LSP4
	5322011	5322029	2525M43	●	●	25	25	150	25	32	28						

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Dimensions of toolholders and spare parts / Multi-clamp holder

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
4	5701610	5701628	TCLNR/L2525M12	●	●	25	25	150	25	32	32	TC6CN Clamp-on	ACN423	AOS-6 ＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
	5701131	5701636	3225P12	●	●	32	25	170	32	32	32							
			3232P12			32	32	170	32	39	32							
	5682570	5682588	WCLNR/L2525M12	●	●	25	25	150	25	32	32	DC6CN Double-Clamp						
	5682604	5682612	3225P12	●	●	32	25	170	32	32	32							
			3232P12			32	32	170	32	39	32							
	5701149	5701156	HCLNR/L2525M12	●	●	25	25	150	25	32	32	HC6CN Dimple-Clamp						
	5701875	5701883	3225P12	●	●	32	25	170	32	32	32							
			3232P12			32	32	170	32	39	32							

※AOS-6*30WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	C31R/L…※ CCLNR/L12※	CN□N1204(1207)		E7
2	PCLNR/L…43N	CN□A1204 CN□G1204		E6・20・21・36
3	PCLNR/L…43	CN□A1204 CN□G1204		E6・20・21・36
4	TCKLNR/L…12※	CN□N1204(1207)		E7
	WCLNR/L…12※	CN□A1204(1207) CN□G1204(1207)		E6・20・21・36
	HCLNR/L…12	CN□X1207		E7

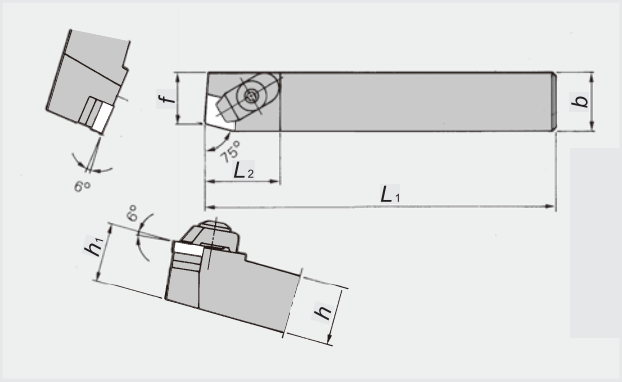
Multi-clampholder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

※A holder having the dimension "h" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

CN.. Inserts

CCBN

Clamp-on



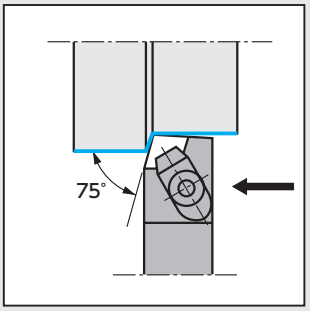
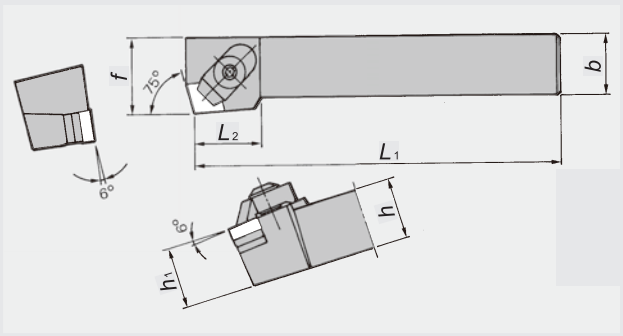


Figure-1

●Right-hand shown.

CCKN

Clamp-on



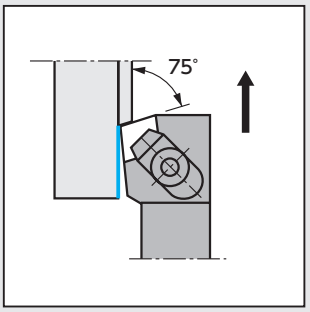


Figure-2

●Right-hand shown.

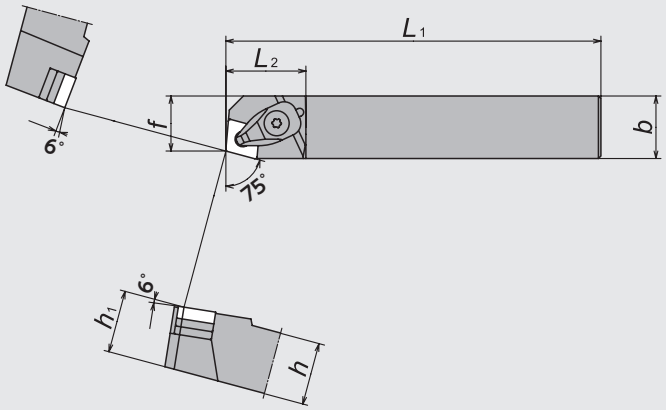
Multi-clamp holder

TCBN

Clamp-on

WCBN

Double-Clamp



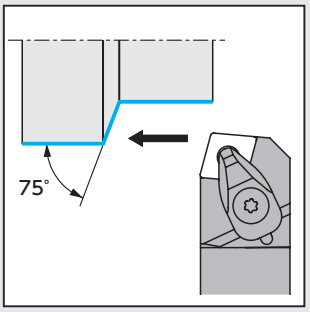


Figure-3

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1	5830617		**CCBNR/L2525M12**	●		25	25	150	25	22	32	CC08M※ (CC08W)	ACN422	BS0835W	M3＊12	LW-4	SR08
2	5613690		**CCKNR/L2525M12**	●		25	25	150	25	32	30						

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Dimensions of toolholders and spare parts / Multi-clamp holder

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
3	5701644	5701651	**TCBNR/L2525M12**	●	●	25	25	150	25	22	32	TC6CN Clamp-on	ACN423	AOS-6＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
			3225P12			32	25	170	32	22	32							
			3232P12			32	32	170	32	29	32							
	5682620	5682638	**WCBNR/L2525M12**	●	●	25	25	150	25	22	32	DC6CN Double-Clamp						
			3225P12			32	25	170	32	22	32							
			3232P12			32	32	170	32	29	32							

※AOS-6*30WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	**CCBNR/L2525M12**	CN□N1204 (1207)		**E7**
2	**CCKNR/L2525M12**			
3	**TCBNR/L…12**	CN□N1204 (1207)		**E7**
	WCBNR/L…12	CN□A1204 (1207) CN□G1204 (1207)		**E6 • 20 • 21 • 36**

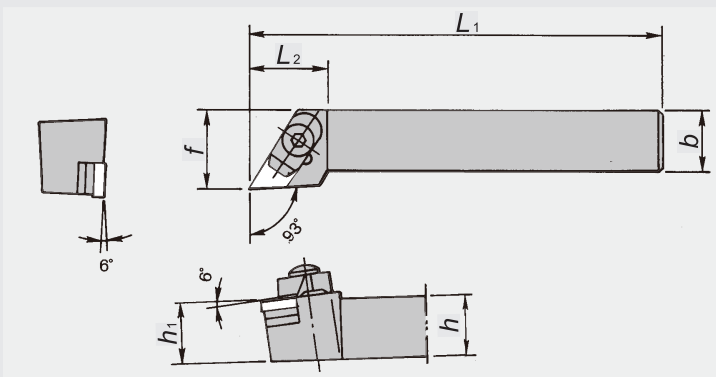
※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

Multi-clampholder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

DN.. Inserts

CDJN

Clamp-on



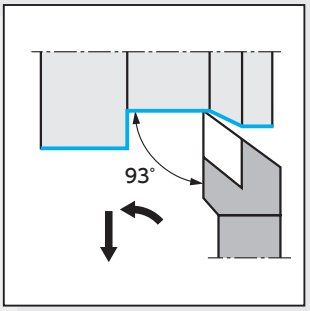
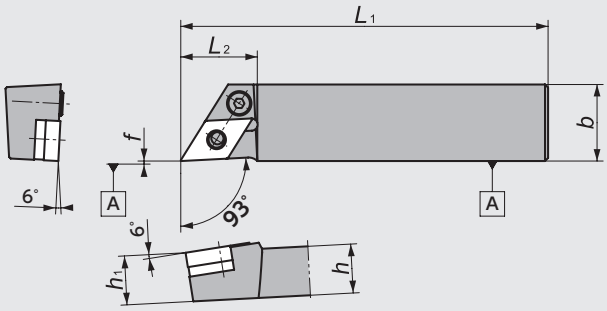


Figure-1

●Right-hand shown.

PDJN-N

Lever lock
Able to tighten both sides



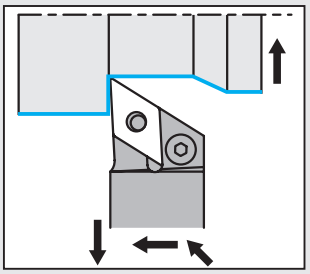
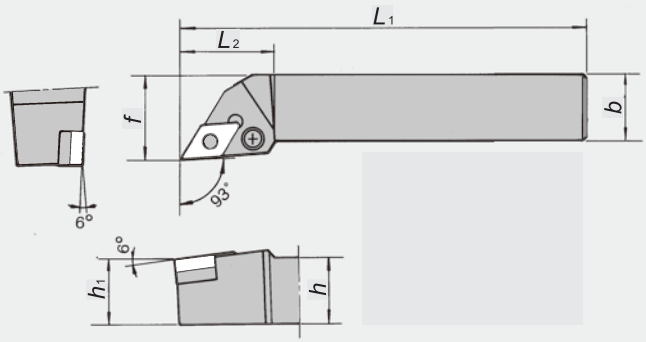


Figure-2

●Right-hand shown.

PDJN

Lever lock
Able to tighten both sides



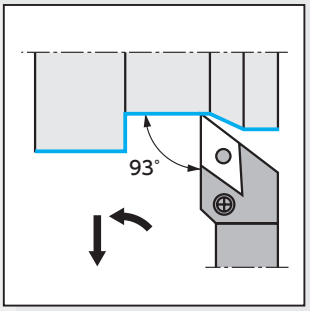


Figure-3

●Right-hand shown.

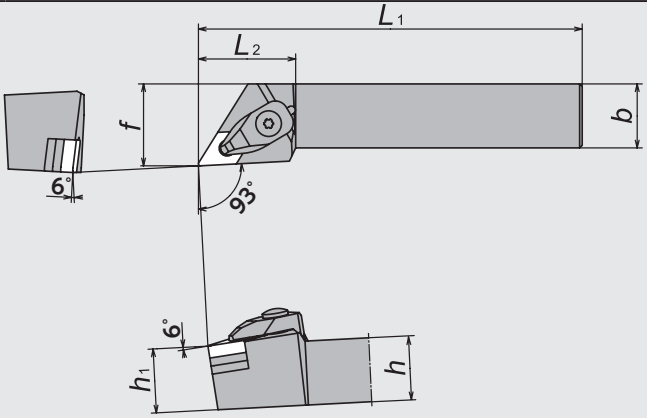
Multi-clamp holder

WDJN

Double-Clamp

HDJN

Dimple-Clamp



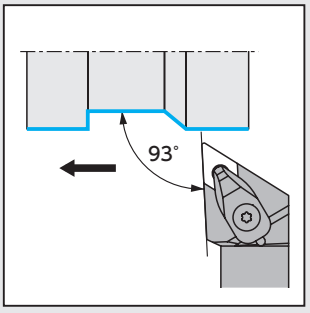


Figure-4

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1			**CDJNR/L2525M15**			25	25	150	25	32	32	CC08M※ (CC08W)	ADN422	BS0835W	M3＊12	LW-4	SR08
			3225P15			32	25	170	32	32	32						
2	5259072		**PDJNR/L1625X43N**	●		16	25	120	16	0.0	25	—	LSD42	Clamp Pin: LCL4	Clamp Screw: LCS4CA	LW-3	Spring: LSP4
3	5322037	5322045	**PDJNR/L2020K43**	●	●	20	20	125	20	25	32	—	LSD42	Clamp Pin: LCL4	Clamp Screw: LCS4	LW-3	Spring: LSP4
	5682463		**2525M43**	●		25	25	150	25	32	32	—	LSD42				

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Dimensions of toolholders and spare parts / Multi-clamp holder

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
4	5682729	5682737	**WDJNR/L2525M15**	●	●	25	25	150	25	32	38	DC6DN Double-Clamp	ADN423	AOS-6＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
	5682745	5682752	**3225P15**	●	●	32	25	170	32	32	38							
			3232P15			32	32	170	32	32	38							
	5701263	5701271	**HDJNR/L2525M15**	●	●	25	25	150	25	32	38	HC6DN Dimple-Clamp						
	5701289	5701297	**3225P15**	●	●	32	25	170	32	32	38							
			3232P15			32	32	170	32	39	38							

※AOS-6*30WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	**CDJNR/L···-15※**	DN□N1504 (1507)		**E8**
2	**PDJNR/L···43N**	DN□A1504 DN□G1504		**E8 • 22 • 23 • 36**
3	**PDJNR/L···43**	DN□A1504 DN□G1504		**E8 • 22 • 23 • 36**
4	**WDJNR/L···15※**	DN□A1504 (1507) DN□G1504 (1507)		**E8 • 22 • 23 • 36**
	HDJNR/L···15	DN□X1507		**E8**

Multi-clampholder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

DN.. Inserts

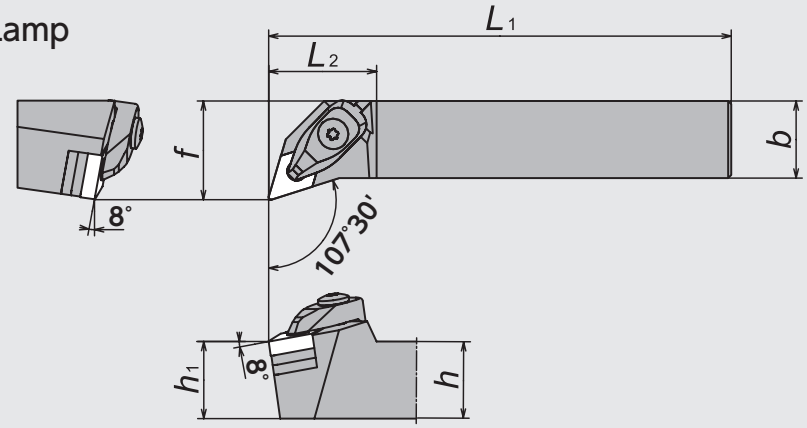
Multi-clamp holder

WDHN

Double-Clamp

HDHN

Dimple-Clamp



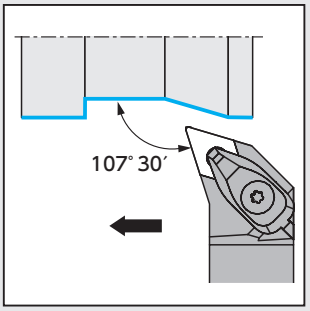


Figure-1

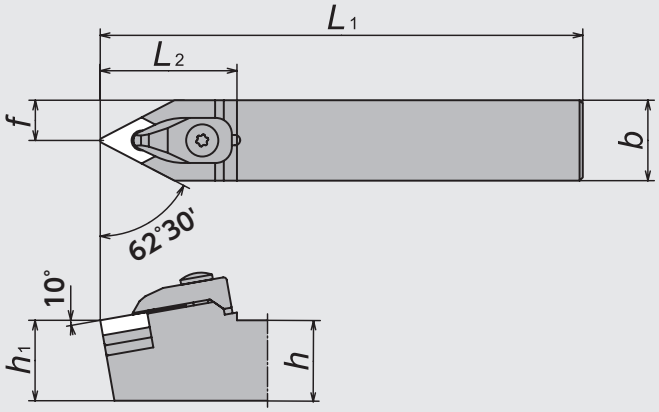
● Right-hand shown.

WDNN

Double-Clamp

HDNN

Dimple-Clamp



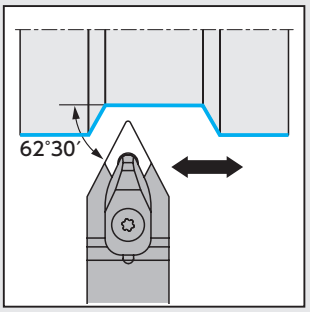


Figure-2

Dimensions of toolholders and spare parts / Multi-clamp holder

Figure	Code No. R (N)	Code No. L (N)	Item Number	Stock R (N)	Stock L (N)	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Snap ring
1	5682778	5682786	**WDHNR/L2525M15**	●	●	25	25	150	25	32	35	DC6DN Double-Clamp	ADN423	AOS-6 *30W※	FSS15-3.0*12	LLR-T20	LLR-T10	ASGL6-D
			3225P15			32	25	170	32	32	35							
			3232P15			32	32	170	32	39	35							
	5701313	5701321	**HDHNR/L2525M15**	●	●	25	25	150	25	32	35	HC6DN Dimple-Clamp						
			3225P15			32	25	170	32	32	35							
			3232P15			32	32	170	32	39	35							
2	5682760		**WDNNN2525M15**	●		25	25	150	25	12.5	42.5	DC6DN Double-Clamp	ADN423	AOS-6 *30W※ screw-able from both ends	FSS15-3.0*12	LLR-T20	LLR-T10	ASGL6-D
			3225P15			32	25	170	32	12.5	42.5							
			3232P15			32	32	170	32	16.0	42.5							
	5701305		**HDNNN2525M15**	●		25	25	150	25	12.5	42.5	HC6DN Dimple-Clamp						
			3225P15			32	25	170	32	12.5	42.5							
			3232P15			32	32	170	32	16	42.5							

※AOS-6*30WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	**WDHNR/L…15※**	DN□A1504 (1507)		**E8 • 22 • 23 • 36**
	HDHNR/L…-15	DN□X1507		**E8**
2	**WDNNN…15※**	DN□A1504 (1507)		**E8 • 22 • 23 • 36**
	HDNNN…15	DN□X1507		**E8**

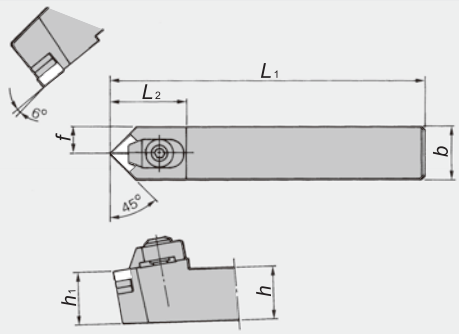
Multi-clampholder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

SN.. Inserts

C14/CSDN

Clamp-on



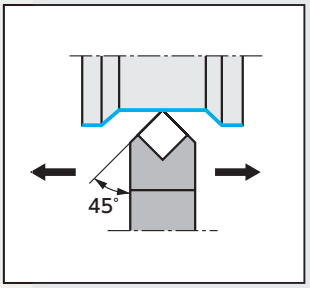
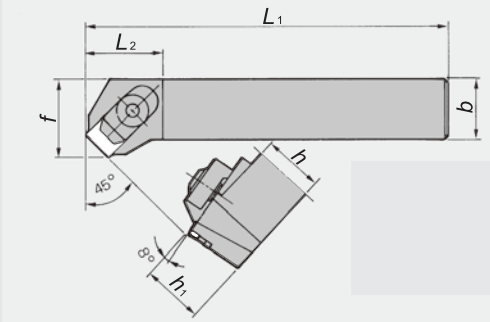


Figure-1

C12/CSSN

Clamp-on



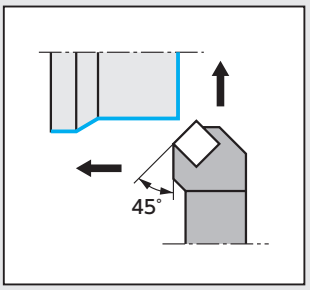
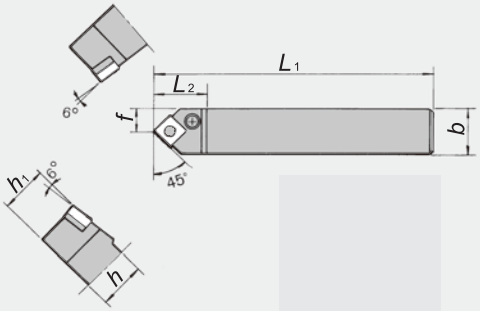


Figure-2

●Right-hand shown.

PSDN

Lever lock



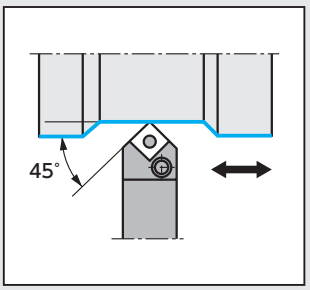


Figure-3

■ Multi-clamp holder

TSDN

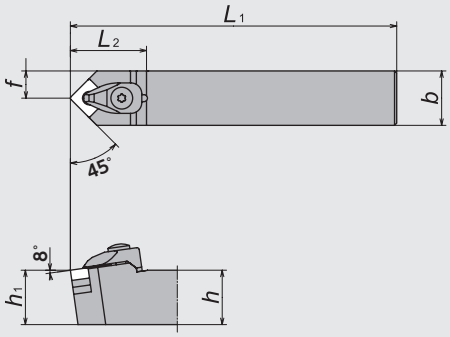
Clamp-on

WSDN

Double-Clamp

HSDN

Dimple-Clamp



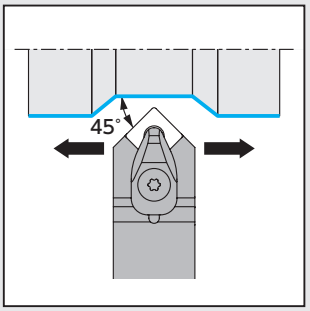


Figure-4

TSSN

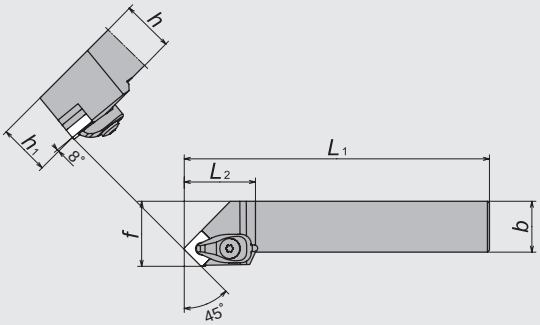
Clamp-on

WSSN

Double-Clamp

HSSN

Dimple-Clamp



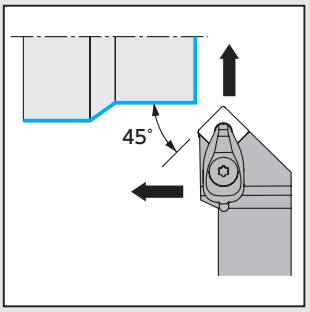


Figure-5

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R (N)	Code No. L (N)	Item Number	Stock R (N)	Stock L (N)	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1	5538327		**C14M-33**	●		19	19	140	19	9.5	35	CC08M※ (CC08W)	ASN423	BS0829W	M3＊12	LW-4	SR08
	5538335		**-34**	●		25	19	160	25	9.5	35			BS0835W			
	5538343		**-44**	●		25	25	160	25	12.5	35						
	5638036		**-45**	●		32	25	160	32	12.5	35						
	5700349		**CSDNN2525M12**	●		25	25	150	25	12.5	35						
2	5538178	5538186	**C12R/L-33**	●	●	19	19	140	19	27	28	CC08MS※ (CC08WS)	ASN423	BS0829W	M3＊12	LW-4	SR08
	5538194	5538202	**-44**	●	●	25	25	160	25	35	31	CC08M※ (CC08W)		BS0835W			
	5620869	5637277	**-45**	●	●	32	25	160	32	35	31						
		5700448	**CSSNR/L2525M12**		●	25	25	150	25	32	31						
		5857172	**3225P12**		●	32	25	170	32	32	31						
3	5523451		**PSDNN2020K43**	●		20	20	125	20	10	30	—	LSS42	Clamp Pin: LCL4	Clamp Screw: LCS4	LW-3	Spring: LSP4
	5764006		**2525M43**	●		25	25	150	25	12.5	30						

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Dimensions of toolholders and spare parts / Multi-clamp holder

Figure	Code No. R (N)	Code No. L (N)	Item Number	Stock R (N)	Stock L (N)	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
4	5701784		**TSDNN2525M12**	●		25	25	150	25	12.5	35	TC6CN Clamp-on	ASN423	AOS-6 ＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
	5701792		**3225P12**	●		32	25	170	32	12.5	35							
			3232P12			32	32	170	32	16	35							
	5682935		**WSDNN2525M12**	●		25	25	150	25	12.5	35	DC6CN Double-Clamp						
	5682943		**3225P12**	●		32	25	170	32	12.5	35							
			3232P12			32	32	170	32	16.0	35							
	5701503		**HSDNN2525M12**	●		25	25	150	25	12.5	35	HC6SN Dimple-Clamp						
	5701511		**3225P12**	●		32	25	170	32	12.5	35							
			3232P12			32	32	170	32	16	35							
5	5701768	5701776	**TSSNR/L2525M12**	●	●	25	25	150	25	32	35	TC6CN Clamp-on	ASN423	AOS-6 ＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
			3225P12			32	25	170	32	32	35							
			3232P12			32	32	170	32	39	35							
	5682901	5682919	**WSSNR/L2525M12**	●	●	25	25	150	25	32	35	DC6CN Double-Clamp						
			3225P12			32	25	170	32	32	35							
			3232P12			32	32	170	32	39	35							
	5701487	5701495	**HSSNR/L2525M12**	●	●	25	25	150	25	32	35	HC6SN Dimple-Clamp						
			3225P12			32	25	170	32	32	35							
			3232P12			32	32	170	32	39	35							

※AOS-6*30WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	**C14M-…※ CSDNN…12※**	SN□N1204 (1207)		**E10～11・24・37**
2	**C12R/L-…※ CSSNR/L…-12※**			
3	**PSDNN…43**	SN□A1204 SN□G1204		**E10～11・24・37**

Figure	Item Number	Insert		Listed on pages
4	**TSDNN…12※**	SN□N1204 (1207)		**E10～11・24・37**
	WSDNN…12※	SN□A1204 (1207) SN□G1204 (1207)		**E10～11・24・37**
	HSDNN…12	SN□X1207		**E11**
5	**TSDNN…12※**	SN□N1204 (1207)		**E10～11・24・37**
	WSDNN…12※	SN□A1204 (1207) SN□G1204 (1207)		**E10～11・24・37**
	HSDNN…12	SN□X1207		**E11**

Multi-Clamp holder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

SN.. Inserts

C13

Clamp-on

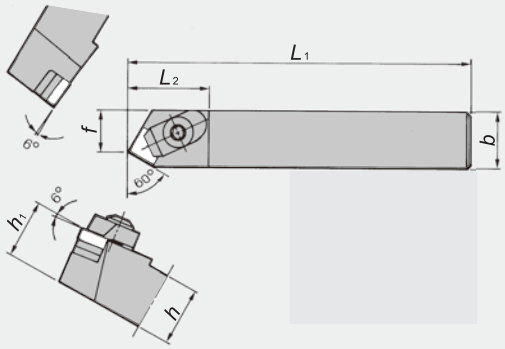
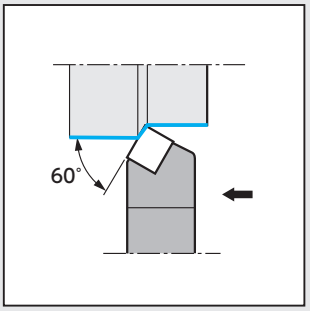


Figure-1



● Right-hand shown.

C11

Clamp-on

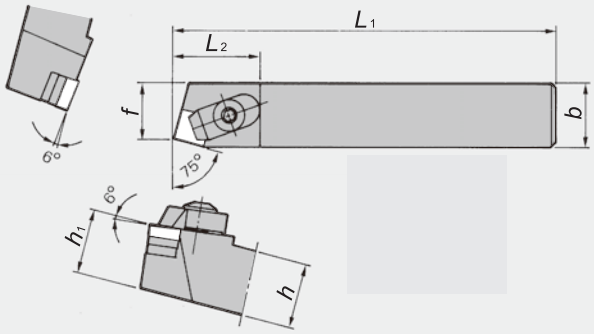
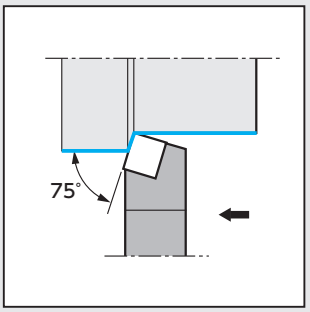


Figure-2



● Right-hand shown.

C16

Clamp-on

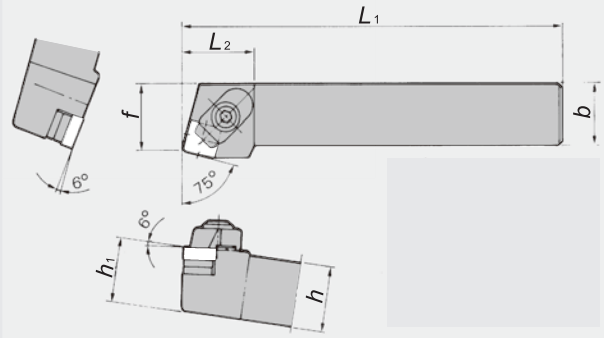
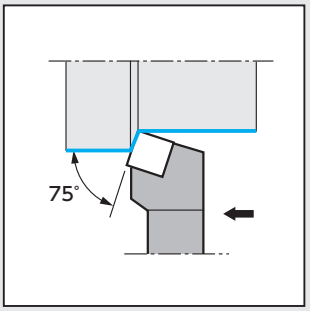


Figure-3



● Right-hand shown.

CSHN

Clamp-on

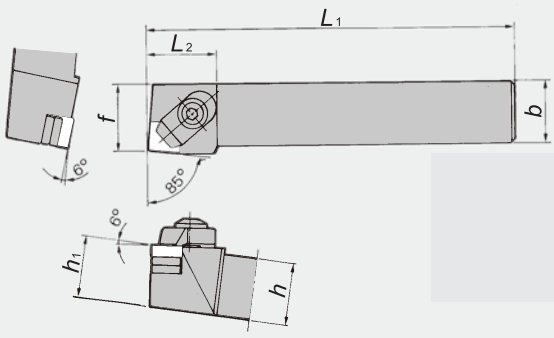
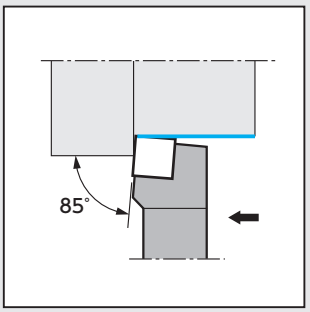


Figure-4



● Right-hand shown.

PSBN

Lever lock

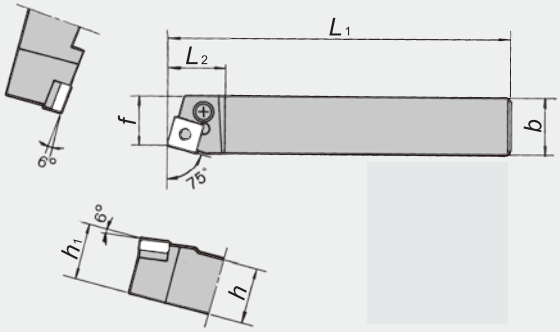
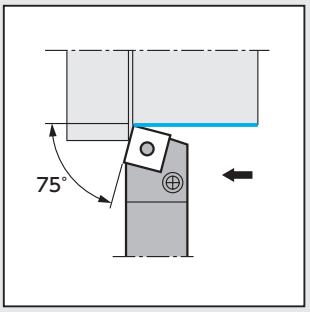


Figure-5



● Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1	5538244	5538251	**C13R/L-33**	●	●	19	19	140	19	12.5	35	CC08M※ (CC08W)	ASN423	BS0829W	M3＊12	LW-4	SR08
	5538269		**-34**	●		25	19	160	25	12.5	35			BS0835W			
	5538277	5538285	**-44**	●	●	25	25	160	25	18.5	35						
	5684816	5802863	**-45**	●	●	32	25	160	32	18.5	35						
2	5538608	5538616	**C11R/L-33**	●	●	19	19	140	19	15.5	34	CC08M※ (CC08W)	ASN423	BS0829W	M3＊12	LW-4	SR08
	5538624		**-34**	●		25	19	160	25	15.5	34			BS0835W			
	5538632	5538640	**-44**	●	●	25	25	160	25	21.5	34						
	5778170	5710876	**-45**	●	●	32	25	160	32	21.5	34						
3	5538350	5538368	**C16R/L-33**	●	●	19	19	140	19	22	32	CC08MS※ (CC08WS)	ASN423	BS0829W	M3＊12	LW-4	SR08
	5538376	5538384	**-44**	●	●	25	25	160	25	25	25			BS0835W			
	5684824	5746862	**-45**	●	●	32	25	160	32	25	25						
4	5692488	5692470	**CSHNR/L2525M12**	●	●	25	25	150	25	27	30	CC08M※ (CC08W)	ASN423	BS0835W	M3＊12	LW-4	SR08
5	5934518	5934492	**PSBNR/L2020K43**	●	●	20	20	125	20	17	28	—	LSS42	Clamp Pin LCL4	Clamp Screw LCS4	LW-3	Spring LSP4

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Applicable inserts

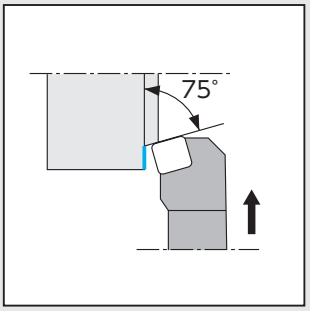
Figure	Item Number	Insert		Listed on pages
1	**C13…**※	SN□N1204 (1207)		**E10～11・24・37**
2	**C11…**※			
3	**C16…**※			
4	**CSHN…12**※			
5	**PSBN…43**	SN□A1204 SN□G1204		**E10～11・24・37**

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

SN.. Inserts

C15

Clamp-on



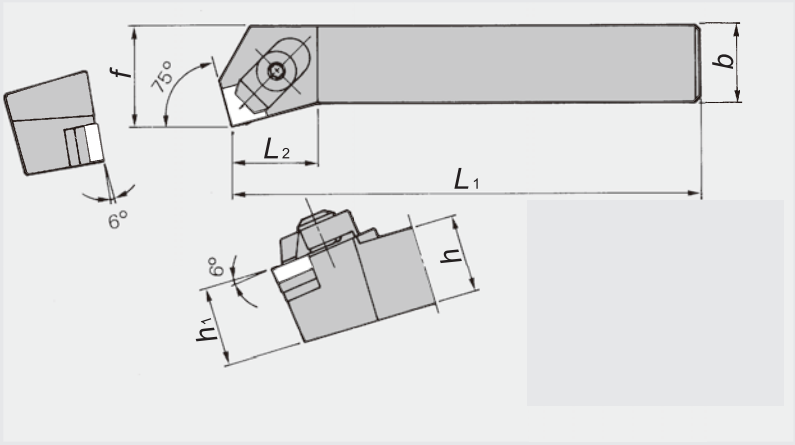
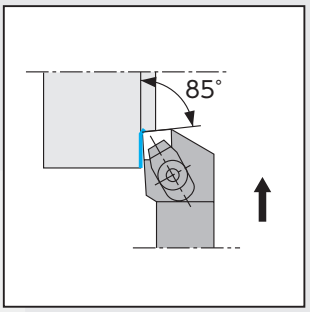


Figure-1

●Right-hand shown.

C17

Clamp-on



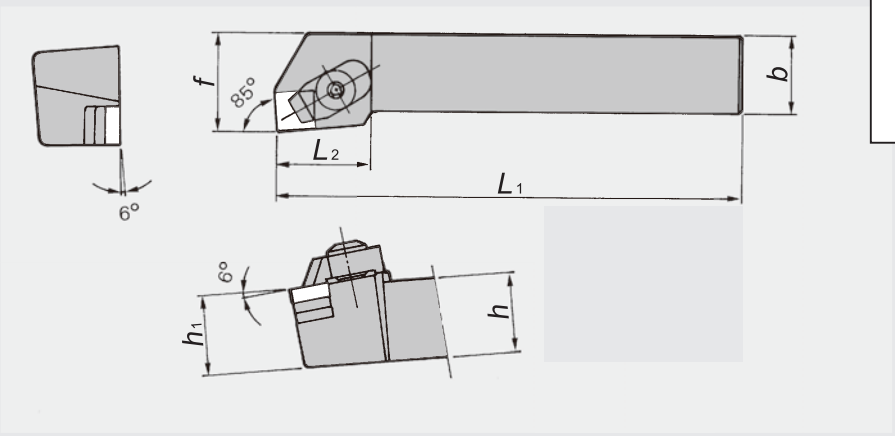


Figure-2

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1	5566070	5538210	C15R/L-33	●	●	19	19	140	19	25	29	CC08M※ (CC08W)	ASN423	BS0829W	M3＊12	LW-4	SR08
		5538228	-34		●	25	19	160	25	25	29			BS0835W			
	5538236	5576863	-44	●	●	25	25	160	25	31	28						
	5802848	5759865	-45	●	●	32	25	160	32	31	28						
2	5538145		C17R/L-33	●		19	19	140	19	24	30	CC08M※ (CC08W)	ASN423	BS0829W	M3＊12	LW-4	SR08
	5538152	5538160	-44	●	●	25	25	160	25	30	30			BS0835W			
	5755400	5743281	-45	●	●	32	25	160	32	30	30						

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Applicable inserts

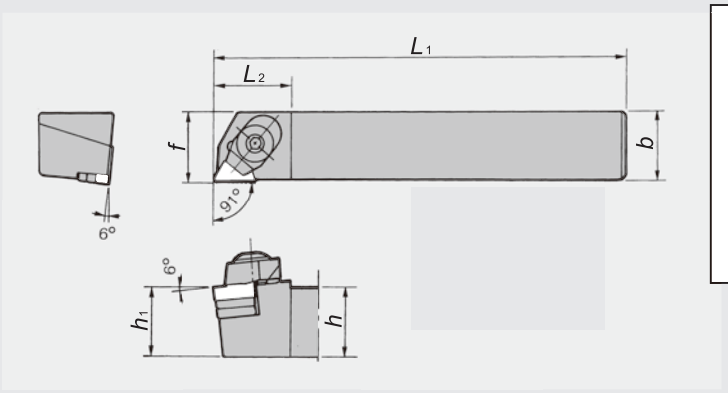
Figure	Item Number	Insert		Listed on pages
1	C15…※	SN□N1204 (1207)		E10～11・24・37
2	C17…※			

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

TN.. Inserts

C21

Clamp-on



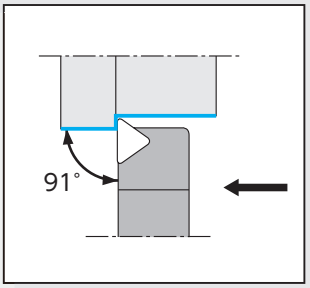
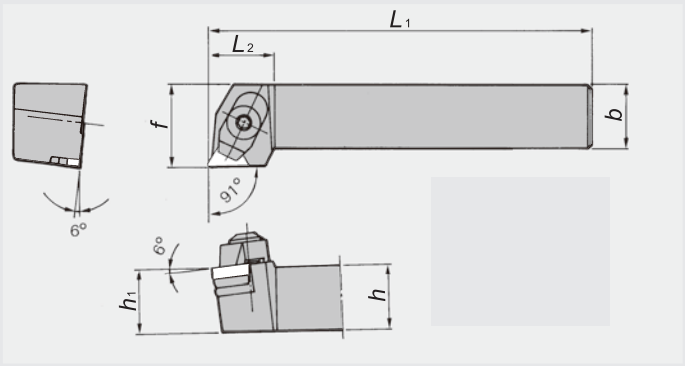


Figure-1

●Right-hand shown.

C22

Clamp-on



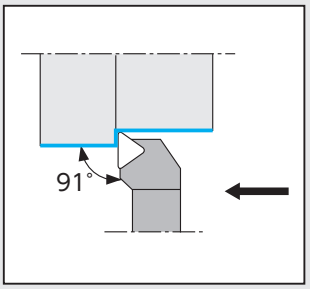
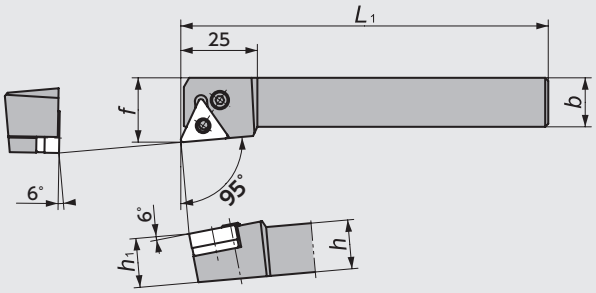


Figure-2

●Right-hand shown.

PTLN

Lever lock



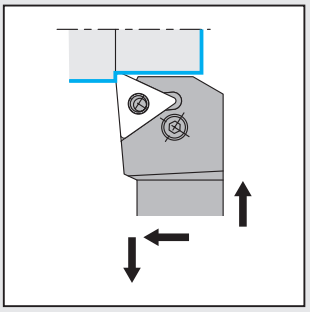


Figure-3

●Right-hand shown.

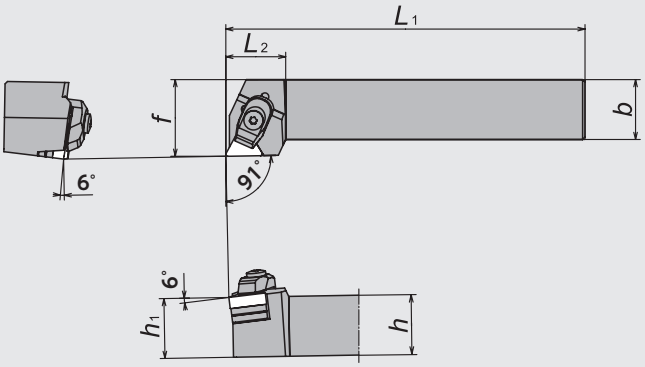
Multi-clamp holder

TTGN

Clamp-on

WTGN

Double-Clamp



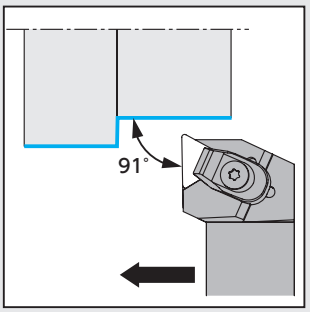


Figure-4

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1	5538426		**C21R/L-33**	●		19	19	140	19	19	28	CC08MS※ (CC08WS)	ATN323	BS0829W	M3＊12	LW-4	SR08
		5538434	**-34**		●	25	19	160	25	19	28			BS0835W			
	5538442	5538459	**-44**	●	●	25	25	160	25	25	28						
	5760558	5650411	**-45**	●	●	32	25	160	32	25	28						
2	5538467	5538475	**C22R/L-33**	●	●	19	19	140	19	25	25	CC08MS※ (CC08WS)	ATN323	BS0829W	M3＊12	LW-4	SR08
	5538483		**-34**	●		25	19	160	25	25	25			BS0835W			
	5538491	5538509	**-44**	●	●	25	25	160	25	30	25						
	5695630	5692231	**-45**	●	●	32	25	160	32	30	25						
3	5552336	5552344	**PTLNR/L2020L33**	●	●	20	20	140	20	25	25	—	LST317	Clamp Pin LCL3	Clamp Screw LCS3	LW-2.5	Spring LSP3

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Dimensions of toolholder and spare parts / Multi-clamp holder

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Snap ring
4	5701826	5701834	**TTGNR/L2525M16**	●	●	25	25	150	25	32	25	TC5TN Clamp-on	ATN 323	AOS-5 ＊26W※ screw-able from both ends	FSS15-3.0＊12	LLR-T15	LLR-T10	ASGL5-D
			3225P16			32	25	170	32	32	25							
			3232P16			32	32	170	32	39	25							
	5682976	5682984	**WTGNR/L2525M16**	●	●	25	25	150	25	32	25	DC5TN Double-Clamp						
			3225P16			32	25	170	32	32	25							
			3232P16			32	32	170	32	39	25							

AOS-5*26WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	**C21…**※	TN□N1604 (1607)		**E12～13・25～26・37**
2	**C22…**※			
3	**PTLN…33**	TN□A1604 TN□G1604		**E12～13・25～26・37**
4	**TTGNR/L…16**※	TN□N1604 (1607)		**E12～13・25～26・37**
	WTGNR/L…16※	TN□A1604 (1607)		**E12～13・25～26・37**

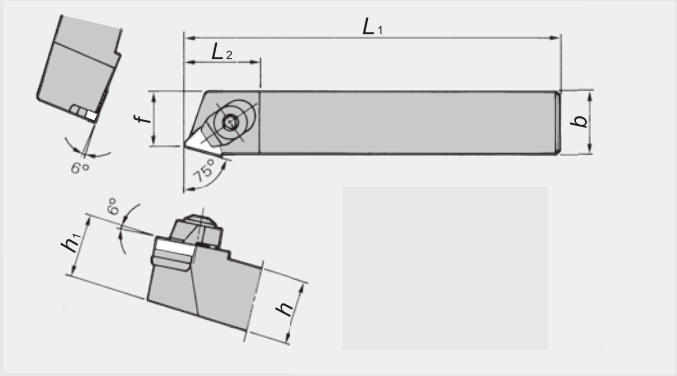
Multi-clampholder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

TN.. Inserts

C23

Clamp-on



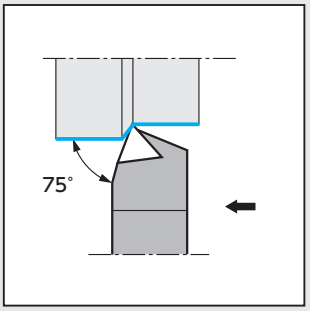
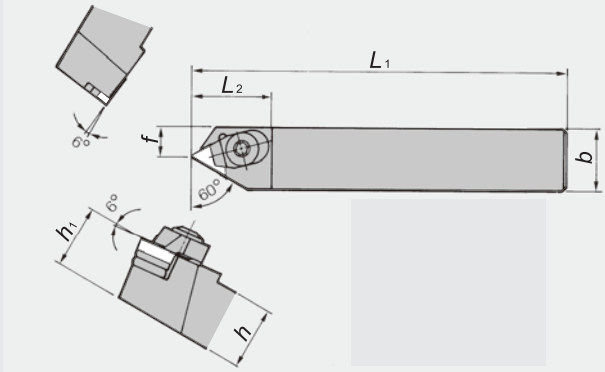


Figure-1

●Right-hand shown.

C24

Clamp-on



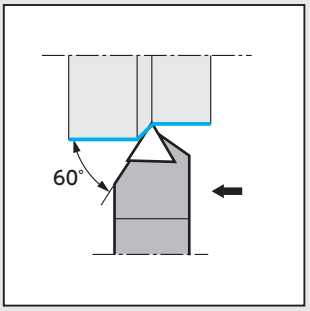
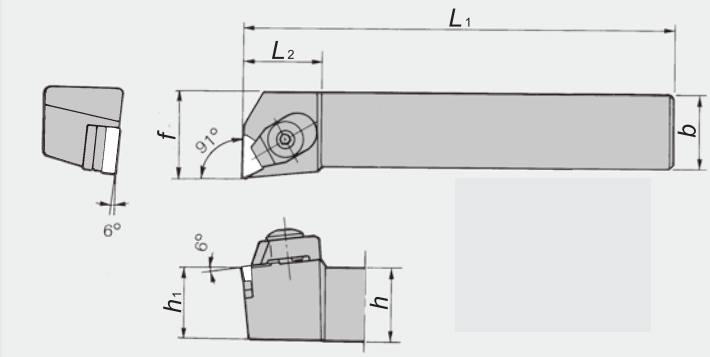


Figure-2

●Right-hand shown.

C25

Clamp-on



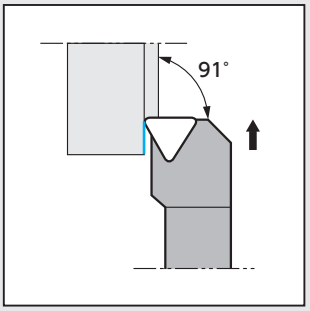


Figure-3

●Right-hand shown.

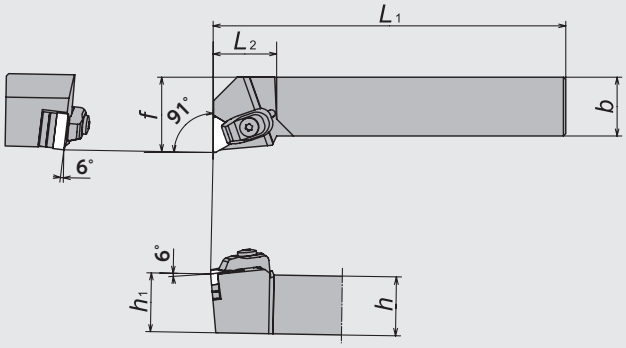
Multi-clamp holder

TTFN

Clamp-on

WTFN

Double-Clamp



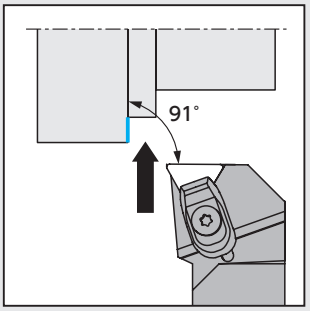


Figure-4

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1	5538541		C23R/L-33	●		19	19	140	19	14.5	30	CC08MS※ (CC08WS)	ATN323	BS0829W	M3＊12	LW-4	SR08
	5576939	5538558	-44	●	●	25	25	160	25	20.5	30			BS0835W			
2	5538517		C24R/L-34	●		25	19	160	25	10.5	32	CC08MS※ (CC08WS)	ATN323	BS0829W	M3＊12	LW-4	SR08
	5538525	5538533	-44	●	●	25	25	160	25	16.5	32			BS0835W			
3	5538566	5538574	C25R/L-33	●	●	19	19	140	19	25	25	CC08MS※ (CC08WS)	ATN323	BS0829W	M3＊12	LW-4	SR08
	5576954		-34	●		25	19	160	25	25	25			BS0835W			
	5538582	5538590	-44	●	●	25	25	160	25	30	28						
	5720875		-45	●		32	25	160	32	30	28						

※CC08W clamp incorporates a hard carbide facing to eliminate excessive wear from the chip flow.
※For other shank sizes, please contact us for more information.

Dimensions of toolholders and spare parts / Multi-clamp holder

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Snap ring
4	5701859	5701867	TTFNR/L2525M16	●	●	25	25	150	25	32	27	TC5TN Clamp-on	ATN 323	AOS-5 ＊26W※ screw-able from both ends	FSS15-3.0＊12	LLR-T15	LLR-T10	ASGL5-D
			3225P16			32	25	170	32	32	27							
			3232P16			32	32	170	32	39	27							
	5682992	5683008	WTFNR/L2525M16	●	●	25	25	150	25	32	27	DC5TN Double-Clamp						
			3225P16			32	25	170	32	32	27							
			3232P16			32	32	170	32	39	27							

AOS-5*26WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	C23···	TN□N1604(1607)		E12～13・25～26・37
2	C24···			
3	C25···	TN□N1604(1607)		E12～13・25～26・37
4	TTFNR/L····16	TN□N1604(1607)		E12～13・25～26・37
	WTFNR/L····16	TN□A1604(1607)		E12～13・25～26・37

Multi-clampholder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

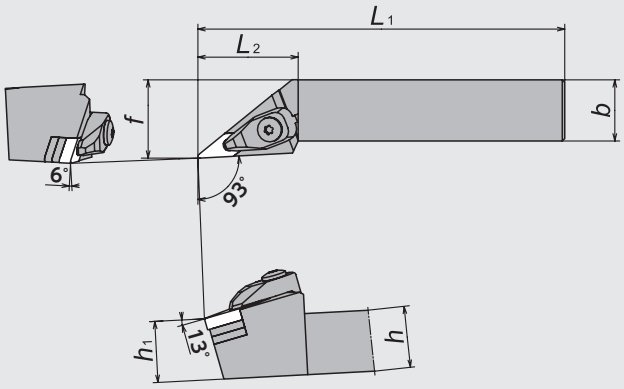
※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

VN.. Inserts

Multi-clamp holder

WVJN
Double-Clamp

HVJN
Dimple-Clamp



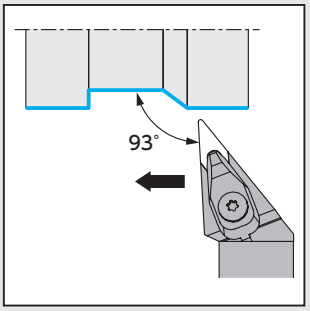
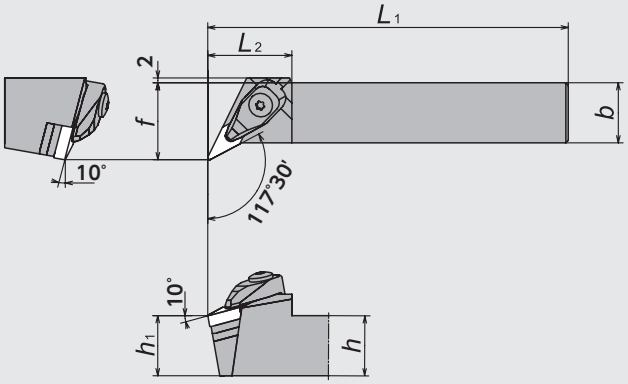


Figure-1

● Right-hand shown.

WVPN
Double-Clamp

HVPN
Dimple-Clamp



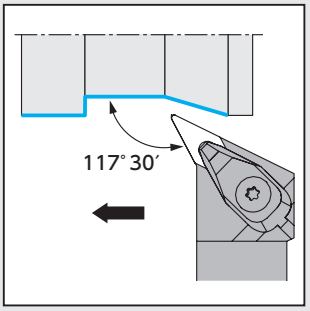
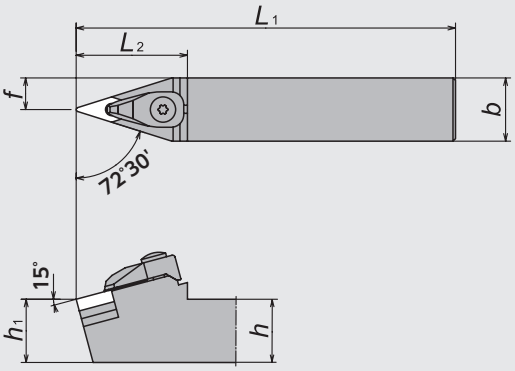


Figure-2

● Right-hand shown.

WVVN
Double-Clamp

HVVN
Dimple-Clamp



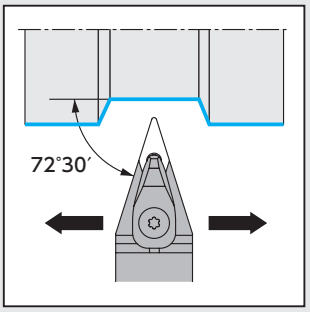


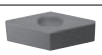
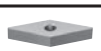
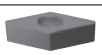
Figure-3

Dimensions of toolholders and spare parts / Multi-clamp holder

Figure	Code No. R (N)	Code No. L (N)	Item Number	Stock R (N)	Stock L (N)	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Snap ring
1	5682828	5682836	**WVJN[R/L]2525M16**	●	●	25	25	150	25	32	41	DC6VN Double-Clamp	AVN 323	AOS-6＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
	5682844	5682851	**3225P16**	●	●	32	25	170	32	32	41							
			3232P16			32	32	170	32	39	41							
	5701396	5701412	**HVJN[R/L]2525M16**	●	●	25	25	150	25	32	41	HC6VN Dimple-Clamp						
	5701420	5701438	**3225P16**	●	●	32	25	170	32	32	41							
			3232P16			32	32	170	32	39	41							
2	5682885	5682893	**WVPN[R/L]2525M16**	●	●	25	25	150	25	32	35	DC6VN Double-Clamp	AVN 323	AOS-6＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
			3225P16			32	25	170	32	32	35							
			3232P16			32	32	170	32	32	35							
	5701461	5701479	**HVPN[R/L]2525M16**	●	●	25	25	150	25	32	35	HC6VN Dimple-Clamp						
			3225P16			32	25	170	32	32	35							
			3232P16			32	32	170	32	39	35							
3	5682877		**WVVNN2525M16**	●		25	25	150	25	12.5	44	DC6VN Double-Clamp	AVN 323	AOS-6＊30W※ screw-able from both ends	FSS15-3.0＊12	LLR-T20	LLR-T10	ASGL6-D
			3225P16			32	25	170	32	12.5	44							
			3232P16			32	32	170	32	16	44							
	5701453		**HVVNN2525M16**	●		25	25	150	25	12.5	44	HC6VN Dimple-Clamp						
			3225P16			32	25	170	32	12.5	44							
			3232P16			32	32	170	32	16	44							

※AOS-6*30WH is an option for hexagonal hole type screw.

Applicable inserts

Figure	Item Number	Insert		Listed on pages
1	**WVJN[R/L]…※**	VN□A1604(1607) VN□G1604		**E14・27・38**
	HVJN[R/L]…	VNGX1607		—
2	**WVPN[R/L]…※**	VN□A1604(1607) VN□G1604		**E14・27・38**
	HVPN[R/L]…	VNGX1607		—
3	**WVPN[R/L]…※**	VN□A1604(1607) VN□G1604		**E14・27・38**
	HVPN[R/L]…	VNGX1607		—

Multi-clampholder
Just changing the clamps enables the holder to clamp pin type, flat or dimple style inserts.

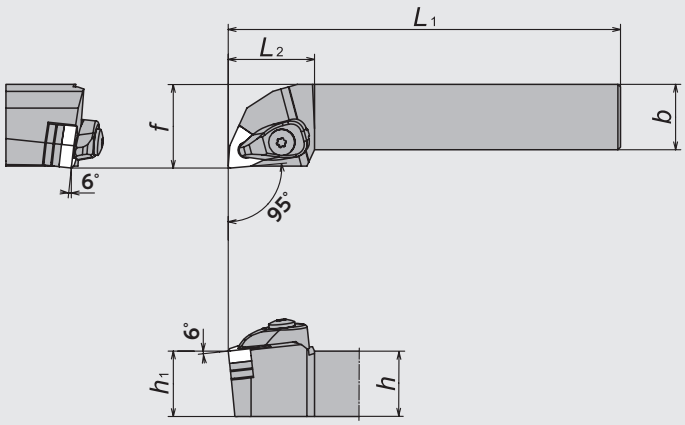
※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

WN.. Inserts

Multi-clamp holder

WWLN

Double-Clamp



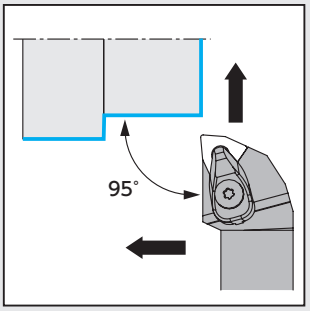
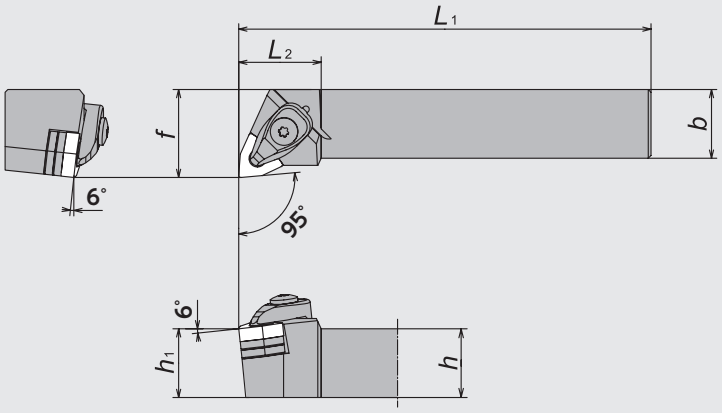


Figure-1

●Right-hand shown.

WWLN-2

Double-Clamp



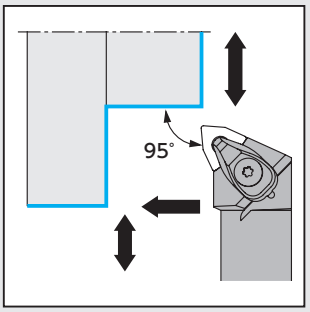


Figure-2

●Right-hand shown.

Dimensions of toolholders and spare parts / NEW Multi-clamp holder

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
1	5683016	5683024	**WWLNR/L2525M08**	●	●	25	25	150	25	32	33	DC6CN Double-Clamp	AWN423-W	AOS-6 * 30W screw-able from both ends	FSS15-3.0 * 12	LLR-T20	LLR-T10	ASGL6-D
			3225P08			32	25	170	32	32	33							
			3232P08			32	32	170	32	40	33							
2	5701578	5701586	**WWLNR/L2525M08-2**	●	●	25	25	150	25	32	30	DC6CN Double-Clamp	AWN423-W	AOS-6 * 30W screw-able from both ends	FSS15-3.0 * 12	LLR-T20	LLR-T10	ASGL6-D
			3225P08-2			32	25	170	32	32	30							
			3232P08-2			32	32	170	32	40	30							

Applicable inserts

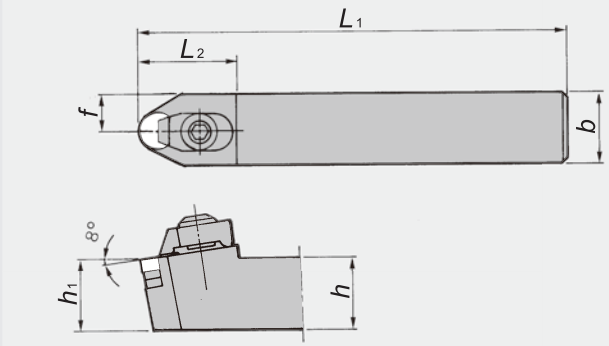
Figure	Item Number	Insert		Listed on pages
1	**WWLNR/L…**	WN□A0804 WN□G0804		**E14 • 38**
2	**WWLNR/L…-2**			

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

RN.. Inserts

C54/CRDN

Clamp-on



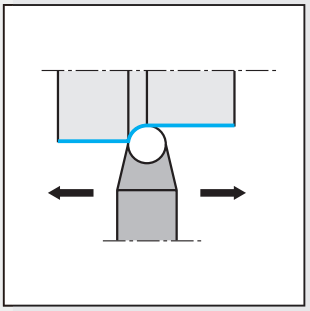
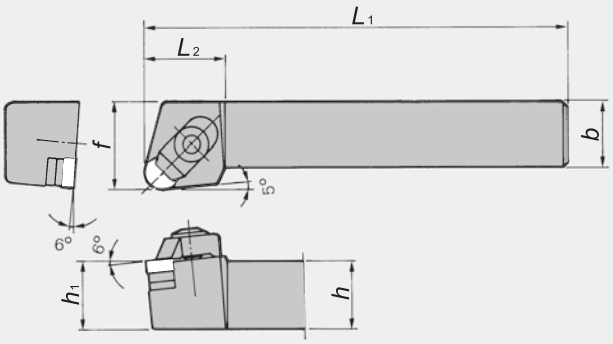


Figure-1

C55/CRGN

Clamp-on



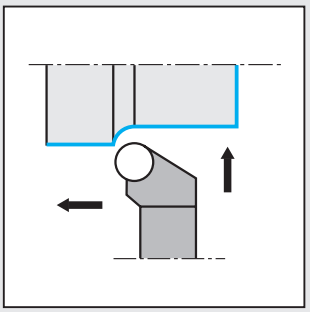


Figure-2

●Right-hand shown.

Dimensions of toolholders and spare parts

Figure	Code No. R (N)	Code No. L	Item Number	Stock R (N)	Stock L	h	b	L_1	h_1	f	L_2	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Snap ring
1	5538392		**C54M-44**	●		25	25	160	25	12.5	33	CC08M	ARN42	BS0835W	M3＊12	LW-4	SR08
	5700323		**CRDNN2525M12**	●		25	25	150	25	12.5	34						
	5700331		**3225P12**	●		32	25	170	32	12.5	34						
2	5538400		**C55R/L-33**	●		19	19	140	19	28	30	CC08M	ARN42	BS0829W	M3＊12	LW-4	SR08
	5573027	5538418	**-44**	●	●	25	25	160	25	30	30			BS0835W			
	5768221		**-45**	●		32	25	160	32	30	30						
	5829395		**CRGNR/L3225P12**	●		32	25	170	32	32	30						

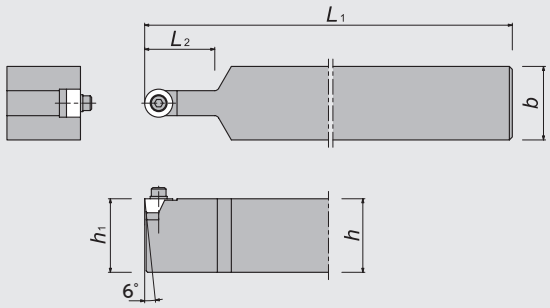
Applicable inserts

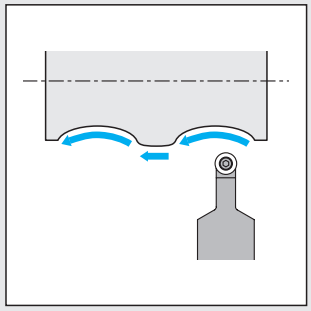
Figure	Item Number	Insert		Listed on pages
1	**C54M-···**	RN□N1204 (1207)		**E9 • 23**
	CRDNN···12			
2	**C55R/L-···**			
	CRGNR/L···-12			

※A holder having the dimension "*h*" of 25 or greater comes with two shim seats. An insert "7.94-mm thick" can be also mounted by removing one of the shim seats.

CDH.. Inserts

HRCD





●Right-hand shown.

Dimensions of toolholders

Code No.	Item Number	Stock	Dimensions (mm)					insert	
R N L		R N L	*h*	*b*	L_1	h_1	L_2		
5454921	**HRCD-22**	●	50	50	300	50	30		CDH22
5144274	**-33**	●					50		CDH33
5454947	**-42**						80		CDH42
5844113	**-43**						80		CDH43
	-53						100		CDH53

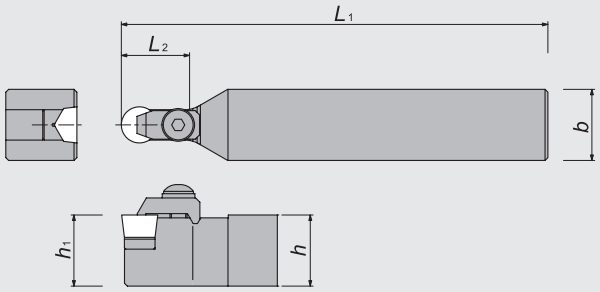
Inserts ➡ E17 • L26

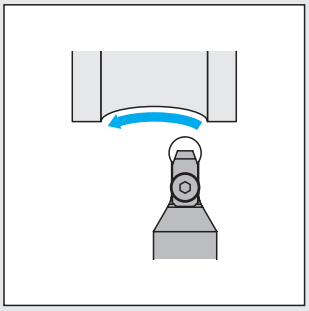
Spare parts

Parts / Toolholder	Clamp Screw	Washer	Shim	Wrench (for Clamp Screw)
HRCD-22	CS0316	W120	HACDH22	LW-2.5
HRCD-33	CS0625	W110	HACDH33	LW-5
HRCD-42	1/4-20UNC＊11/4	W106	HACDH42	LWU-4
HRCD-43	1/4-20UNC＊11/2		HACDH43	
HRCD-53	3/8-16UNC＊11/2	W107	HACDH53	LWU-5

RCGX/RPGX.. Inserts

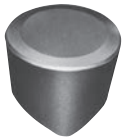
CRDC





●Right-hand shown.

Dimensions of toolholders

Code No. R N L	Item Number	Stock R N L	Dimensions (mm) h	b	L_1	h_1	L_2	insert	
5720750	**CRDCN2525M06**		25	25	150	25	20		※RCGX/RPGX0607(08)
5478706	**2525M09**								※RCGX/RPGX0907(08)
5691613	**2525M12**								※RCGX/RPGX1207(08)
5911557	**3225P06**	●	32		170	32			※RCGX/RPGX0607(08)
5829528	**3225P09**	●							※RCGX/RPGX0907(08)
5829510	**3225P12**	●					25		※RCGX/RPGX1207(08)
5634241	**3232P15**			32			30		RCGX/RPGX1510

※Both of thickness 07&08 can be used.

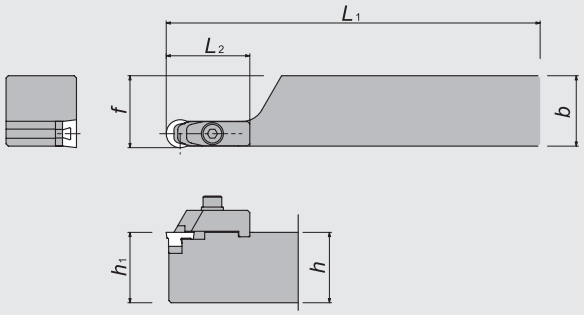
Inserts ➡ E17 • L18 • L27

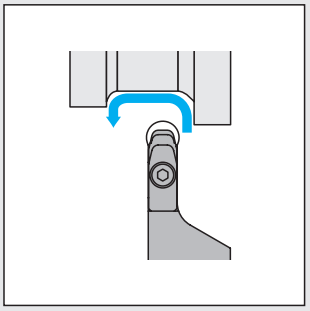
Spare parts

Parts / Toolholder	Clamp Screw	Washer	Shim	Clamp	Spring pin	Wrench (for Clamp Screw)
			(A) (B)			
CRDCN3225P06	BS0520	WS-5	HARCGX06 (A)	HC35KR-4099	—	LW-3
CRDCN3225P09	BS0625	WS-6	HARCGX0908V (B)	HC35KR-6075	2＊8AW	LW-4
CRDCN3225P12			HARCGX1208V (B)	HC35KR-6076	2.5＊8AW	

RCGY.. Inserts

CRXC





● Right-hand shown.

Dimensions of toolholders

Code No.			Item Number	Stock			Dimensions (mm)						insert	
R	N	L		R	N	L	*h*	*b*	L_1	h_1	*f*	L_2		
5981469			**CRXCR/L3232P09Y**	●			32	32	170	32	32.7	28		RCGY090603
5981188			**3232P12Y**	●								38		RCGY120603

Inserts ➡ E17 • L22

Spare parts

Parts / Toolholder	Clamp Screw	Washer	Shim	Shim Screw	Spring	Clamp	Wrench (for Clamp Screw)
CRXCR3232P09Y	CS0425	WS-4	HAR09Y	M2＊8	ASGL4	CRN4	LW-3
CRXCR3232P12Y	CS0525	WS-5	HAR12Y	M3＊8	ASGL5	CRN5	LW-4

MEMO

G

Unique Swiss Tooling

Tooling for Swiss-type Lathes G2

Spare Parts - Wrenches ····· G4
Clamp Screws and Wrenches ····· G5
Holder and inserts Combination ····· G6

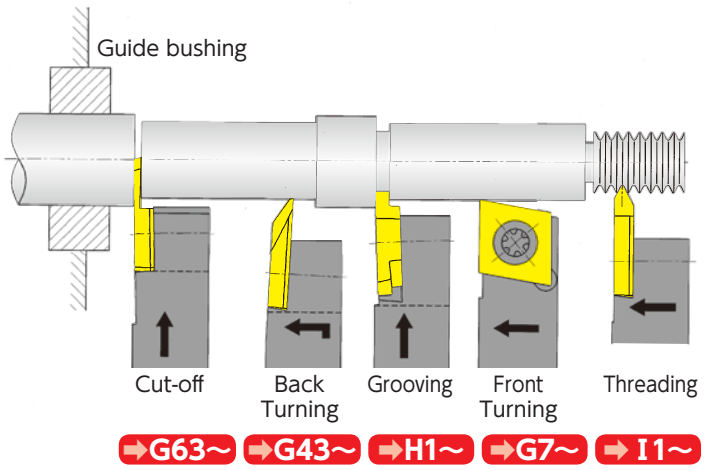
Front Turning G7

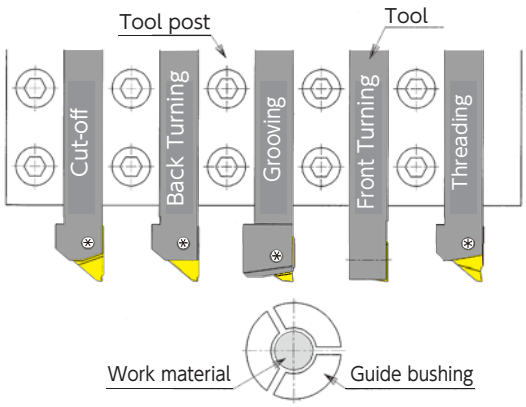
Back Turning G43

Cut-off G63

Original Series G93

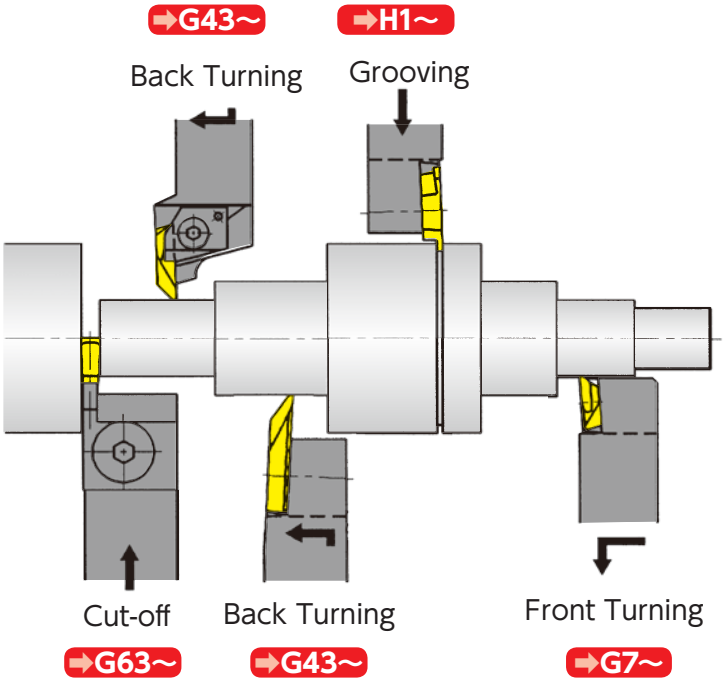
Tooling example for a small CNC automatic lathe (gang type)

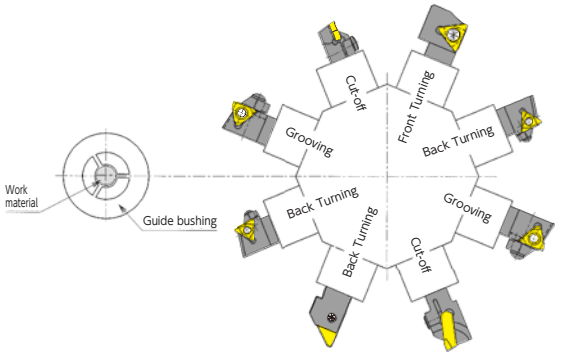




Tooling for gang type tool post

Tooling example for a small CNC automatic lathe (turret type)

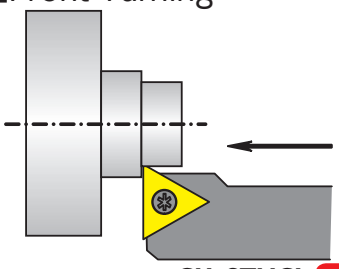




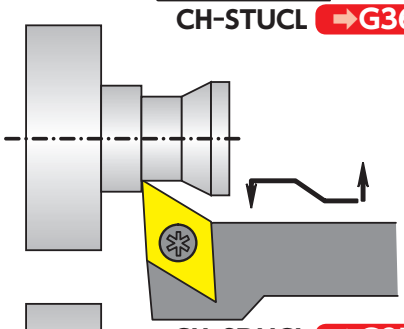
Tooling for turret type tool post

Tooling example for a small CNC automatic lathe (horizontal gang style)

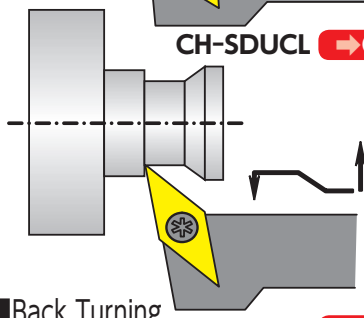
■Front Turning



CH-STUCL ➡G36



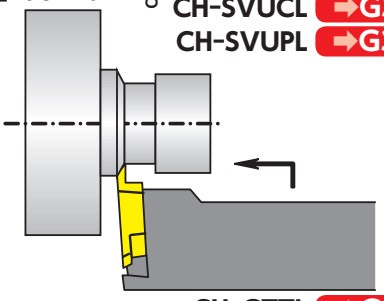
CH-SDUCL ➡G25



■Back Turning

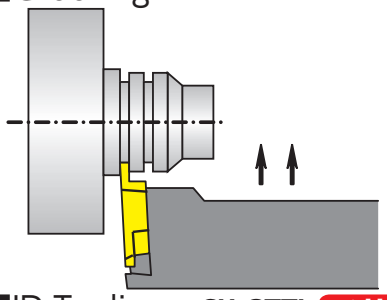
CH-SVUCL ➡G31

CH-SVUPL ➡G33

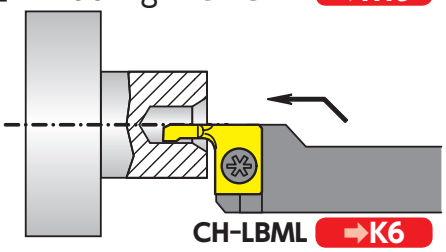


CH-GTTL ➡G61

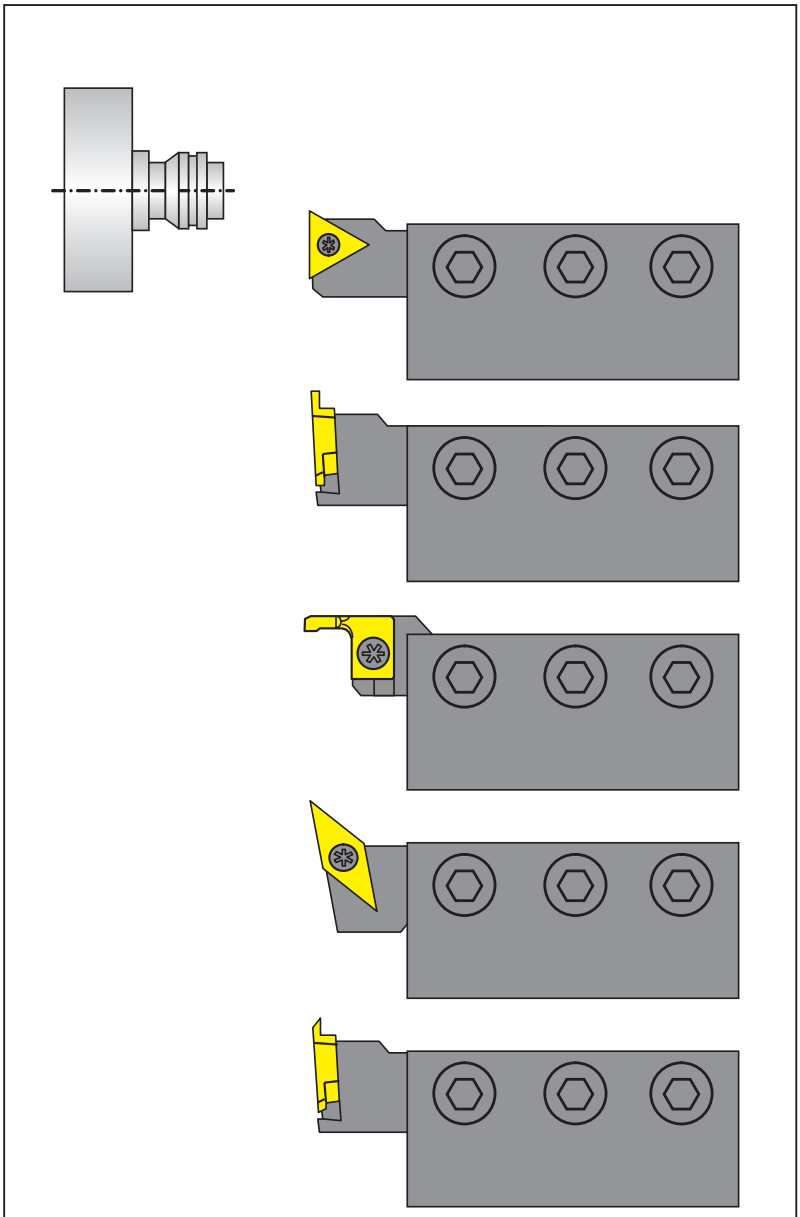
■Grooving



■ID Tooling CH-GTTL ➡H19



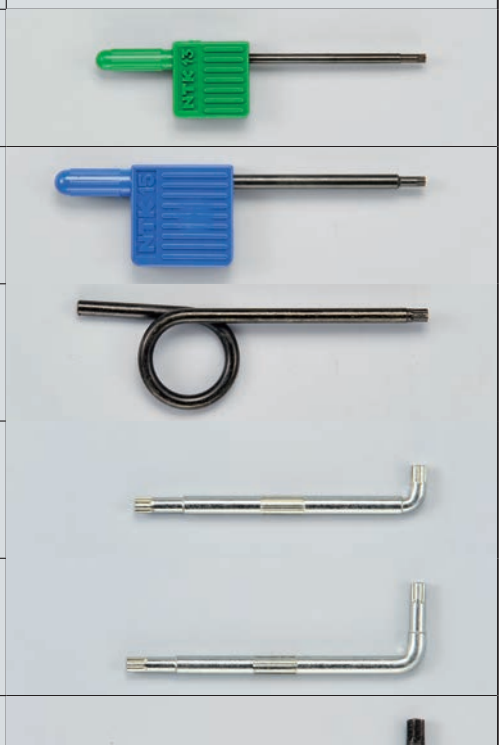
CH-LBML ➡K6



Tooling for horizontal gang style tool post

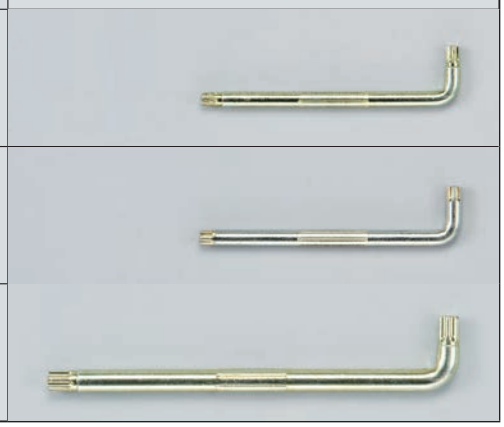
Spare Parts - Wrenches

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	

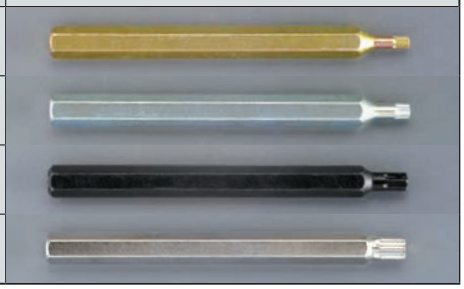
Optional Items

〈LLR Type〉

Item Number	Appearance
LLR-13S	
LLR-15S	
LLR-20S	

〈Driver type wrench for increased adaptability〉

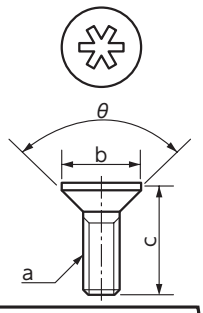
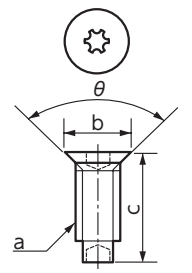
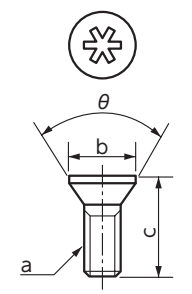
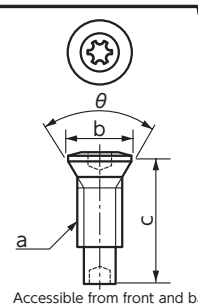
Item Number	Magnetic Driver Handle
XX2815-04	

Item Number	Replaceable Bits
HLR-13S	
HLR-15S	
HLR-20S	
HLR-25S	

〈Driver type wrench kits〉

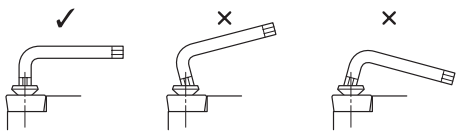
Item Number	Contents
XX2815-04-13S	XX2815-04 with HLR-13S
XX2815-04-15S	XX2815-04 with HLR-15S
XX2815-04-20S	XX2815-04 with HLR-20S
XX2815-04-25S	XX2815-04 with HLR-25S

Clamp Screws and Wrenches

Clamp Screw			Dimension (mm)				Standard Wrench		Adaptable standard wrench	
Appearance	Order Code	Item Number	a	b	c	θ (°)	Order Code	Item Number	LR	Hexalobular (6 – LOBE)
	5704739	**LR-S-2×3.5**	M2×P0.4	3.1	3.5	82	5681994	**CLR-13S**	LR-1	T-6
	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	5681978	**CLR-15S**	LR-2	T-7
	5704747	**LR-S-2.5×5.5**	M2.5×P0.45	3.6	5.5	82				
	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				
 Accessible from front and back	5773619	**LR-S-3×5.8**	M3×P0.5	4.1	5.8	90	5485164	**RLR-20S**	LR-3	T-10
	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				
	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**	LR-2	T-7
	5534029	**LRIS-2×6**	M2×P0.4	2.6	6.0	60	5681994	**CLR-13S**	LR-1	T-6
	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**	LR-2	T-7
	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**	LR-3	T-10
	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**	LR-4	T-15
	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				
 Accessible from front and back	5907852	**LRIS-5×10**	M5×P0.8	7.0	9.5	60	5364948	**LLR-28S**	–	T-20
	5116983	**LRIS-4×10PW**	M4×P0.7	5.7	10.0	60	5681978	**CLR-15S**	LR-2	T-7
	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 (N·m)
CLR LLR HLR **13S**	0.7
CLR LLR HLR **15S**	1.4
RLR LLR HLR **20S**	3.0
LLR HLR **25S**	5.0
LLR HLR **28S**	7.0
LW-4	12
LW-5	15

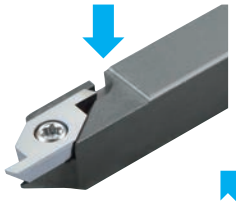
Holder and inserts Combination

Inserts can use the same toolholder!!

CSV series ➡G94

Able to use in Cam-style machine lathe

Front Turning — CSVF
Back Turning — CSVB
Threading — CSVT



Cut-off — CSVC
Grooving — CSVG

CTPS series ➡G98

Best for

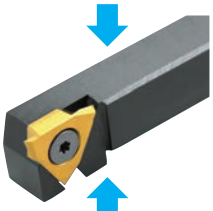
Cut-off — CTPS
Back Turning — TBPS

Grooving — GTPS
Threading — TTPS

GTT type ➡H19

Grooving

GTM32 GTMH32 GTMH32-GX GTMX32

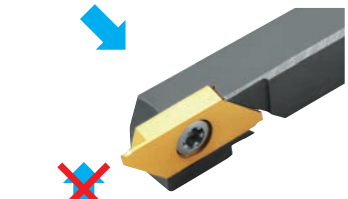


Back Turning

TBMH32

CTPA type ➡G80

Cut-off — CTPA
Back Turning — TBPA



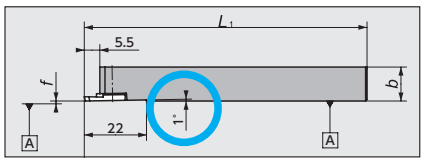
Grooving — GTPA

Insert can be attached, but it will interfere the machining process due to the difference of set angle.

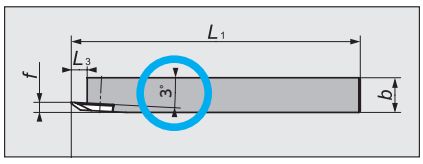
※No compatibility in CTP (Cut-off) • TBP (Back Turning) • TTP (Threading)

Any insert can be attached in each holder, but it will interfere the machining process due to the difference of set angle.

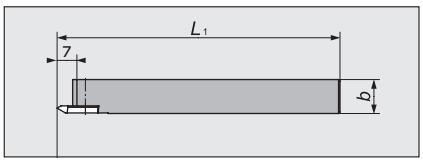
Cut-off CTP ➡G74 ✕ Back Turning TBP ➡G52 ✕ Threading TTP ➡I12



Set angle : 1°



Set angle : −3°



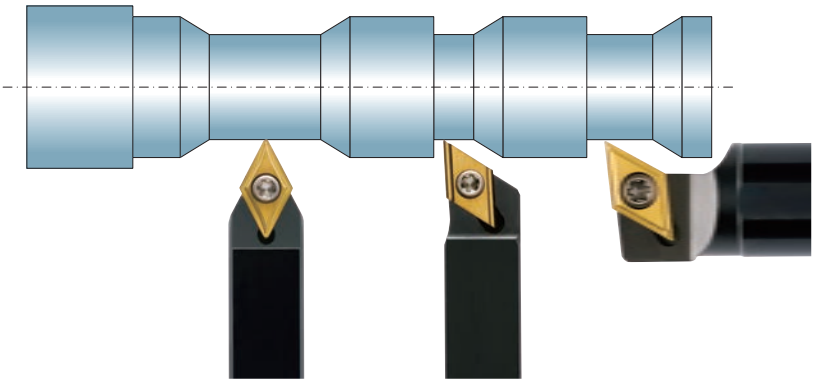
Set angle : 0°

General Turning / Front Turning

- Front Turning Tools ····· G8
- Recommended Cutting Conditions ·· G10
- General Information ····· G11
- Tool List ····· G20

CSV Series ····· G20
CC.. Series ····· G22
DC.. Series ····· G24
VC.. Series ····· G28
VP.. Series ····· G32
TFT Series ····· G34
TC.. Series ····· G36
TN.. Series ····· G38
CN.. Series ····· G40
DN.. Series ····· G41

NTK General / Front Turning Tools - Product Lines

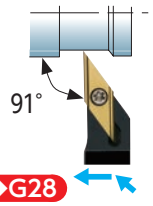
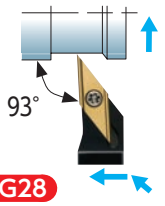
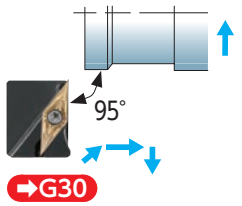


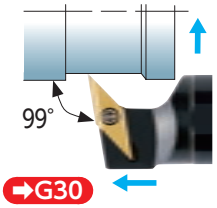
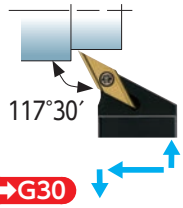
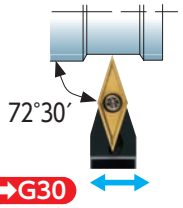
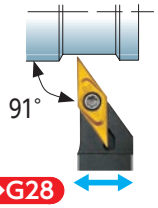
Insert	CSVF ➡G21
Holder	CSV 91° ➡G20

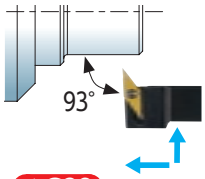
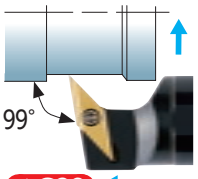
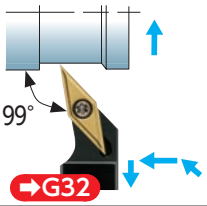
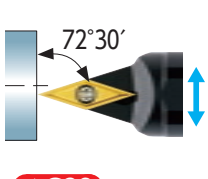
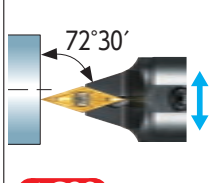
Insert	CC..0602/09T3.. ➡E39～					
Holder	SCAC	SCLC	SCLC-OH2/OH	SCLC-F	DS-SCLL	DS-SCLL-ACH
	91° ➡G22	95° ➡G22	95° ➡G22 Coolant through	95° ➡G22 Shifted	95° ➡G22 DS Holder	95° ➡G22 DS-ACH

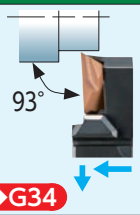
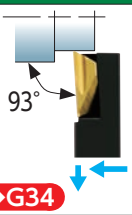
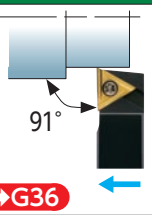
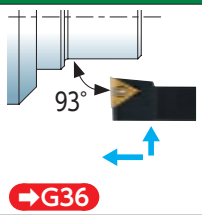
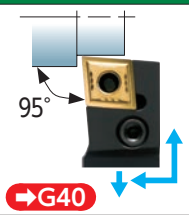
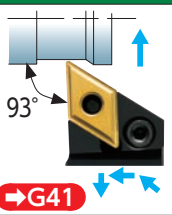
Insert	DC..0702/11T3.. DC..0702/11T3..WP ➡E42～					
Holder	SDJC	SDJC-OH2/OH	SDJC-F	Y-SDJC	Y-SDJC-OH2/OH	CH-SDUC
	93° ➡G24	93° ➡G24 Coolant through	93° ➡G24 Shifted	93° ➡G26 Y-axis	93° ➡G26 Y-axis/Coolant through	93° ➡G24

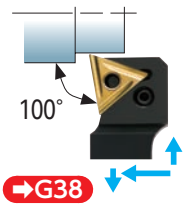
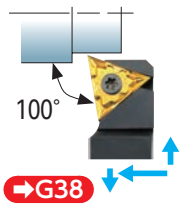
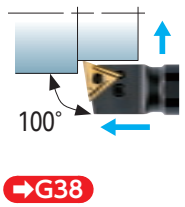
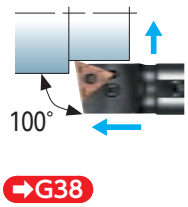
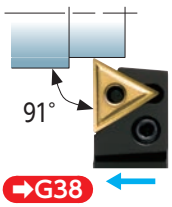
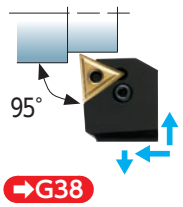
Insert	DC..0702/11T3..-WP ➡E44		DC..0702/11T3.. ➡E42～				
Holder	DS-SDUL	DS-SDUL-ACH	SDXC	DS-SDX	SDQC	SDNC	Y-SDNC
	93° ➡G26 DS Holder	93° ➡G26 DS-ACH	96° ➡G24	96° ➡G26 DS Holder	107°30′ ➡G24	62°30′ ➡G24	62°30′ ➡G26 Y-axis

Insert	VC..1103..-WP	VC.. 1103.. ➡E49 ~			
Holder	SVAC	SVJC	SVJC-OH	Y-SVXCL	Y-SVJC-OH
	 ➡G28	 ➡G28	➡G29	 ➡G30	➡G29
			Coolant through	Y-axis	Y-axis/Coolant through

Insert	VC..1103.. ➡E49				VC..1102.. ➡E50
Holder	SVXC	DS-SVX	SVQC	SVVCN	SVAC-1L
	➡G30	 ➡G30	 ➡G30	 ➡G30	 ➡G28
		DS Holder			

Insert	VP..0802.. ➡E50			VP..1103.. ➡E50		
Holder	SVQP	CH-SVUP	DS-SVXP	SVXP	DS-SVVPN	DS-SVVPN-ACH
	➡G32	 ➡G32	 ➡G32	 ➡G32	 ➡G32	 ➡G32
			DS Holder		DS Holder	DS-ACH

Insert	TFX33.. TF33.. ➡G35		TC..0902/1102..-WP	TC..0902.. ➡E46	CN..1204.. ➡E36	DN..1504.. ➡E36
Holder	TFX-OH	TFT	STAC	CH-STUC	PCLN	PDJN
	 ➡G34	 ➡G34	 ➡G36	 ➡G36	 ➡G40	 ➡G41

Insert	TN..1604.. ➡E37					
Holder	PTXN	STXN	DS-PTX	DS-PTX-ACH	PTAN	PTLN
	 ➡G38	 ➡G38	 ➡G38	 ➡G38	 ➡G38	 ➡G38
			DS Holder	DS-ACH		

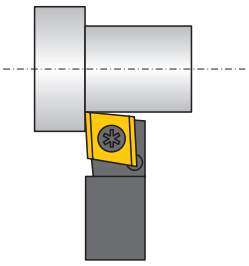
Recommended Insert Grade and Cutting Conditions

Work Material				Grade	Recommended Chipbreaker			Cutting Speed (m/min)
					Depth of cut (mm)			
Common Name	JIS	GB	AISI/ASTM		~ 0.3	0.5 ~ 2.0	2.0 ~	
Low Carbon Steel	S10C ≀ S30C	10 ≀ 30	1010 ≀ 1030	**ZM3 DT4**	AMX	AM3,YL,UL S,AT,U1	CL,ZP S,AT,U1	50 90 130
Carbon Steel	S45C ≀ S55C	45 ≀ 55	1045 ≀ 1055	**QM3 DM4**	AMX	AM3,YL,UL S,AT,U1	CL,ZP S,AT,U1	50 80 120
Alloy Steel	SCr415 ≀ SCr440	15Cr ≀ 40Cr	5140	**QM3 DM4**	AMX	AM3,YL,UL S,AT,U1	CL,ZP S,AT,U1	50 80 120
Stainless Steel (Austenitic)	SUS303	Y1Cr18Ni9	303	**ST4 DT4**	AMX	AM3,YL,UL S,AT,U1	CL,UL S,AT,U1	50 90 130
Stainless Steel (Austenitic)	SUS304 SUS316 SUS316L	0Cr18Ni9 0Cr17Ni12Mo2 00Cr17Ni14Mo2	304 316 316L	**ST4 DT4**	AMX	CL,YL,UL S,AT,U1	CL,UL S,AT,U1	40 70 100
Stainless Steel (Ferritic)	SUS430 SUS430F	1Cr17 Y1Cr17	430 430F	**ST4 DT4**	AMX	CL,YL,UL S,AT,U1	CL,UL S,AT,U1	50 100 180
Stainless Steel (Martensitic) (Precipitation hardenic)	SUS440C SUS630	9Cr18 11Cr17 9Cr18Mo	440C	**ST4 DM4**	AMX	AM3,YL,UL S,AT	CL,UL S,AT	40 60 90
Sulfur free cutting steel Sulfur complex free cutting steel	SUM22 SUM23 SUM24L	Y15	1213 1215 12L14	**VM1 TM4**	AMX	CL,YL,UL S,AT,U1	CL,UL S,AT,U1	50 120 200
Electromagnetic soft iron	SUY-0 SUY-1 SUY-2			**DT4 QM3**	AMX	CL,S,ZP	CL,S,ZP	200 300 350
Electromagnetic stainless				**DT4 QM3**	AMX	AM3,CL,S UL,ZP	AM3,CL,S UL,ZP	50 80 120
High-carbon chromium bearing steel	SUJ2	GCr5	52100	**DM4 QM3**	AMX	AM3,YL,UL S,AT,U2	CL,UL S,AT,U2	50 80 120
Titanium alloy	6AL-4V 6AL-4VELI			**DT4 TM4**	AMX	CL,YL,UL S,AT,U1	CL,UL S,AT,U1	50 70 120
Aluminum alloy	A5052 A6061 A7025	5A02 7A09	5052 7175	**KM1 PD2**	No (Mirror finish)	No (Mirror finish)	No (Mirror finish)	60 150 200 100 200 350

General Turning Inserts Explained

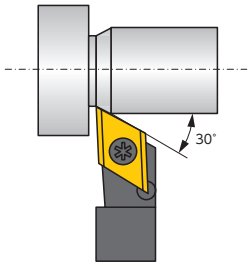
Advantage for each geometry

CC.. Style (80°)



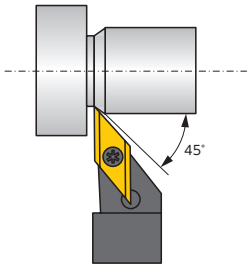
- Increased toughness. Cutting edge is close to insert pocket.
- Not applicable to undercut

DC.. Style (55°)



- Versatile geometry. Toughness of CC.. with flexibility of VC..
- Up to 30 deg. undercuts

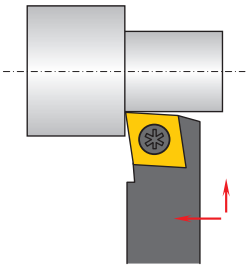
VB / VC / VP Style (35°)



- Wide coverage in work geometry.
- Up to 45 deg. undercuts

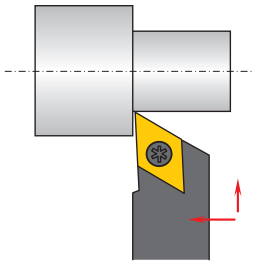
Chip Control and Finish

SCLCR ➡G22



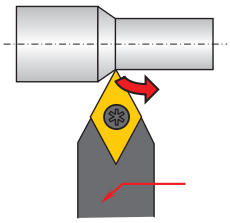
Rigid clamping
High dimensional repeatability

SDJCR ➡G24



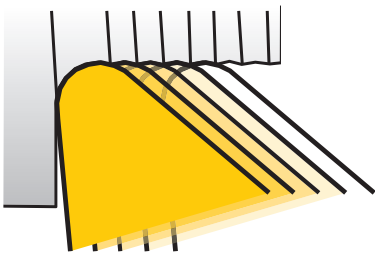
Increased room for chip evacuation creates better surface finish

SDNCN ➡G24

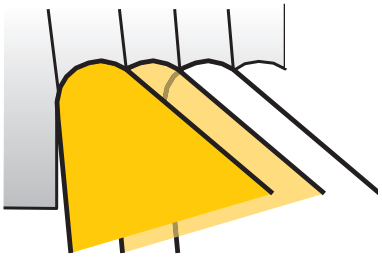


Chips flow away from the work

Surface Finish in General Turning Using Inserts with Wiper Flat

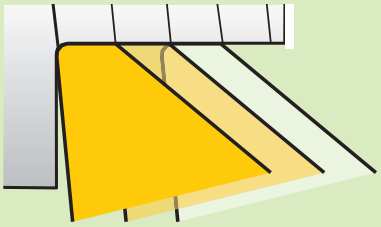


Slower feed rates create better finishes but sacrifices cycle time, chip control, and tool life.



Fast feed rates improve chip control but produce a bad surface finish.

Inserts with wiper



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) ➡G24

for SDJC toolholders

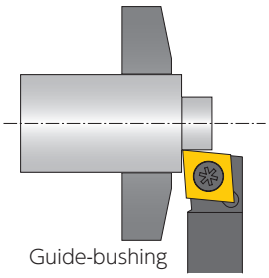
TCGT.. -WP (TFT) ➡G36

for STAC toolholders

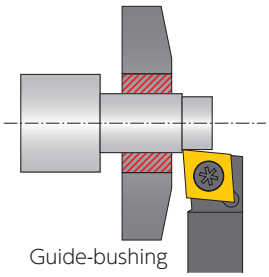
VCGT.. -WP (TFV) ➡G29

for SVJC toolholders

Roughing and Finishing Long Work on Swiss Lathes

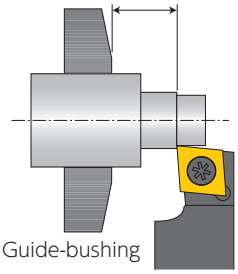


Single pass machining is common in Swiss front turning operations.



Conventional toolholders are not suitable for roughing or finishing of long parts. The guide-bushing cannot hold machined bar stock.

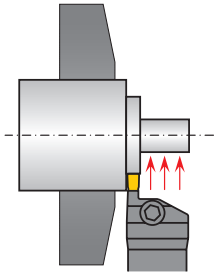
Shifted Holders



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.

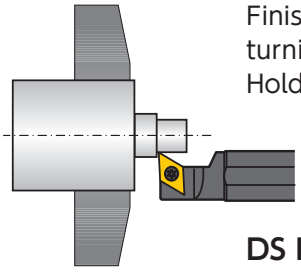
SCLC-N-F ➡G22
SDJC-N-F ➡G24

Combination of Grooving Tool and DS Holders



Rough with grooving tool for good chip control

GTWP Holders ➡H28



Finish by using general turning inserts with DS Holders

DS Holders

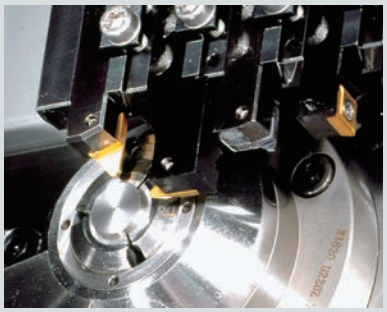
Y-axis Toolholders

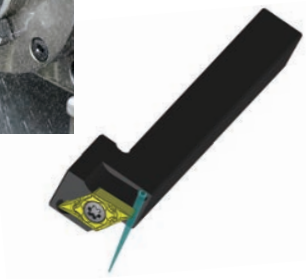
Chip control by gravity

WATCH ON YouTube

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			
①T300				Select tool	①T300			
②G0	X11.0	Z0	T3	Position tool	②G0	Y11.0	Z0	T3
③					③	X0		
④G1	X8.0		F0.08	Move to OD to cut	④G1	Y8.0		F0.08
⑤		Z5.0	F0.05	Cut 5mm length	⑤		Z5.0	F0.05
⑥	X11.0			Cut face	⑥	Y11.0		
⑦G0	X11.0				⑦G0	X11.0		

Cut by X-axis

Cut by Y-axis

Note: Need Y-offset for holder shank size.

➡G27 • G29 • G31

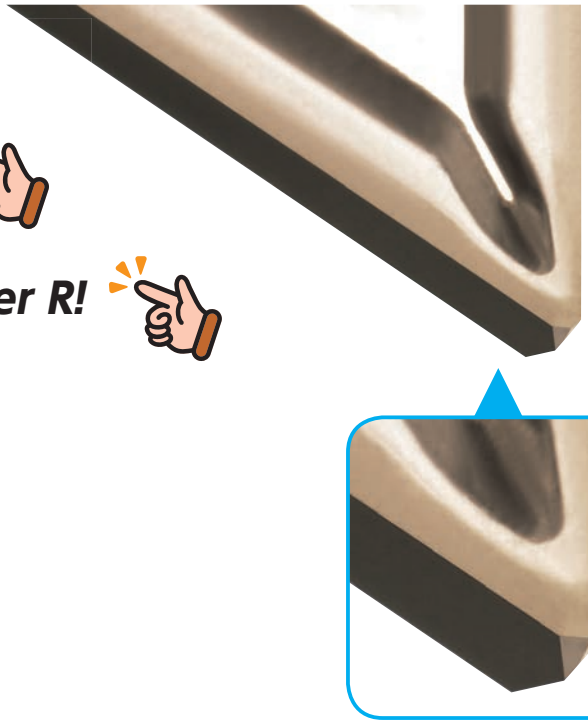
TFD-AM3 breaker

Lined up Front turning

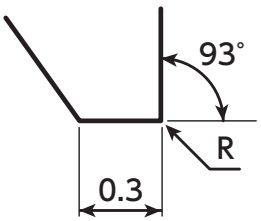
Good surface!

Good chip control!

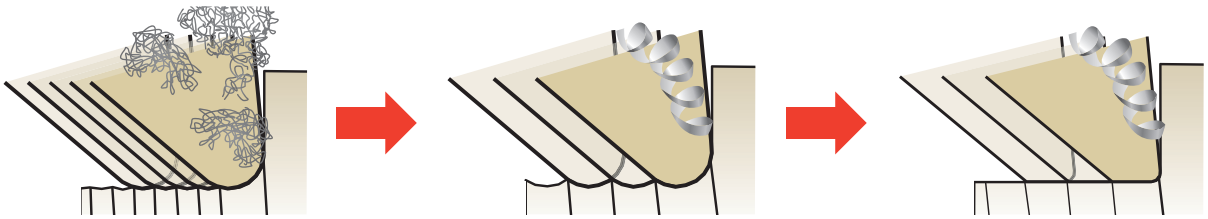
Good inside corner R!



Edge design



Surface finish in front turning

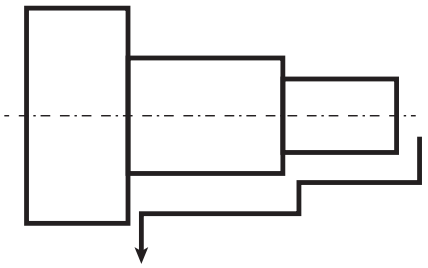


Unstable chip control at low feed rate to keep surface finish

Bad surface finish at high feed rate to improve chip control

TFD wiper insert offers good chip control and surface finish

Cutting condition	
Work material	SUS304
Cutting speed	V_c=30 ~ 80m/min
Feed speed	f =0.015mm /rev
Depth of cut	a_p=0.15mm
DT4 TFD11FR05AM3	1500pcs /corner
Conventional tool	700pcs/corner



Surface finish of conventional tool after 500pcs machined was Ry10.2μm, and dimensional change 0.1mm occurred at start of machining.
TFD-AM3 chipbreaker(DT4 grade) achieved stable machining with no dimensional change after 1,000pcs machined. Surface roughness was Ry2.3μm.

➡E44

Front Turning Chipbreaker Quartet

YL Chipbreaker

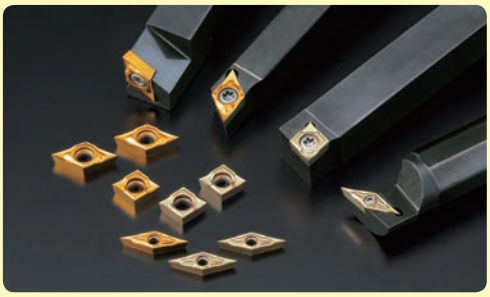
➡E40 • E43 • E49 • E50

- Great combination of sharpness and toughness
- Covers extremely wide range
- Excellent chip control

WATCH ON YouTube

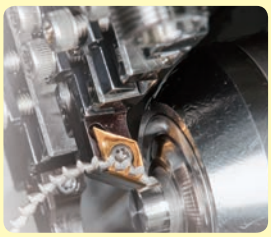
CL Chipbreaker

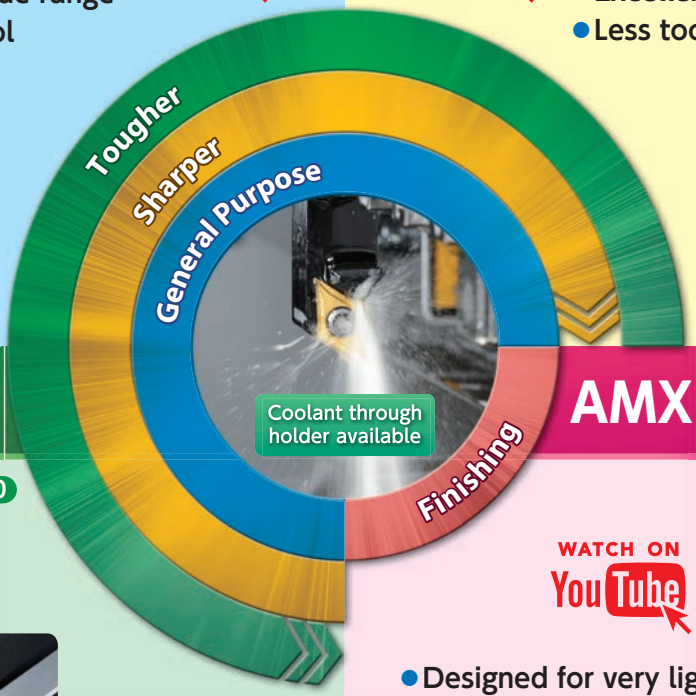
➡E40 • E43 • E50



WATCH ON YouTube

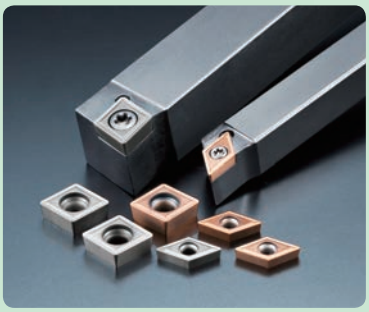
- Sharpest molded Chipbreaker
- Excellent chip control
- Less tool pressure





AM3 Chipbreaker

➡E39 • E42 • E44 • E49 • E50



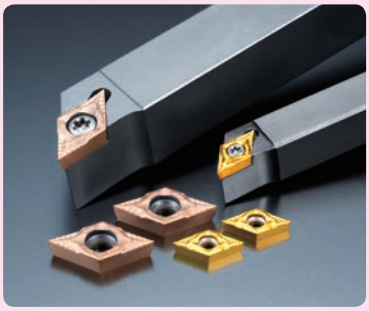
- All purpose chipbreaker
- Sharp edge with toughness

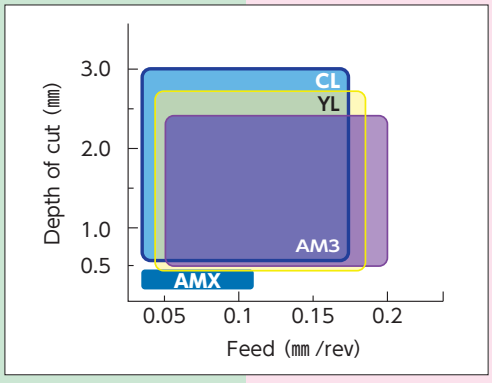
AMX Chipbreaker

➡E42

WATCH ON YouTube

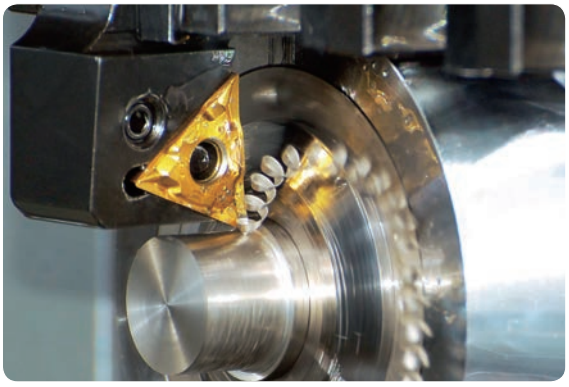
- Designed for very light depth of cut
- Exceptional sharpness





UL Chipbreaker

6 corner insert for Swiss machines

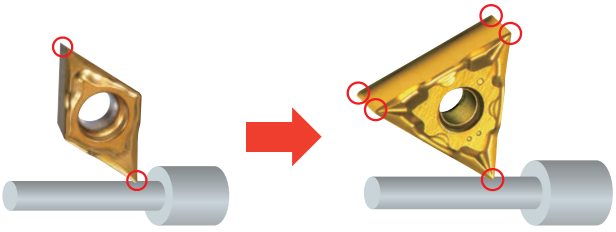


WATCH ON YouTube

Features

- First negative style insert designed for Swiss machines
- Less tool pressure and good chip control

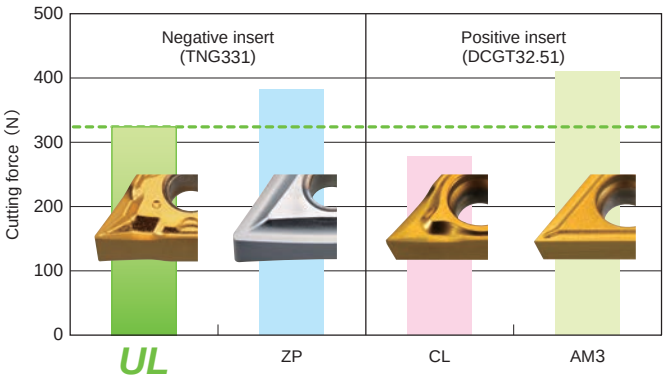
Reduce Cost in Swiss Machining



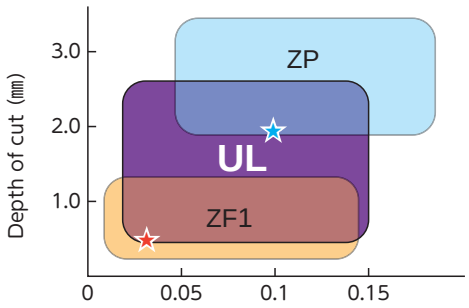
Positive insert with sharp cutting edge is required for Swiss machining.

With UL chipbreaker, negative insert provides sharp cutting edge AND more corners.

Cuts Like Positive Inserts

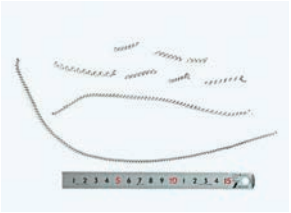


Covers a Wide Range of Cutting Conditions with Good Chip Control

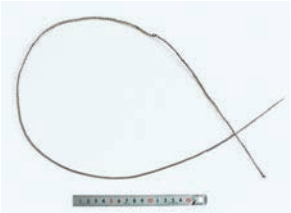


《SUS304》 260 SFM WET

★ 0.03mm /rev 0.5mm DOC



★ 0.1mm /rev 2.0mm DOC



Toolholders for Swiss Machines

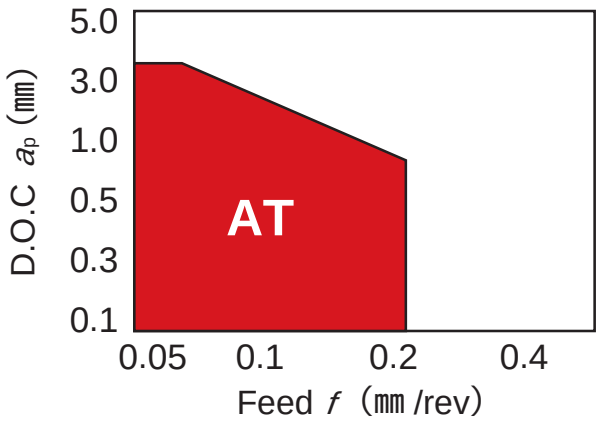
Available in ACH (Adjustable centerline height) toolholder

Holders ➡G38
Inserts ➡E37

AT breaker

Features

- ***Almighty breaker which combines sharp edge and cutting edge strength!***
- ***By mirror finish breaker, it is able to suppress built up edge in slow speed region and sticky work material (such as S10C e.t.c.)***
- ***Able to machine high precision due to E class precision inserts.***

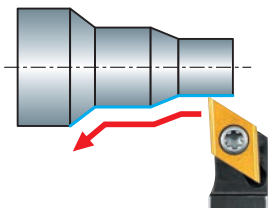


〈Cutting edge shape〉

Case study

Shaft machining

Work material	: S15C
Cutting speed (m/min)	: 20 ~ 150
Feed (mm/rev)	: 0.02
Depth of cut (mm)	: 0.10
Coolant	: WET

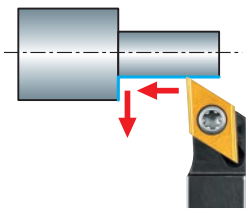


TM4 AT breaker	1,600 pcs/corner
Competitor's polished breaker (PVD coated carbide)	500 pcs/corner

Due to the strict dimensional tolerance, tool life was not stable using conventional product.
Thanks to AT breaker, deposition has been restrain and tool life became longer.

Shaft machining

Work material	: S45CL
Cutting speed (m/min)	: 200
Feed (mm/rev)	: 0.07
Depth of cut (mm)	: 0.5
Coolant	: WET



TM4 AT breaker	1,500 pcs/corner
Competitor's polished breaker (PVD coated carbide)	900 pcs/corner

Stable machining and longer tool life can realize due to the sharp edge and cutting edge toughness of AT breaker.

➡E42

DS-ACH Toolholders

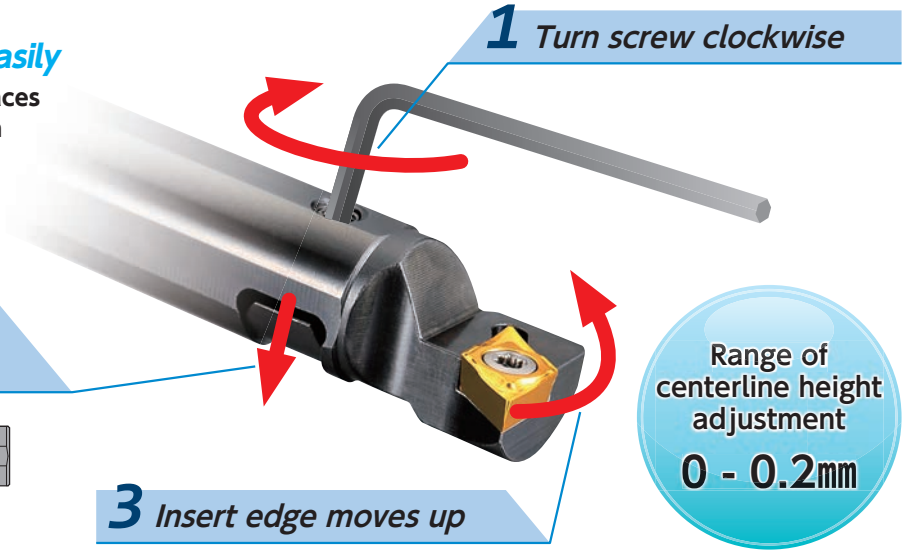
Features

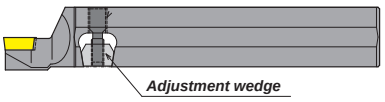
WATCH ON YouTube

- Adjust centerline height simply with a wrench

1 Adjust centerline height easily

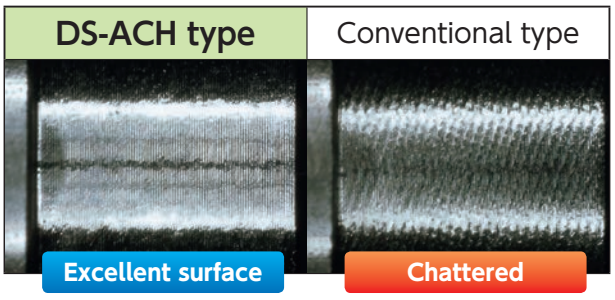
- Eliminate center boss on end faces
- Provide constant OD dimension
- Adjust easily in machine





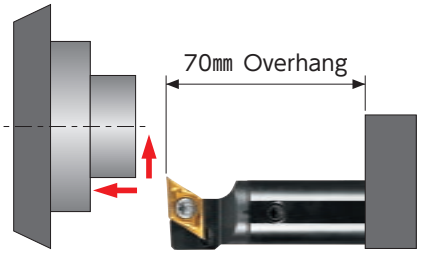
2 Optimized design reduces vibration

Improved chatter resistance.



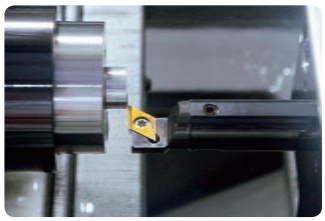
Tested cutting conditions (SUS304)

Work material : SUS304
Holder : DS-SDUL19-11-ACH
Insert : DCGT11T302MCL TM4
Cutting condition : v_c=75 m/min、 f =0.05 mm/rev、 a_p=2.0 WET

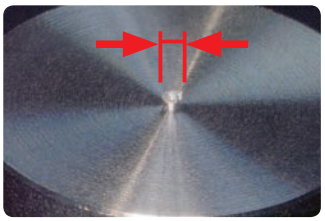


How to use

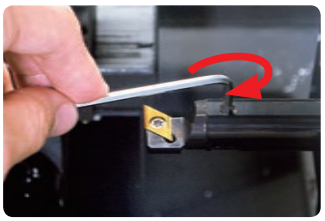
Insert moves in an upward direction only. (Loosen wedge screw before making any adjustment)



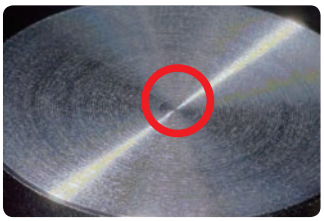
①Install the holder slightly below centerline. Then take a facing test cut.



②Measure the diameter of the centerboss.



③Raise the center height by one half of the diameter of the boss. Adjustment references are available in the tool case.



④Re-machine the end face.

*Adjustment instructions are supplied in the tool case

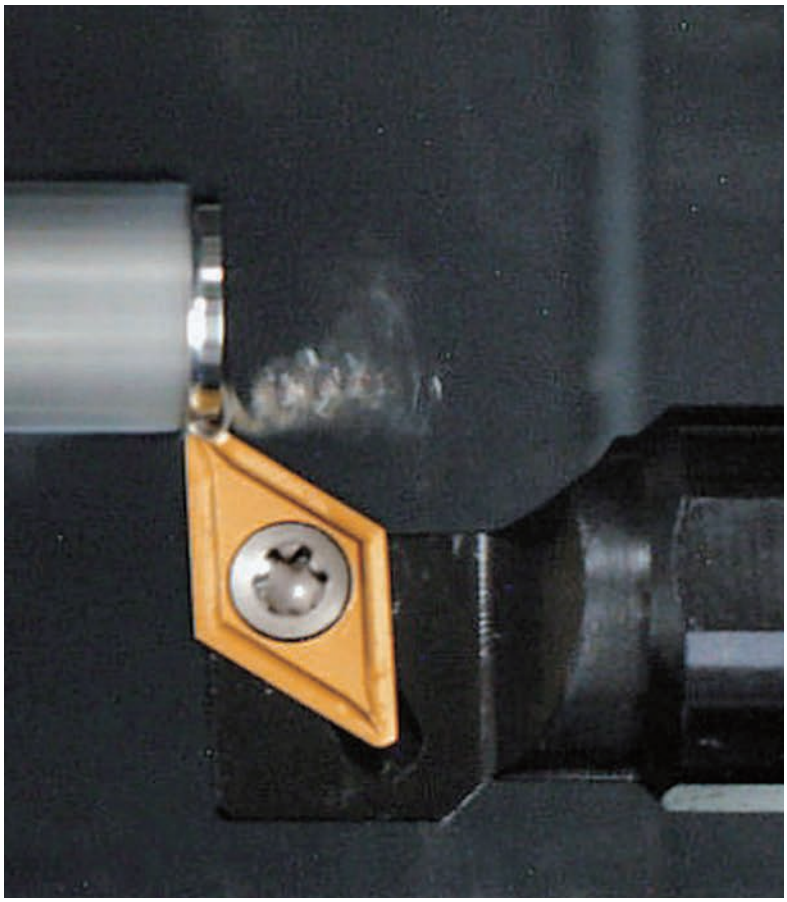
➡G23 • G27 • G33 • G39

DS Toolholders

Make the most of vacant drill sleeves

DS / DS-ACH Toolholders

Industry Proven Concept



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 14 mm to 32 mm

➡G23 • G27 • G31 • G33 • G39

CSV Series

CSV

For Cam-style machine

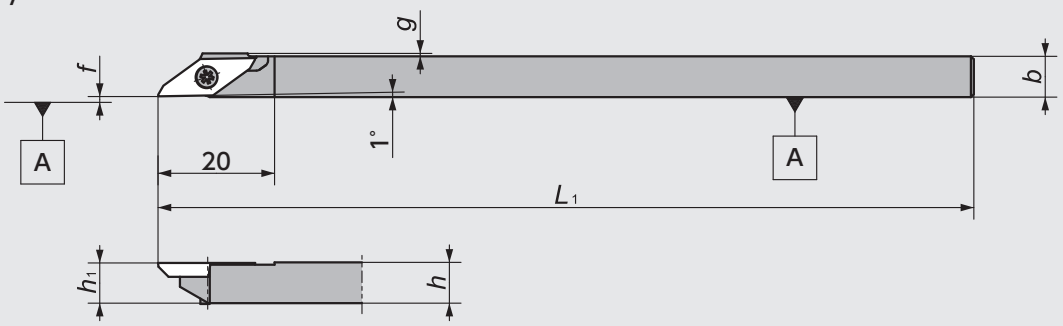


Figure-1

●Right-Hand style shown

CSV-NC

For Gang-style machine

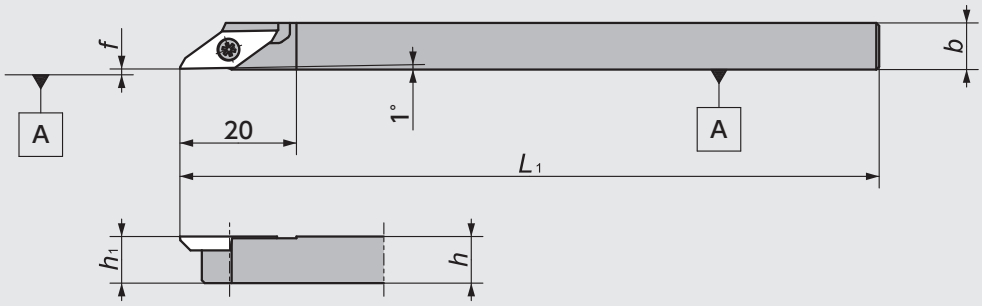


Figure-2

●Right-Hand style shown

CSV-NC-F

For Gang-style machine

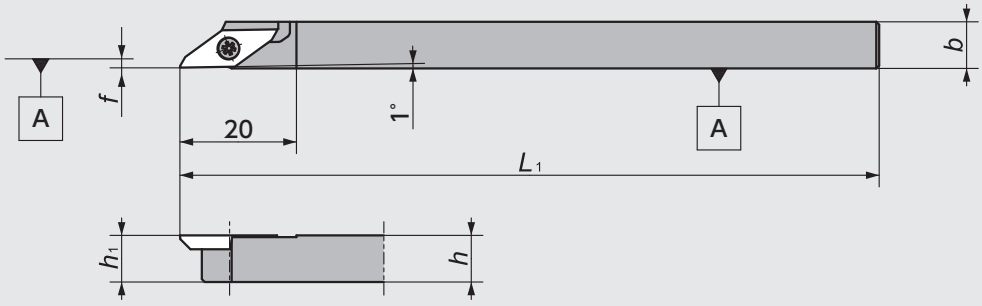


Figure-3

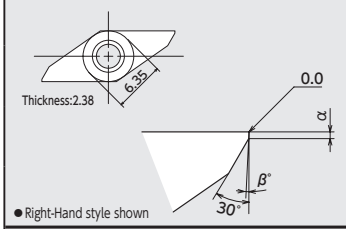
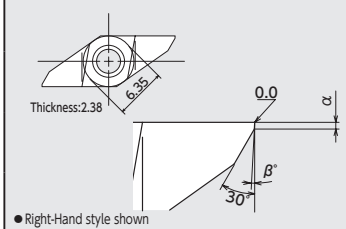
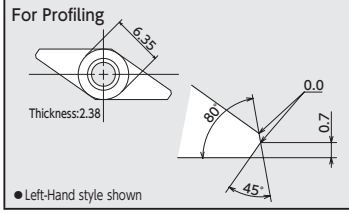
●Right-Hand style shown

☆All the inserts can use the same toolholder CSV series ➡ G94

CSV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5492962		CSVR/L07GX	●		7	7	85	7	0.1	0.5	CSVF	LR1S-2.5*7	CLR-15S
	5303169	5303193	07	●	●			140						
	5492954		08GX	●		8	8	85	8		0.0			
	5303151	5303201	08	●	●			140						
	5303136		095	●		9.5	9.5	140	9.5					
	5303144	5303177	10	●	●	10	10		10					
	5474770		12GX	●		12	12	85	12					
	5327929		12	●				140						
2	5514062	5514070	CSVR/L08NC	●	●	8	8	120	8	0.1	—	CSVF	LR1S-2.5*7	CLR-15S
	5563010		10GXNC	●		10	10	85	10	0.1				
	5477492	5477542	10NC	●	●			120						
	5477534	5477500	12NC	●	●	12	12		12					
3	5789615		CSVR/L08NC-F	●		8	8	120	8	0.0 ∫ 0.1	—	CSVF	LR1S-2.5*7	CLR-15S

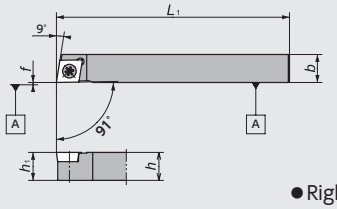
CSV Series - Inserts Mirror finish

Shape	Item Number	Chip-breaker	Dimensions (mm) Max. Depth of Cut	Dimensions (mm) Edge Geometry (α×β°)	PVD Coated Carbide ZM3 R	ZM3 Stock	ZM3 L	ZM3 Stock	VM1 R	VM1 Stock	VM1 L	VM1 Stock	DT4 R	DT4 Stock
	CSVF11FR/LV Ⓜ	No	—	0.3×5°					5303516	●	5303557	●		
	11FR/LV-A Ⓜ			0.3×2°					5358858	●				
	11FR/LV-M Ⓜ			0.15×2°	5436019	●			5386248	●	5386255	●	5850235	●
	11FR/LV-C Ⓜ			0.15×5°					5358577	●				
	CSVF11FR/LVB Ⓜ	Yes	3.00	0.3×5°					5313168	●	5313150	●		
	11FR/LVB-A Ⓜ			0.3×2°					5358692	●				
	11FR/LVB-M Ⓜ			0.15×2°	5436001	●			5386263	●	5386271	●	5850243	●
	11FR/LVB-C Ⓜ			0.15×5°					5358700	●				
For Profiling 	CSVF11FR/LVX Ⓜ	No	—								5358866	●		

Note: All angles shown are obtained when insert is set in the holder.

Toolholders for CC.. Inserts

SCAC-N



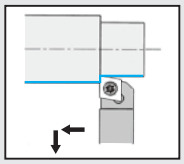
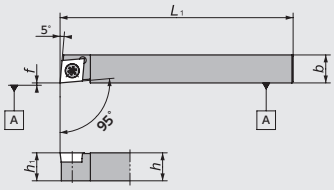


Figure-1

●Right-Hand style shown

SCLC-N



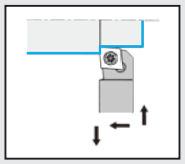
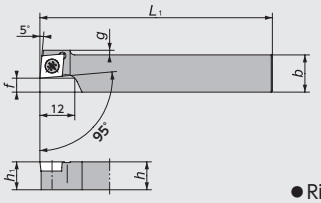


Figure-2

●Right-Hand style shown

SCLC-N-F

(Shifted)



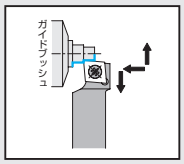
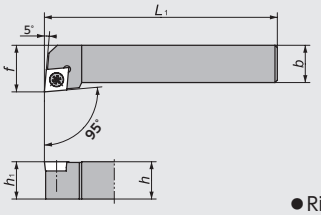


Figure-3

●Right-Hand style shown

SCLC



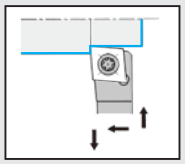
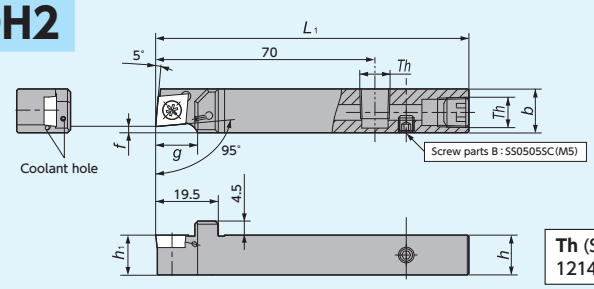


Figure-4

●Right-Hand style shown

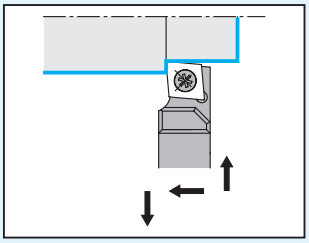
SCLC-OH2

(Coolant through)



Th (Screw parts A)
1214/1616 size : SPR1/8(Rc1/8)

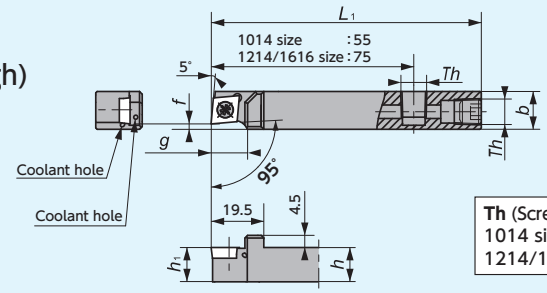
Figure-5



●Right-Hand style shown

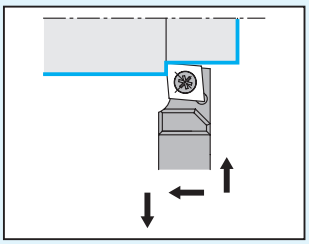
SCLC-OH

(Coolant through)



Th (Screw parts A)
1014 size : SS0605SC(M6×1.0)
1214/1616 size : SPR1/8(Rc1/8)

Figure-6



●Right-Hand style shown

DS-SCL

(DS Holder)

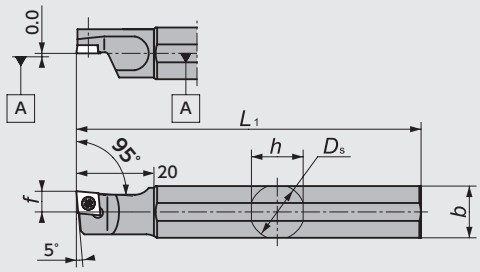
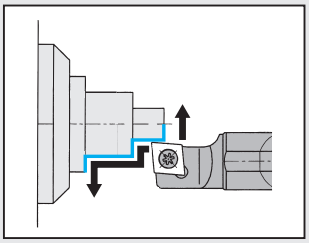


Figure-7



●Left-Hand style shown
☆Takes Right-hand or Neutral insert

DS-SCLL-ACH

(DS-holder with Adjustable centerline height)

〈Parts〉

Shank	Wedge	Screw for Wedge
ϕ16	ACH-W18 (5805601)	WS060415-003 (5795539)
ϕ19.05		
ϕ20		WS060419-004 (5799226)
ϕ22		
ϕ25	ACH-W24	
ϕ25.4	ACH-W24 (5805619)	

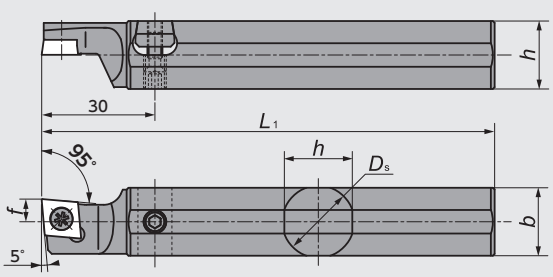
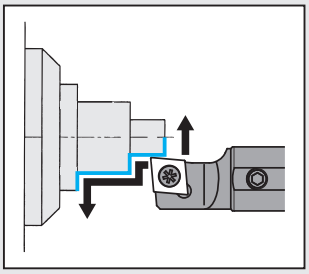


Figure-8



●Left-Hand style shown
☆Takes Right-hand or Neutral insert

CC.. Series - Toolholders

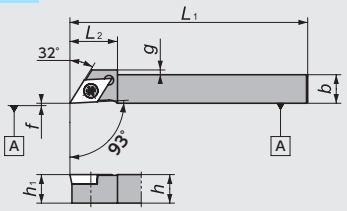
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	D_s	h	b	L_1	h_1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5137013	5137922	SCAC[R/L]0808X06N	●	●	–	8	8	120	8	0.0	–	CC□□0602 E28•39~40	LRIS-2.5*7	CLR-15S (A)
	5119060	5137914	1010X06N	●	●		10	10	120	10					
	5459847		1212GX09N	●			12	12	85	12			CC□□09T3 E28•39~40	LRIS-4*10	LLR-25S (B)
	5137088	5137906	1212X09N	●	●		12	12	120	12					
2	5137021	5137898	SCLC[R/L]0808X06N	●	●	–	8	8	120	8	0.0	–	CC□□0602 E28•39~40	LRIS-2.5*7	CLR-15S (A)
	5122171	5137880	1010X06N	●	●		10	10	120	10					
	5873872		1010H09N	●			10	10	100	10			CC□□09T3 E28•39~40	LRIS-4*10	LLR-25S (B)
	5152889	5152897	1010X09N	●	●		10	10	120	10					
	5459839	5459821	1212GX09N	●	●		12	12	85	12					
	5137039	5137872	1212X09N	●	●		12	12	120	12					
	5191200	5191218	1616X09N	●	●		16	16	120	16					
3	5700240	5700257	SCLC[R/L]1015X09N-F05	●		–	10	15	120	10	5	2	CC□□09T3 E28•39~40	LRIS-4*10	LLR-25S (B)
	5700265	5700273	1020X09N-F10	●			10	20	120	10	10	2			
	5700364	5700372	1218X09N-F06	●			12	18	120	12	6	0			
	5700380	5700398	1224X09N-F12	●			12	24	120	12	12	0			
4	5744719	5884911	SCLC[R/L]20-X09	●	●	–	20	20	120	20	24.0	–	CC□□09T3 E28•39~40	LRIS-4*10	LLR-25S (B)
5	5037957		SCLC[R/L]1214H09N-F02OH2	●		–	12	14	100	12	2	12	CC□□09T3 E28•39~40	LRIS-4*10	LLR-25S (B)
	5044011		1616X09N-F02OH2	●			16	16	120	16	2	17.7			
6	5905740		SCLC[R/L]1014F09N-F02OH	●		–	10	14	80	10	2	12	CC□□09T3 E28•39~40	LRIS-4*10	LLR-25S (B)
	5905732		SCLC[R/L]1214H09N-F02OH	●			12	14	100	12	2	12			
	5905658		SCLC[R/L]1616H09N-F02OH	●			16	16	100	16	2	17.7			
7		5602636	DS-SCL[R/L]14F-06		●	14.000	13	13	80	–	6.0	–	CC□□0602 E28•39~40	LRIS-2.5*7	CLR-15S (A)
		5486923	15H-06		●	15.875	15	15	100						
		5601703	16F-06※		●	16.000			80						
		5338876	19-06		●	19.050	18	18	120						
		5520630	20X-06		●	20.000	19	19	95						
		5388608	20-06		●				120						
		5484936	22-06※		●	22.000	21	21							
		5520689	25-06MET		●	25.000	24	24							
		5486691	25-06		●	25.400			150						
		5601729	14F-09		●	14.000	13	13	80				CC□□09T3 E28•39~40	LRIS-4*8	LLR-25S -20*65 (B)
		5486931	15H-09		●	15.875	15	15	100						
		5601711	16F-09※		●	16.000			80						
		5563168	19GX-09		●	19.050	18	18	85						
		5338884	19-09		●	19.050			120						
		5520655	20X-09		●	20.000	19	19	95						
		5374699	20-09		●				120						
		5401096	22-09※		●	22.000	21	21							
		5520671	25-09MET		●	25.000	24	24							
		5486709	25-09		●	25.400			150						
		5939327	32-09		●	32.000	30	30	150						
8		5833694	DS-SCL[R/L]16F-09-ACH※		●	16.00	15.5	15.5	80	–	6.0	–	CC□□09T3 E28•39~40	LRIS-4*8	LLR-25S -20*65 (B)
		5833702	19-09-ACH		●	19.05	18.0	18.0							
		5833710	20-09-ACH		●	20.00	19.0	19.0	120						
		5833728	22-09-ACH※		●	22.00	21.0	21.0							
		5934013	25-09MET-ACH		●	25.00	24.0	24.0	150						
		5833736	25-09-ACH		●	25.40	24.0	24.0	150						

※Compatible with 16mm / 22mm round shank DS Series holders.

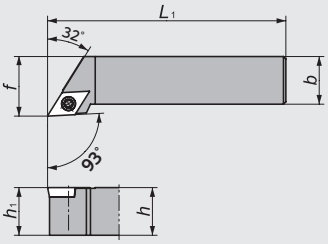
DS-Sleeve G104

Toolholders for DC.. Inserts

SDJC-N/SDJC



SDJCR/L20-X11



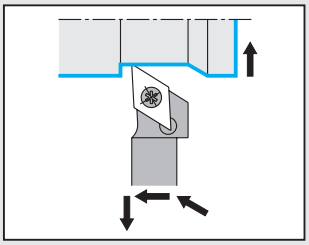
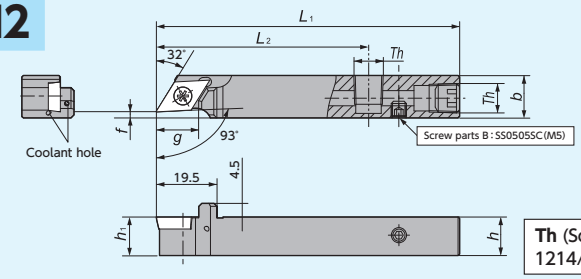


Figure-1

●Right-Hand style shown

SDJC-OH2

(Coolant through)



Th (Screw parts A)
1214/1616 size : SPR1/8(Rc1/8)

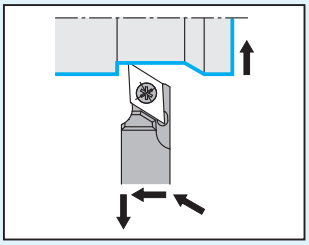
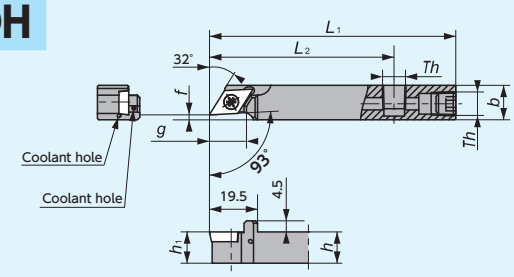


Figure-2

●Right-Hand style shown

SDJC-OH

(Coolant through)



Th (Screw parts A)
1014 size : SS0605SC(M6×1.0)
1214/1616 size : SPR1/8(Rc1/8)

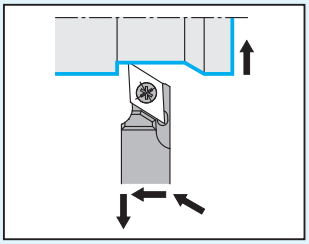
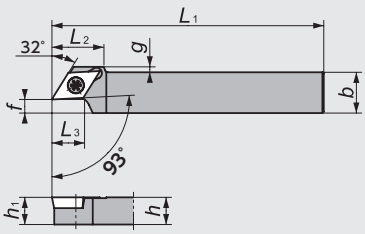


Figure-3

●Right-Hand style shown

SDJC-N-F

(Shifted)



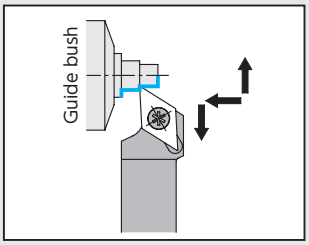
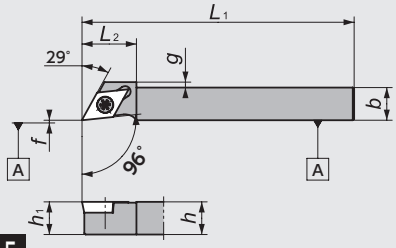


Figure-4

●Right-Hand style shown

SDXC-N



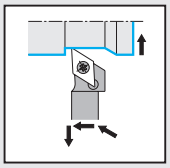
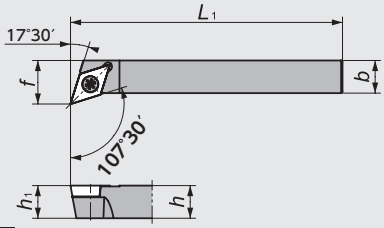


Figure-5

●Right-Hand style shown

SDQC



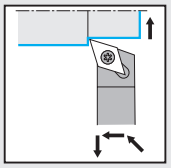
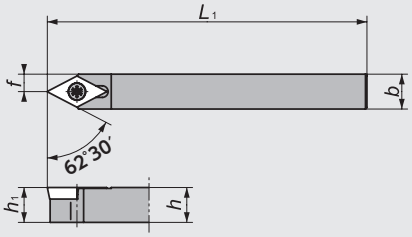


Figure-6

●Right-Hand style shown

SDNC



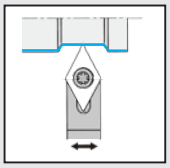
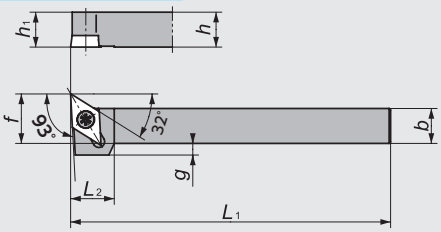


Figure-7

CH-SDUC



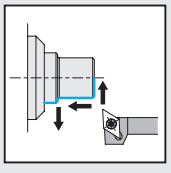
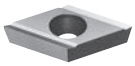
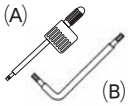


Figure-8

●Left-Hand style shown
☆Takes Right-hand or neutral insert

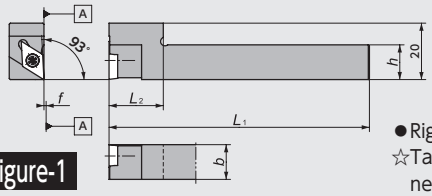
DC.. Series - Toolholders

Figure	Code No. R (N)	Code No. L	Item Number	Stock R (N)	Stock L	h	b	L_1	h_1	f	L_2	g	L_3	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
																 (A) (B)
1	5137047	5137864	SDJCR/L 0808X07N	●	●	8	8	120	8	0	–	0	–	DC□□□0702 **E29•42~43** TFD07 **E44**	LRIS-2.5*7	CLR-15S (A)
	5502125		1010GX07N	●		10	10	85	10							
	5120464	5137856	1010X07N	●	●			120								
	5463070		1212X07N	●		12	12	120	12					DC□□□0702 **E29•42~43** TFD07 **E44**	LRIS-2.5*7	CLR-15S
	5873880		1010H11N	●		10	10	100	10		19	2		DC□□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10	LLR-25S (B)
	5152863	5153234	1010X11N	●	●			120								
	5122155		1012X11N	●			12				–	0				
	5459813	5473681	1212GX11N	●	●	12		85	12							
	5593215		1216GX11N	●			16									
	5122163	5137849	1212X11N	●	●		12	120								
	5180583	5180609	1616X11N	●	●	16	16		16							
	5744743	5852793	20-X11	●	●	20	20		20	25.0		–				
2	5034871		SDJCR/L 1214H11N-F02OH2	●		12	14	100	12	2	70	16	–	DC□□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10	LLR-25S (B)
	5044029		SDJCR/L 1616X11N-F02OH2	●		16	16	120	16			18.4				
3	5903208		SDJCR/L 1014F11N-F02OH	●		10	14	80	10	2	55	16	–	DC□□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10	LLR-25S (B)
	5886254		1214H11N-F02OH	●		12		100	12		75					
	5903216		1616H11N-F02OH	●		16	16		16			18.4				
4	5700588	5700570	SDJCR/L 1015X07N-F05	●		10	15	120	10	5	–	0	12	DC□□□0702 **E29•42~43** TFD07 **E44**	LRIS-2.5*7	CLR-15S (A)
	5700562	5700554	1020X07N-F10	●			20			10						
	5700547	5700539	1015X11N-F05	●			15			5	19	2		DC□□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10	LLR-25S (B)
	5700521	5700513	1020X11N-F10	●			20			10						
	5700505	5700497	1218X11N-F06	●		12	18		12	6	–	0				
	5700471	5700463	1224X11N-F12	●			24			12						
	5974456		1620X11N-F08	●		16	20		16	8			18.5	DC□□□11T3 **E29•42~43** TFD11 **E44**		
	5974464		1628X11N-F16	●			28			16						
5	5525449		SDXCR/L 1010X11N	●		10	10	120	10	0	20	3	–	DC□□□11T3 **E29•42~43**	LRIS-4*10	LLR-25S (B)
	5553169		1016X11N	●			16				–	0				
	5525456		1212X11N	●		12	12		12		20	1				
	5553177		1216X11N	●			16				–	0				
	5525464		1616X11N	●		16			16							
6	5743711	5743752	SDQCR/L 10-X07	●	●	10	10	120	10	12	–	–	–	DC□□□0702 **E29•42~43**	LRIS-2.5*7	CLR-15S (A)
	5743729	5743760	12-X11	●	●	12	12		12	16				DC□□□11T3 **E29•42~43**	LRIS-4*10	LLR-25S (B)
	5743737	5747332	16-X11	●	●	16	16		16	20						
	5743745		20-X11	●		20	20		20	25						
7	5742184		SDNCN08-X07	●		8	8	120	8	4	–	–	–	DC□□□0702 **E29•42~43**	LRIS-2.5*7	CLR-15S (A)
	5742192		N10-X07	●		10	10		10	5						
	5742200		N12-X11	●		12	12		12	6				DC□□□11T3 **E29•42~43**	LRIS-4*10	LLR-25S (B)
	5742218		N16-X11	●		16	16		16	8						
	5742226		N20-X11	●		20	20		20	10						
8		5659222	CH-SDUCR/L 1010H11		●	10	10	100	10	15	15	6	–	DC□□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10PW	CLR-15S (A)
		5659230	1212H11		●	12	12		12	17		4				
		5004148	1616H11		●	16	16	100	16	21	15	0				
		5939616	2020H11		●	20	20	100	20	25	15	0				

Toolholders for DC.. Inserts

Y-SDJC

(Y-axis)



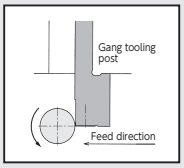
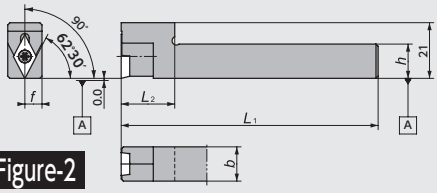


Figure-1

●Right-Hand style shown
☆Takes Right-hand or neutral insert

Y-SDNC

(Y-axis)



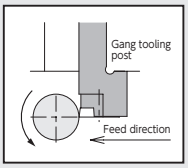
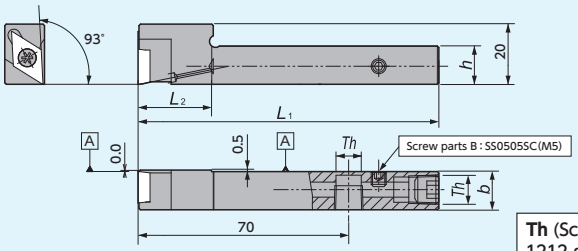


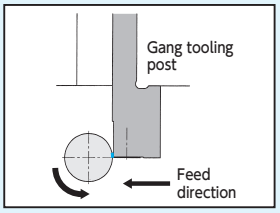
Figure-2

Y-SDJC-OH2

(Y-axis/
Coolant through)



Th (Screw parts A)
1212 size : SPR 1/8(Rc 1/ 8)

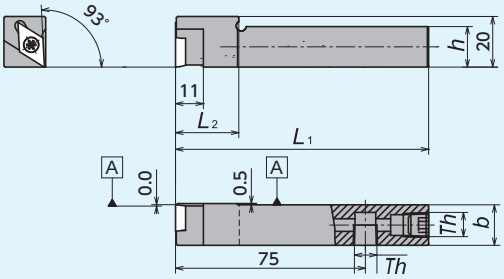


●Right-Hand style shown
☆Takes Right-hand or neutral insert

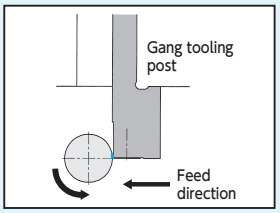
Figure-3

Y-SDJC-OH

(Y-axis/
Coolant through)



Th (Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

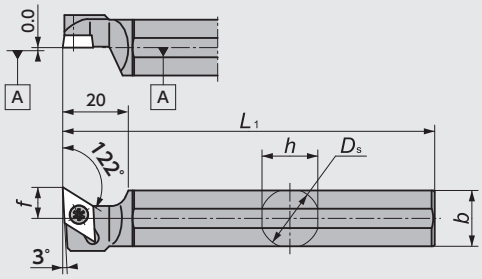


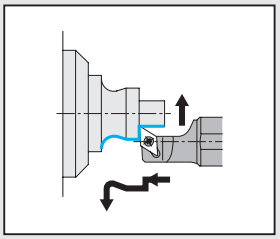
●Right-Hand style shown
☆Takes Right-hand or neutral insert

Figure-4

DS-SDU

(DS Holder)





●Left-Hand style shown
☆Takes Right-hand or neutral insert

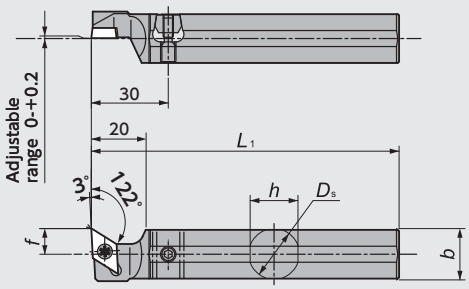
Figure-5

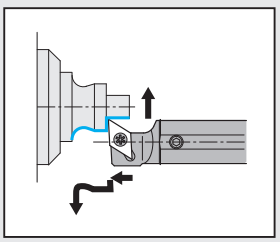
DS-SDU-ACH

(DS-holder with Adjustable centerline height)

〈Parts〉

Shank	Wedge	Screw for Wedge
ϕ16	ACH-W18 (5805601)	WS060415-003 (5795539)
ϕ19.05		
ϕ20		WS060419-004 (5799226)
ϕ22	ACH-W24 (5805619)	
ϕ25		
ϕ25.4		



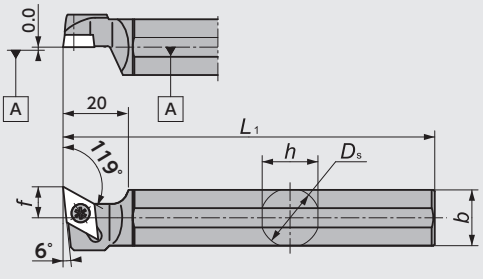


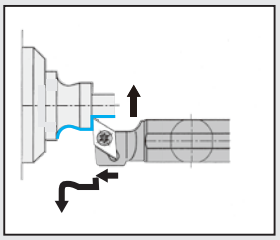
●Left-Hand style shown
☆Takes Right-hand or neutral insert

Figure-6

DS-SDX

(DS Holder)

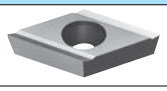




●Left-Hand style shown
☆Takes Right-hand or neutral insert

Figure-7

DC.. Series - Toolholders

Figure	Code No. R (N)	Code No. L	Item Number	Stock R (N)	Stock L	Dimensions (mm) D_s	h	b	L_1	f	L_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
														(A) (B)
1	5371646		**Y-SDJC□10-07S**	●		–	10.0	10	120	0.0	20	DC□□0702 **E29•42~43** TFD07 **E44**	LRIS-2.5*7	CLR-15S (A)
	5371661		**12-07S**	●			12.0	12						
	5926001		**10-11S**	●			10.0	16			22	DC□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10	LLR-25S -20*65 (B)
	5950431		**10-11MS**	●			10.0							
	5600671		**12-11S**	●			12.0				20			
	5950423		**12-11MS**	●			12.0				22			
	5890025		**16-11S**	●			16.0				20			
2	5479191		**Y-SDNCN12-11S**	●		–	12.0	12	120	6.0	20	DC□□11T3 **E29•42~43**	LRIS-4*10	LLR-25S-20*65 (B)
	5485875		**N16-11S**	●			16.0	16		8.0				
3	5035209		**Y-SDJC□1212H11S-OH2**	●		–	12	12	100	–	20	DC□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10	LLR-25S-20*65 (B)
4	5910575		**Y-SDJC□ 1212H11S-OH**	●		–	12	12	100	–	20	DC□□11T3 **E29•42~43** TFD11 **E44**	LRIS-4*10	LLR-25S-20*65 (B)
	5910583		**1616H11-OH**	●		–	16	16			25			
5		5348545	**DS-SDU□14F-07**		●	14.000	13.0	13	80	6.0	–	DC□□0702 **E29•42~43** TFD07□ **E44**	LRIS-2.5*7	CLR-15S (A)
		5348107	**15H-07**		●	15.875	15.0	15	100					
		5520598	**16F-07***		●	16.000			80					
		5341516	**16X-07***		●				95					
		5278247	**19-07**		●	19.050	18.0	18	120					
		5520606	**20X-07**		●	20.000	19.0	19	95					
		5278239	**20-07**		●				120					
		5330758	**22-07***		●	22.000	21.0	21						
		5601745	**14F-11**		●	14.000	13.0	13	80	10.0		DC□□11T3 **E29•42~43** TFD11□ **E44**	LRIS-4*10	LLR-25S -20*65 (B)
		5601737	**16F-11***		●	16.000	15.0	15						
		5278262	**19-11**		●	19.050	18.0	18	120					
		5572730	**19-11SPL**		●				160	11.0				
		5520614	**20X-11**		●	20.000	19.0	19	95	10.0				
		5278254	**20-11**		●				120					
		5324025	**22-11***		●	22.000	21.0	21						
		5638606	**23-11-007**		●	23.000	22.0	22	70					
		5483417	**25-11MET**		●	25.000	24.0	24	120					
		5317136	**25-11**		●	25.400			150					
		5713581	**25-11SPL**		●	25.400				12.5				
6		5805635	**DS-SDU□16F-11-ACH***		●	16.000	15.5	15	80	10.0	–	DC□□11T3 **E29•42~43** TFD11□ **E44**	LRIS-4*10	LLR-25S -20*65 (B)
		5805627	**19-11-ACH**		●	19.050	18.0	18	120					
		5799614	**20-11-ACH**		●	20.000	19.0	19						
		5799622	**22-11-ACH***		●	22.000	21.0	21						
		5934021	**25-11MET-ACH**		●	25.000	24.0	24	150					
		5799648	**25-11-ACH**		●	25.400	24.0	24						
7		5462429	**DS-SDX□19-11**		●	19.050	18.0	18	120	10.0	–	DC□□11T3 **E29•42~43**	LRIS-4*10	LLR-25S (B)
		5520622	**20X-11**		●	20.000	19.0	19	95					
		5462437	**20-11**		●				120					
		5520697	**25-11MET**		●	25.000	24.0	24						
		5939335	**32-11**		●	32.000	30.0	30	150					

※Compatible with 16mm / 22mm round shank DS Series holders. DS-Sleeve ➡ G104

Toolholders for VC.. Inserts

SVAC-N

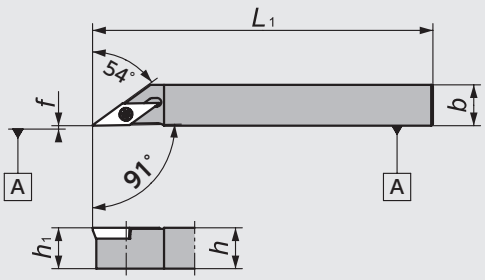
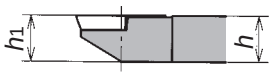


Figure-1



SVACR1010X11N is also available for cam-style machine

● Right-Hand style shown

SVAC-N-1L

(For VCGT1102)

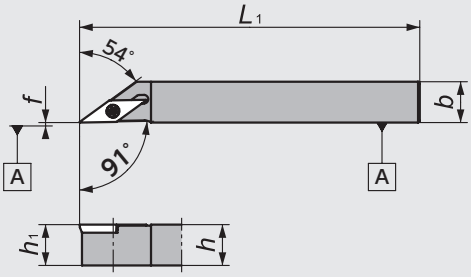
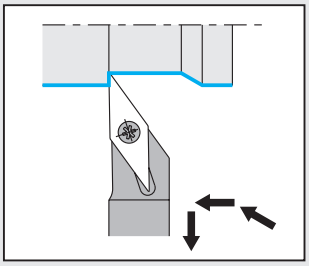


Figure-2



● Right-Hand style shown

SVAC-NW

(For VCGT1303)

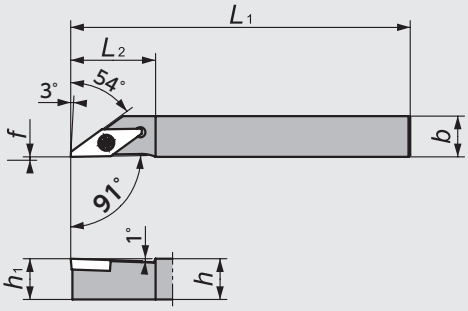
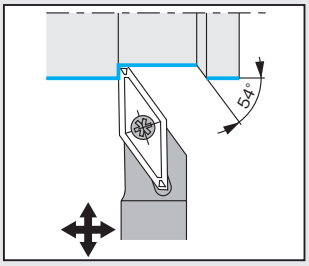


Figure-3



● Right-Hand style shown

SVAC

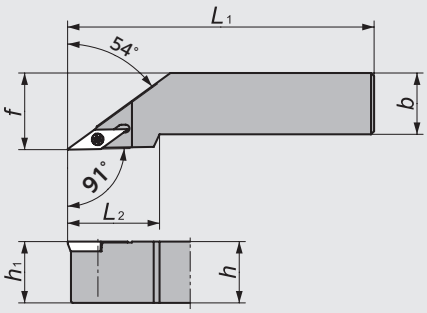
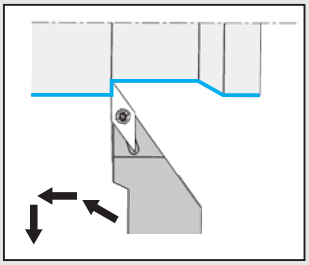


Figure-4



● Right-Hand style shown

SVAC-W

(For VCGT1303)

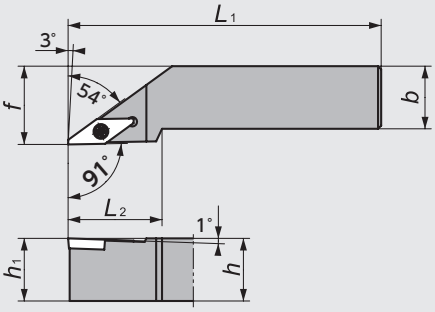
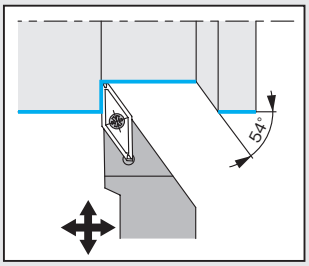


Figure-5



● Right-Hand style shown

SVJC-N

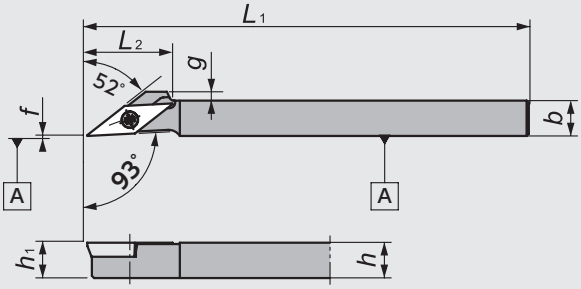
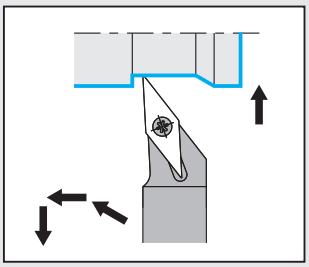


Figure-6



● Right-Hand style shown

SVJC-N-OH

(Coolant through)

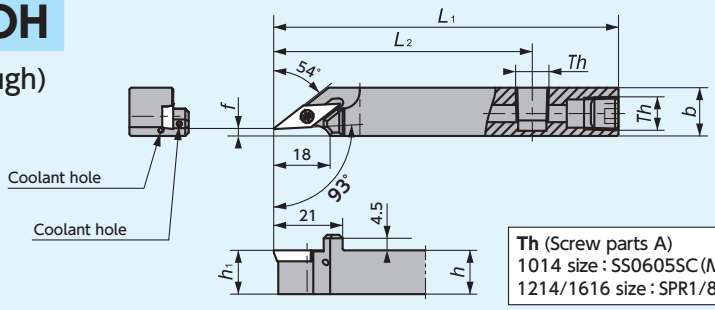
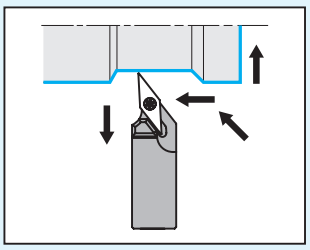


Figure-7

Th (Screw parts A)
1014 size : SS0605SC (M6×1.0)
1214/1616 size : SPR1/8 (Rc1/8)



●Right-Hand style shown

Y-SVJC-OH

(Y-axis/
Coolant through)

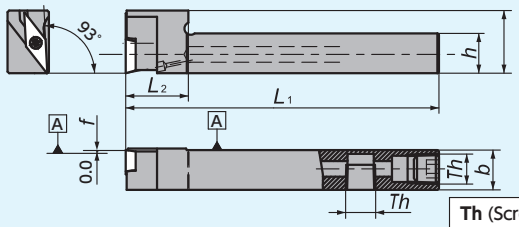
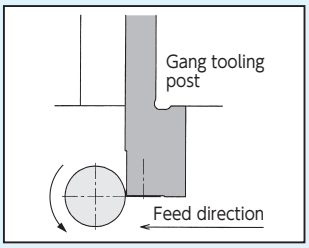


Figure-8

Th (Screw parts A)
1212/1616 size : SPR1/8 (Rc1/8)



●Right-Hand style shown
☆Takes Right-hand or neutral insert

VC.. Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L1	h1	f	L2	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5304043	5304092	SVAC R/L 1010X11N	●	●	10	10	120	10	0.0	–	–	VC□□1103 **E35•49~50**	LRIS-2.5*7	CLR-15S (A)
	5304050	5304076	1212X11N	●	●	12	12		12						
	5304068		1616X11N	●		16	16		16						
2	5473053	5473038	SVAC R/L 1010X11N-1L	●	●	10	10	120	10	0.0	–	–	VCGT1102 **E50**	LRIS-2.5*7	CLR-15S (A)
	5473061	5473046	1212X11N-1L	●	●	12	12		12						
3	5401724	5401708	SVAC R/L 1010L13NW	●	●	10	10	140	10	0.0	25	–	VCGT1303 **E49**	LRIS-3*8	RLR-20S (B)
	5401732	5401716	1212L13NW	●	●	12	12		12						
	5401740	5431077	1616M13NW	●	●	16	16		16						
4	5744768		SVAC R/L 20-X11	●		20	20	120	20	25.0	30	–	VC□□1103 **E35•49~50**	LRIS-2.5*7	CLR-15S (A)
5	5474549		SVAC R/L 2020M13W	●		20	20	150	20	25.0	30	–	VCGT1303 **E49**	LRIS-3*8	RLR-20S (B)
6	5878012		SVJCR 0808H11N	●		8	8	100	8	0	19	2	VC□□1103 **E35•49~50** TFV **E51**	LRIS-2.5*7	CLR-15S (A)
	5339940	5517750	SVJC R/L 1010X11N	●	●	10	10	120	10	0.0	–	–			
	5339932	5517768	1212X11N	●	●	12	12		12						
	5339924	5517743	1616X11N	●	●	16	16		16						
7	5020482		SVJC R/L 1014F11N-F02OH	●		10	14	80	10	2.0	55	–	VC□□1103 **E35•49~50**	LRIS-2.5*7	CLR-15S (A)
	5000419		1214H11N-F02OH	●		12		100	12		75				
	5020508		1616H11N-F02OH	●		16	16		16						
8	5021209		Y-SVJC R/L 1212H11S-OH	●		12	12	100	–	0	20	–	VC□□1103 **E35•49~50** TFV **E51**	LRIS-2.5*7	CLR-15S (A)
	5021191		1616H11S-OH	●		16	16								

Toolholders for VC.. Inserts

SVXC-N

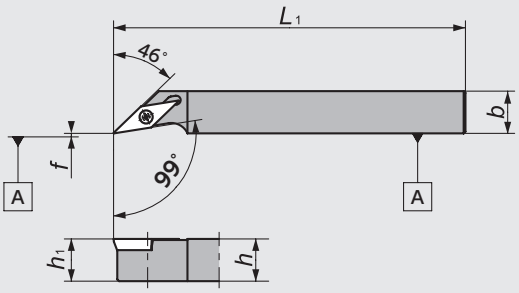
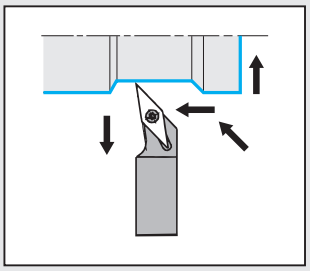


Figure-1



●Right-Hand style shown

Y-SVXCL

(Y-axis)

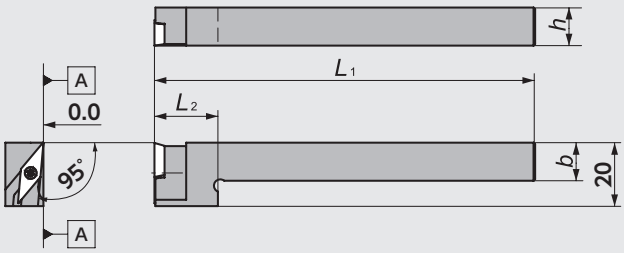
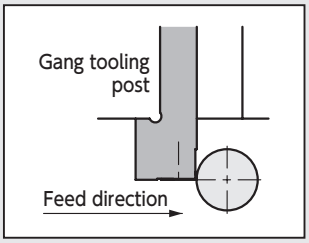


Figure-2



●Left-Hand style shown
☆Takes Left-hand or neutral insert

SVQC

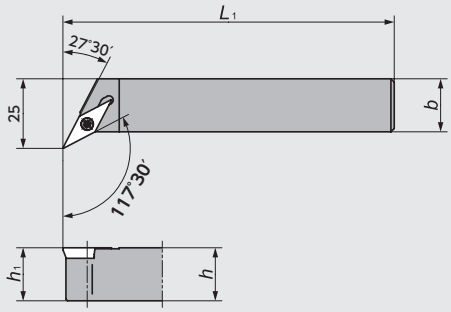
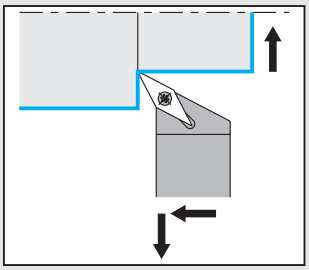


Figure-3



●Right-Hand style shown

SVVC-N

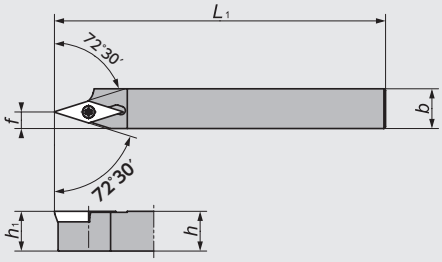
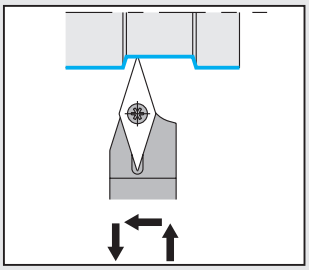


Figure-4



●Right-Hand style shown

SVVC-N

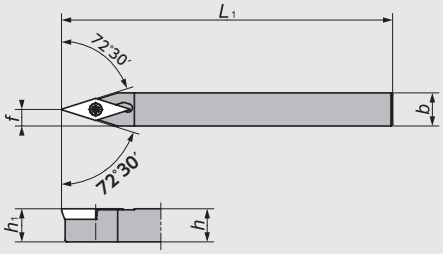
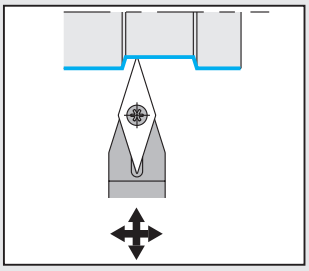


Figure-5



DS-SVX

(DS Holder)

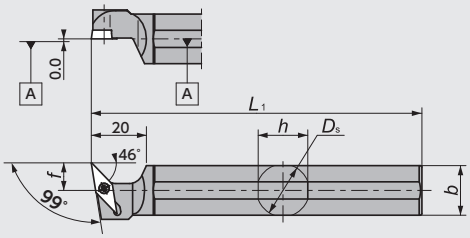
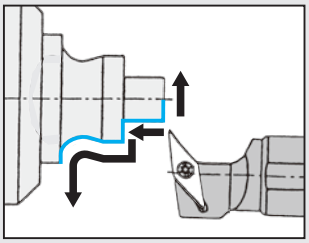
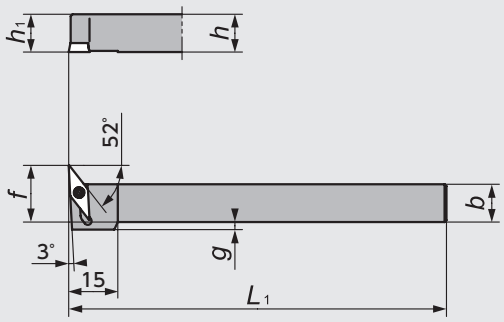


Figure-6



●Left-Hand style shown
☆Takes Right-hand or neutral insert

CH-SVUC



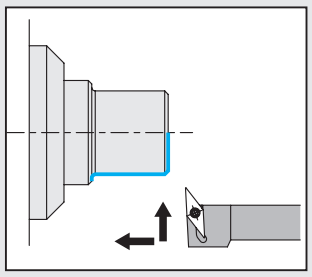


Figure-7

●Left-Hand style shown
☆Takes Right-hand or neutral insert

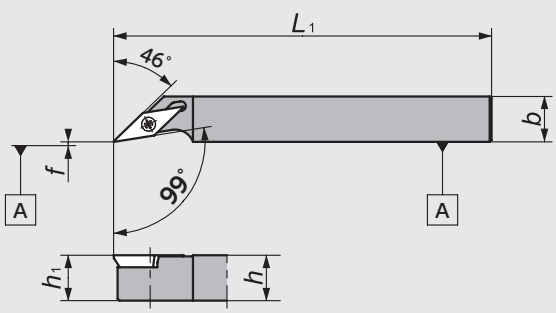
VC.. Series - Toolholders

Figure	Code No. R (N)	Code No. L (N)	Item Number	Stock R (N)	Stock L (N)	D_s	h	b	L_1	h_1	f	L_2	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5393731	5415815	SVXCR/L1012X11N	●	●	—	10	12	120	10	0.0	—	—	VC□□1103 E35•49~50	LRIS-2.5*7	CLR-15S
	5393749		1212X11N	●			12			12						
2		5917182	Y-SVXCL12-11S		●	—	12	12	120	—	—	20	—	VC□□1103 E35•49~50	LRIS-2.5*7	CLR-15S
3	5744776		SVQCR/L20-X11	●		—	20	20	120	20	—		—		LRIS-2.5*7	CLR-15S
4	5523238		SVVCR/L1212X11N	●		—	12	12	120	12	5	—	—		LRIS-2.5*7	CLR-15S
	5523212		1616X11N	●			16	16		16						
5	5877998		SVVCN0808H11N	●		—	8	8	100	8	4	—	—		LRIS-2.5*7	CLR-15S
	5461835		SVVCN1010X11N	●			10	10	120	10	5					
	5744792		N20-X11	●			20	20		20	10					
6		5601778	DS-SVXR/L14F-11		●	14.000	13	13	80	—	10.0	—	—	VC□□1103 E35•49~50	LRIS-2.5*7	CLR-15S
		5418413	15H-11		●	15.875	15	15	100							
		5601752	16F-11※		●	16.000			80							
		5393756	19-11		●	19.050	18	18	120							
		5572722	19-11SPL		●				160		11.0					
		5520663	20X-11		●	20.000	19	19	95		10.0					
		5393764	20-11		●				120							
		5486675	22-11※		●	22.000	21	21								
		5953252	25-11MET		●	25.000	24	24	150							
		5486683	25-11		●	25.400										
7		5997077	CH-SVUCR/L1010H11		●	—	10	10	100	10	18	—	2	VC□□1103 E35•49~50 TFV E51	LRIS-2.5*7	CLR-15S
		5995634	1212H11		●	—	12	12	100	12	20		0			
		5997085	1616H11		●	—	16	16	100	16	24		0			
		5997093	2020H11		●	—	20	20	100	20	28		0			

※Compatible with 16mm / 22mm round shank DS Series holders. DS-Sleeve ➔ G104

Toolholders for VP.. Inserts

SVXP-N



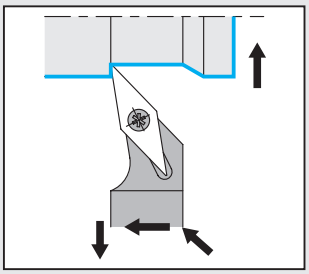


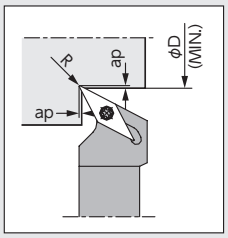
Figure-1

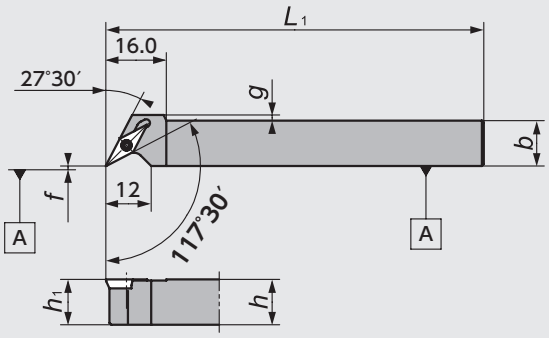
●Right-Hand style shown

SVQP-N

〈Dimension of recessed groove〉

R	ap	ΦD (Min)
0.05	0.2	2.5
	0.5	4.5
0.08	0.2	2.5
	0.5	4.5
0.18	0.2	3.5
	0.5	5.5
0.2	0.2	3.5
	0.5	5.5





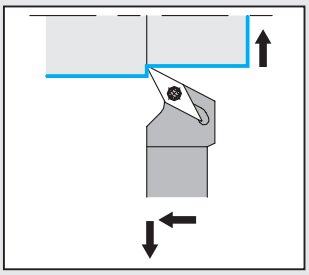
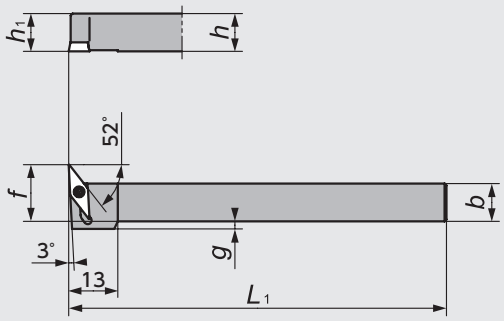


Figure-2

●Right-Hand style shown

CH-SVUP



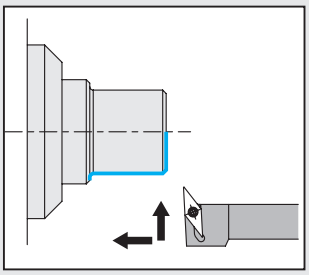
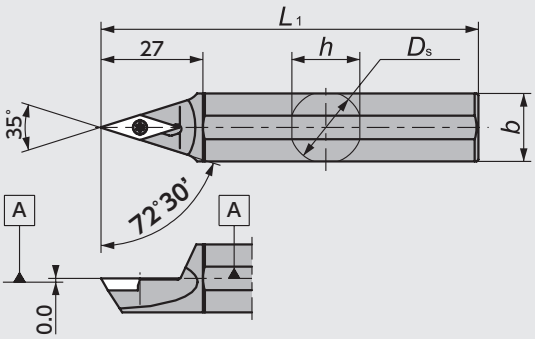


Figure-3

●Left-Hand style shown
☆Takes Right-hand or neutral insert

DS-SVVP

(DS Holder)



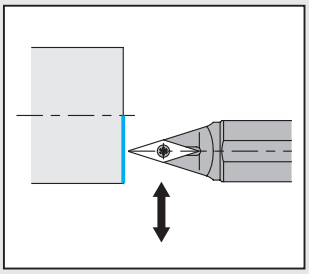


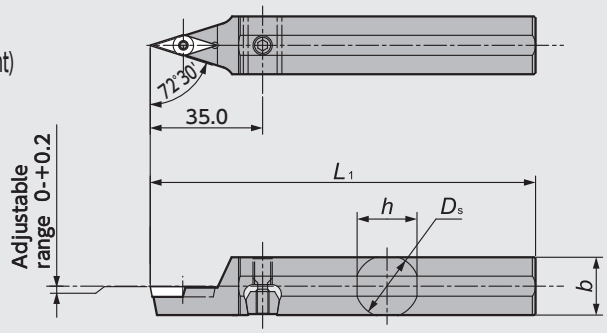
Figure-4

DS-SVVP-ACH

(DS-holder with Adjustable centerline height)

〈Parts〉

Shank	Wedge	Screw for Wedge
ϕ16	ACH-W18 (5805601)	WS060415-003 (5795539)
ϕ19.05		
ϕ20		WS060419-004 (5799226)
ϕ22		
ϕ25.4	ACH-W24 (5805619)	



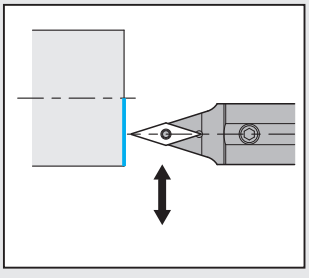


Figure-5

DS-SVXP

(DS Holder)

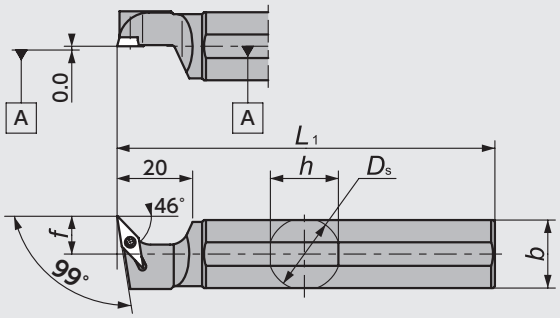
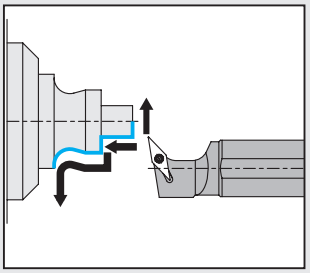


Figure-6



●Left-Hand style shown
☆Takes Right-hand or neutral insert

VP.. Series - Toolholders

Figure	Code No. R (N)	Code No. L (N)	Item Number	Stock R (N)	Stock L (N)	Ds	h	b	L1	h1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5511506	5511514	SVXPR/L1012X11N	●	●	—	10.0	12	120	10	0.0	—	VP□□1103 E50	LRIS-2.5*7	CLR-15S
	5511522	5511548	1212X11N	●	●		12.0			12					
2	5600622	5600614	SVQPR/L1010X08N	●	●	—	10.0	10	120	10	0.0	3.5	VP□□0802 E50	LRIS-2*6	CLR-13S
	5600598	5600606	1212X08N	●	●		12.0	12				1.5			
	5600580	5600564	1616X08N	●	●		16.0	16				—			
3		5659206	CH-SVUPR/L1010H08		●	—	10.0	10	100	10	15	2	VP□□0802 E50	LRIS-2*6	CLR-13S
		5659214	1212H08		●		12.0	12		12	17	0			
4	5511555		DS-SVVPN19-11	●		19.050	18.0	18	120	—	—	—	VP□□1103 E50	LRIS-2.5*7	CLR-15S
	5511563		N22-11	●		22.00	21.0	21							
5	5805643		DS-SVVPN16-11-ACH※	●		16.000	15.5	15	120	—	—	—	VP□□1103 E50	LRIS-2.5*7	CLR-15S
	5799655		N19-11-ACH	●		19.050	18.0	18							
	5799663		N20-11-ACH	●		20.000	19.0	19							
	5799671		N22-11-ACH※	●		22.000	21.0	21							
	5807524		N25-11-ACH	●		25.400	24.0	24	150						
6		5534003	DS-SVXPR/L19-08		●	19.050	18.0	18	120	—	10	—	VP□□0802 E50	LRIS-2*6	CLR-13S
		5534011	20-08		●	20.000	19.0	19							
		5600549	22-08※		●	22.000	21.0	21							
		5533997	25-08		●	25.400	24.0	24	150						

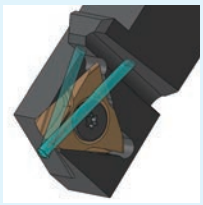
※Compatible with 16mm / 22mm round shank DS Series holders.

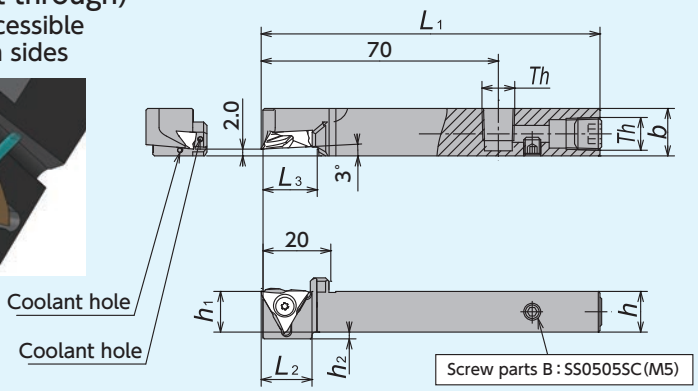
DS-Sleeve ➡ G104

Toolholders for TFX / TF .. inserts

TFT-OH2

(Coolant through)
Screw accessible from both sides

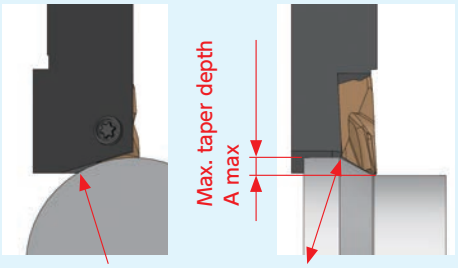




Th (Screw parts A)
1014 size : SS0605SC (M6×1.0)
1214/1616 size : SPR1/8 (Rc1/8)

●Right-Hand style shown

Taper cut capability



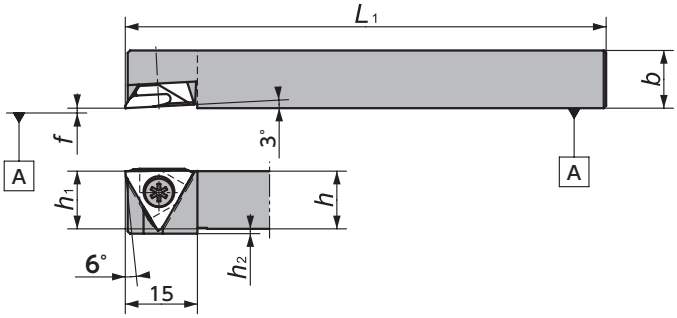
Item Number	Taper cut capability		
	D max	A max	T max
TFTR 1014H-OH2	20	2.5	30°
1214H-OH2	30		
1616X-OH2	40		

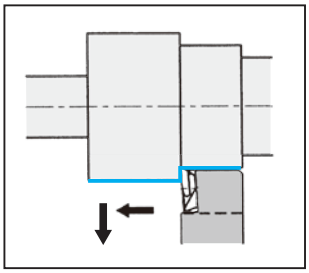
Item Number	Stock	Dimensions (mm)							Spare Parts	
									Clamp screw	Wrench
		h	b	L_1	h_1	h_2	L_2	L_3		
TFTR 1014H-OH2	●	10	14	100	10	4	15	15	LR-S-4*10PW	CLR-15S
1214H-OH2	●	12	14	100	12	2	15	15	LR-S-4*10PW	CLR-15S
1616X-OH2	●	16	16	120	16	–	–	17.5	LR-S-4*10PW	CLR-15S

When coolant is supplied from the tool post directly to the tools, please remove screw parts 「B」and set screw parts A at side and rear of toolholder.
Wrench for screw parts 「A」(SS0605SC) is not attached.
Please use hex wrench3.0(LW-3) for SS0605SC, hex wrench5.0(LW-5) for SPR1/8.

TFT

Screw accessible from both sides

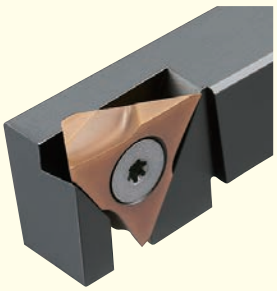


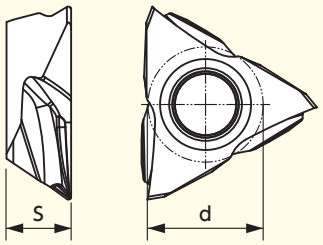


●Right-Hand style shown
※No capability for taper cut

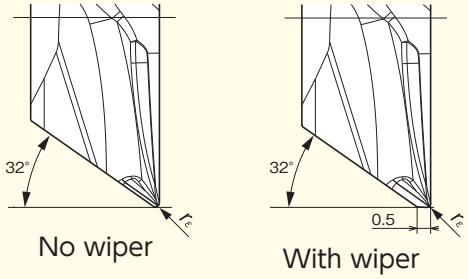
Item Number	Stock	Dimensions (mm)						Spare Parts	
								Clamp screw	Wrench
		h	b	L_1	f	h_1	h_2		
TFTR 10	●	10	10	120	0.0	10	3	LR-S-4*10PW	CLR-15S
12	●	12	12	120	0.0	12	1		
16	●	16	16	120	0.0	16	–		
20	●	20	20	120	0.0	20	–		

NEW TFX Series - inserts (3D mold chipbreaker)





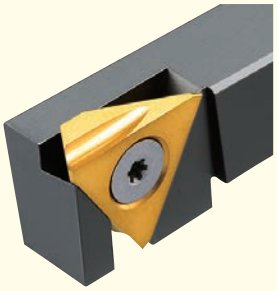
Shape

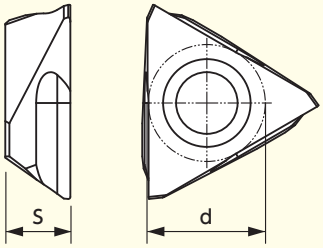


All angles shown are obtained when insert is set in the holder

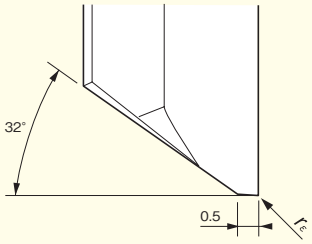
shape	Max. DOC (mm)	Wiper	Item number	Dimension (mm)			PVD coated carbide		
				r_ε	d	s	ST4	DM4	ZM3
	5.0	No	**TFX 3301MR**	0.08	9.525	4.76	●	●	
			3302MR	0.18	9.525	4.76	●	●	
			3304MR	0.38	9.525	4.76	●	●	
		Yes	**TFX 3301MRW**	0.08	9.525	4.76	●	●	
			3302MRW	0.18	9.525	4.76	●	●	
			3304MRW	0.38	9.525	4.76	●	●	

TF Series - inserts (Ground chipbreaker)





Shape

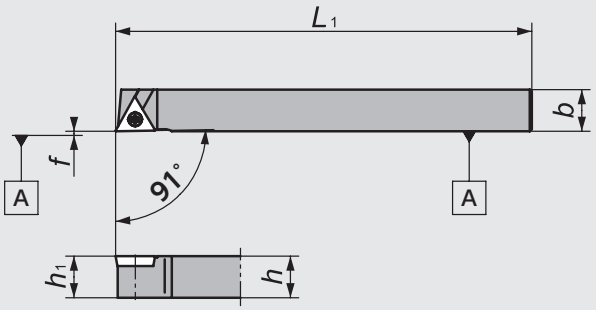


All angles showm are obtained when insert is set in the holder

shape	Max. DOC (mm)	Wiper	Item number	Dimension (mm)			PVD coated carbide		
				r_ε	d	s	ST4	DM4	ZM3
	4.0	Yes	**TF 3300R**	0.0	9.525	4.76			●
			3305R	0.05	9.525	4.76			●
			3315R	0.15	9.525	4.76			●
			3320R	0.2	9.525	4.76			●

Toolholders for TC.. Inserts

STAC-N



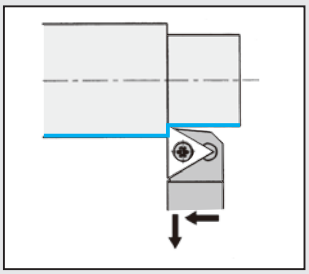
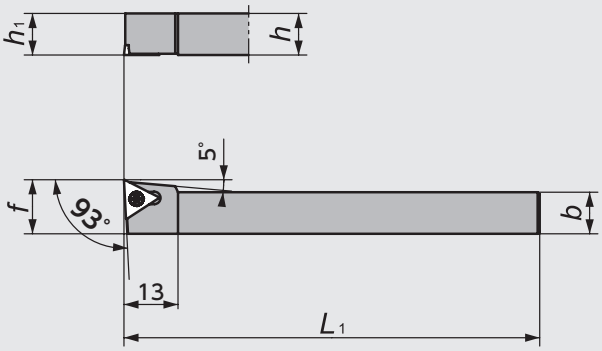


Figure-1

●Right-Hand style shown

CH-STUC



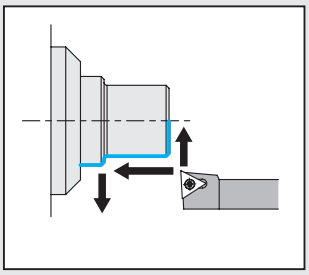


Figure-2

●Left-Hand style shown
☆Takes Right-hand or neutral insert

TC.. Series - Toolholders

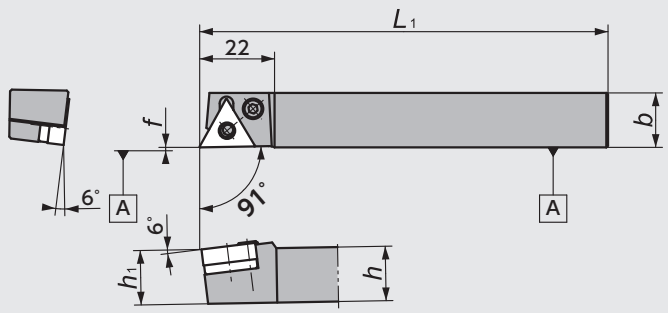
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5137005	5137831	**STAC$^{R}_{L}$0808X09N**	●		8	8	120	8	0.0	TC□□0902 **E46** TFT09 **E48**	LR1S-2.2*6	CLR-13S
	5137096	5137948	**1010X09N**	●	●	10	10		10				
	5119078	5137930	**1212X11N**	●	●	12	12		12		TC□□1102 **E46** TFT11 **E48**	LR1S-2.5*7	CLR-15S
2		5659180	**CH-STUC$^{R}_{L}$1010H09**		●	10	10	100	10	13	TC□□0902 **E46**	LR1S-2.2*6	CLR-13S
		5659198	**1212H09**		●	12	12		12	15			

MEMO

Toolholders for TN.. Inserts

PTAN-N

(Lever - lock)
Screw accesssible from both sides



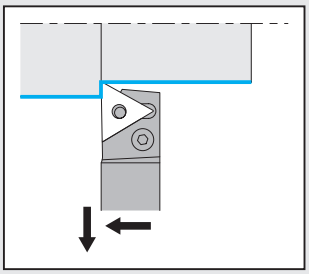
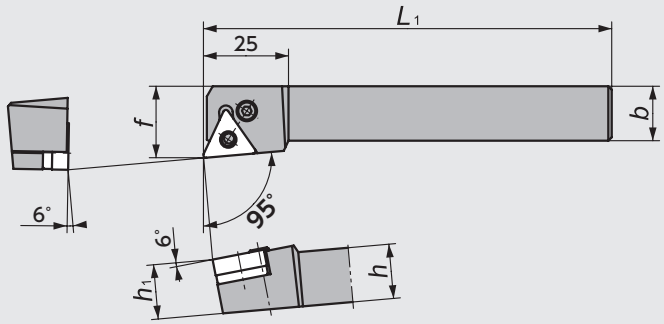


Figure-1

●Right-Hand style shown

PTLN

(Lever - lock)
Screw accesssible from both sides



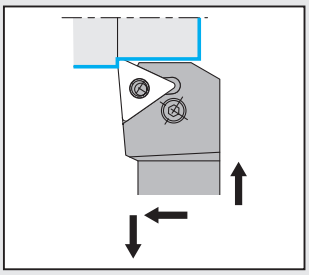
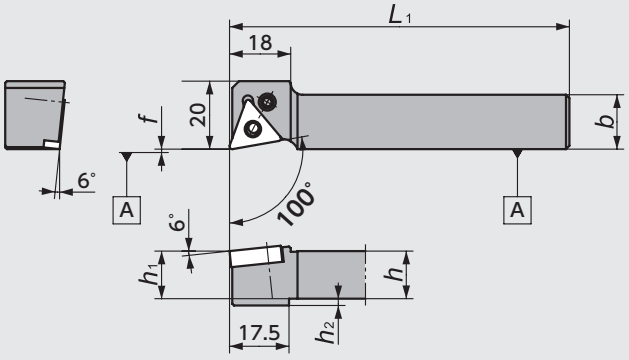


Figure-2

●Right-Hand style shown

PTXN-N

(Lever - lock)



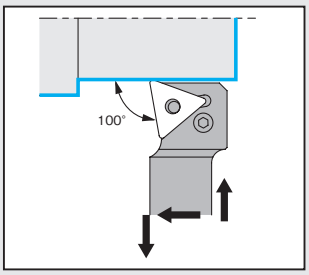
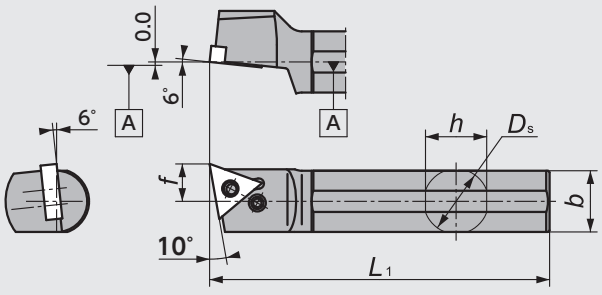


Figure-3

●Right-Hand style shown

DS-PTX

(Lever - lock)
DS Holder



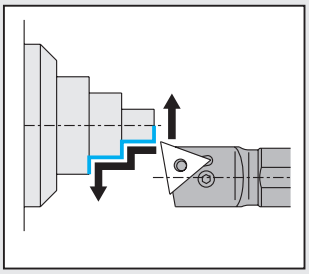


Figure-4

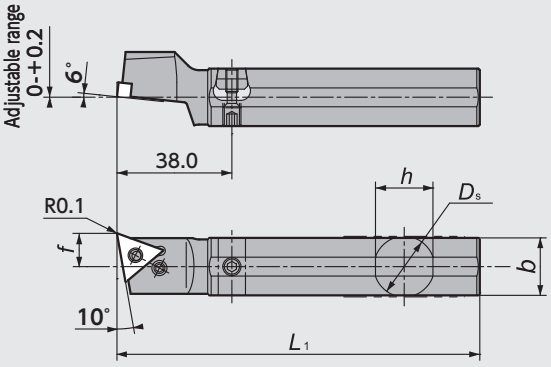
●Left-Hand style shown
☆Takes Right-hand or neutral insert

DS-PTX-ACH

(DS-holder with Adjustable centerline height)

〈Parts〉

Shank	Wedge	Screw for Wedge
ϕ16	ACH-W18 (5805601)	WS060415-003 (5795539)
ϕ19.05		
ϕ20		WS060419-004 (5799226)
ϕ22		
ϕ25	ACH-W24 (5805619)	
ϕ25.4		



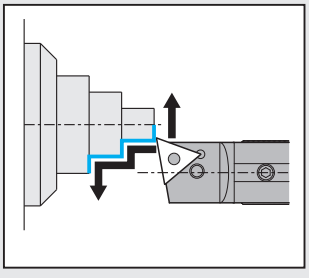
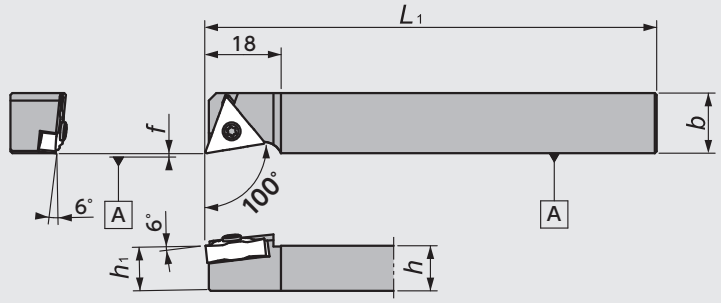


Figure-5

●Left-Hand style shown
☆Takes Right-hand or neutral insert

STXNR-N

Screw-on



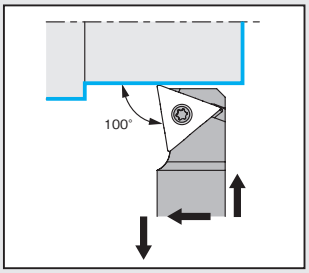


Figure-6

※Only for UL Chipbreaker

●Right-Hand style shown

TN.. Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	D_s	h	b	L_1	h_1	f	h_2	Gage insert	Spare Parts: Shim	Clamp Pin	Clamp Screw	Spring	Wrench
1	5252325		PTANR/L 1616X33N	●		–	16	16	120	16	0.0	–	TN□□1604 **E25~26•37**	LST317	LCL3	LCS3	LSP3	LW-2.5
2	5552336	5552344	PTLNR/L 2020L33	●	●	–	20	20	140	20	25	–	TN□□1604 **E25~26•37**	LST317	LCL3	LCS3	LSP3	LW-2.5
3	5479860		PTXNR/L 1016X33N	●		–	10	16	120	10	0.0	2	TN□□1604 **E25~26•37**		LCL33N	LCS33		LW-2
	5016183		1216X33NGX	●			12		85	12		0						
	5479852		1216X33N	●					120									
	5489901		1616X33N	●			16		120	16								
	5513965		2020X33N	●			20	20		20								
4		5815766	DS-PTXR/L 16-33		★	16.00	15	18	120	–	11.0	–	TN□□1604 **E25~26•37**		LCL33N	LCS33		LW-2
		5519707	19-33		●	19.05	18	18										
		5519715	20-33		●	20.00	19	19										
		5591029	22-33※		●	22.00	21	21			12.0							
		5519699	25M-33		●	25.40	24	24	150		13.0							
5		5805650	DS-PTXR/L 16-33-ACH※		●	16.00	15.5	15	120	–	11.0	–	TN□□1604 **E25~26•37**		LCL33N	LCS33		LW-2
		5799689	19-33-ACH		●	19.05	18	18										
		5799697	20-33-ACH		●	20.00	19	19										
		5799705	22-33-ACH※		●	22.00	21	21			12.0							
		5934039	25-33MET-ACH		●	25.00	24	24	150		13.0							
		5799713	25-33-ACH		●	25.40												

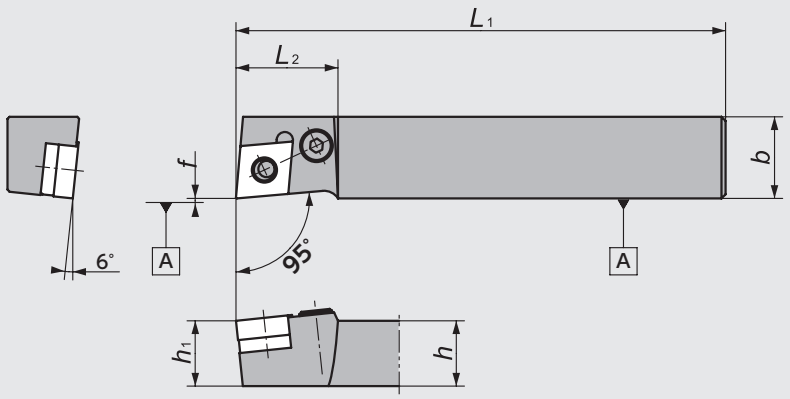
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	D_s	h	b	L_1	h_1	f	h_2	Gage insert	Spare Parts: Clamp Screw	Wrench
6	5837893		STXNR1016X33N	●		–	10	16	120	10	0		TNGG1604□□ MFNUL **E37**	LR-S-3.5x10	LLR-20S
	5016191		1216X33NGX	●			12		85	12					
	5837901		1216X33N	●					120						
	5837919		1616X33N	●			16			16					

※Compatible with 16mm / 22mm round shank DS Series holders. DS-Sleeve ➡ G104

Toolholders for CN.. Inserts

PCLN-N

(Lever - lock)



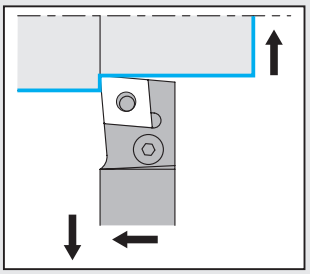
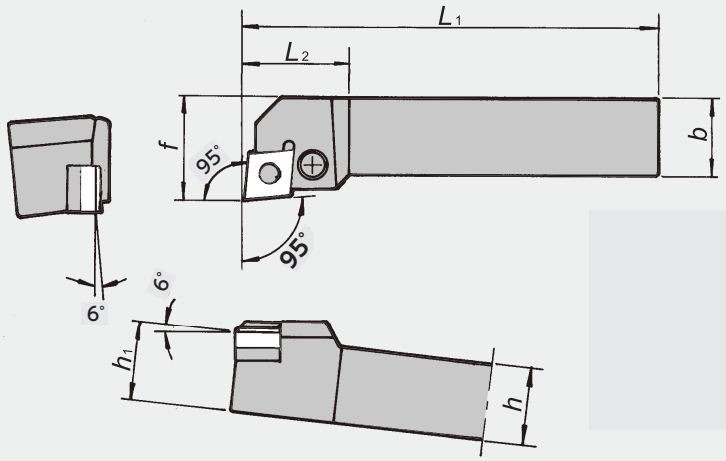


Figure-1

●Right-Hand style shown

PCLN

(Lever - lock)
Screw accesssible from both sides



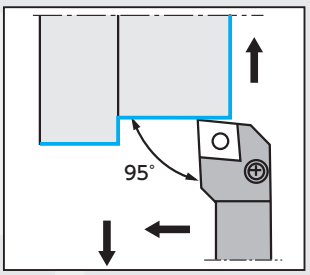


Figure-2

●Right-Hand style shown

CN.. Series - Toolholders

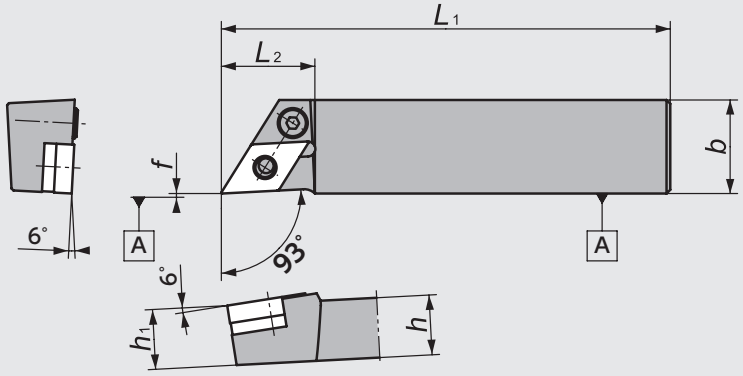
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Gage insert	Spare Parts: Shim	Clamp Pin	Clamp Screw	Spring	Wrench
1	5259056		PCLNR/L1620X43N	●		16	20	120	16	0.0	25	CN□□1204 E20~21・36	LSC42	LCL4	LCS4CA	LSP4	LW-3
2	5321997	5322003	PCLNR/L2020K43	●	●	20	20	125	20	25	28	CN□□1204 E20~21・36	LSD42	LCL4	LCS4	LSP4	LW-3
	5322011	5322029	2525M43	●	●	25	25	150	25	32	28						

※For other shank sizes, please contact us for more information.

Toolholders for DN.. Inserts

PDJN-N

(Lever - lock)



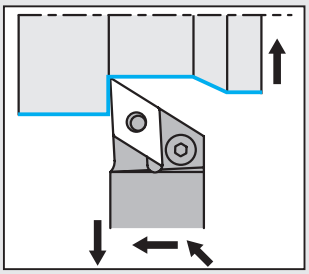
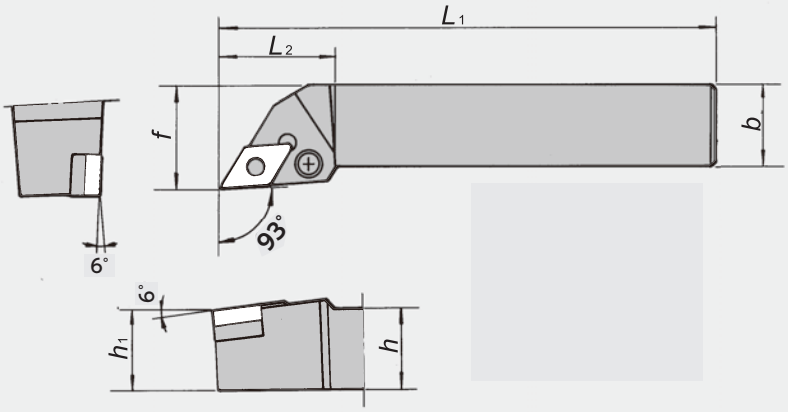


Figure-1

●Right-Hand style shown

PDJN

(Lever - lock)
Screw accesssible from both sides



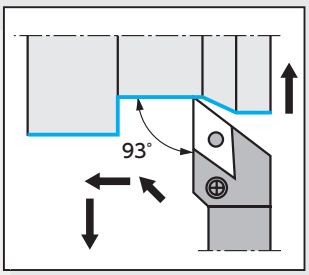


Figure-2

●Right-Hand style shown

DN.. Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	f	L_2	Gage insert	Spare Parts Shim	Clamp Pin	Clamp Screw	Spring	Wrench
1	5259072		PDJNR/L1625X43N	●		16	25	120	16	0.0	25	DN□□1504 E22~23・36	LSD42	LCL4	LCS4CA	LSP4	LW-3
2	5322037	5322045	PDJNR/L2020K43	●	●	20	20	125	20	25	32	DN□□1504 E22~23・36	LSD42	LCL4	LCS4	LSP4	LW-3
	5682463		2525M43	●		25	25	150	25	32							

※For other shank sizes, please contact us for more information.

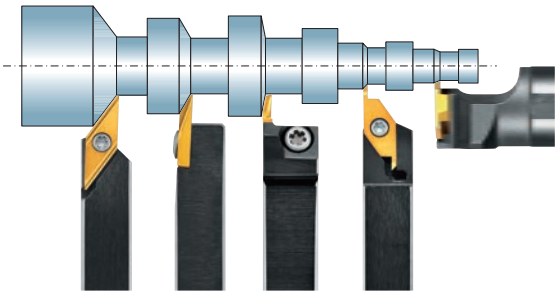
MEMO

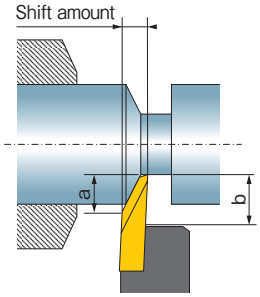
Back Turning

- Back Turning Tools ····· G44
- Recommended Cutting Conditions ·· G45
- General Information ····· G46
- Tool List ····· G50

CSV Series ····· G50
CTPS Series ····· G51
TBP Series ····· G52
TBPA Series ····· G54
TBVC Series ····· G56
TBDP Series ····· G57
TB Series ····· G58
TBMH Series ····· G60

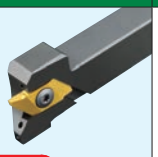
NTK Back Turning Tools - Product Lines



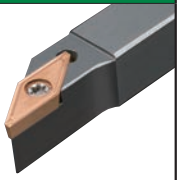


a: Length of Blade
b: Max Depth of Cut

Insert	CSVB ➡G50
Holder	CSV-NC ➡G50
a	~1.0mm
b	~2.0mm
Shift amount	1.1~1.5mm

Insert	TBPS ➡G51	TBP ➡G53				
Holder	CTPS ➡G51	TBP ➡G52	TBP-OH2/OH  ➡G52 Coolant through	Y-TBP ➡G52 Y-axis	Y-TBP-OH ➡G52 Y-axis/Coolant through	DS-TBP ➡G52 DS holder
a	~4.8mm	~4.8mm				
b	~4.8mm	~5.3mm				
Shift amount	2.4mm	3.5mm				

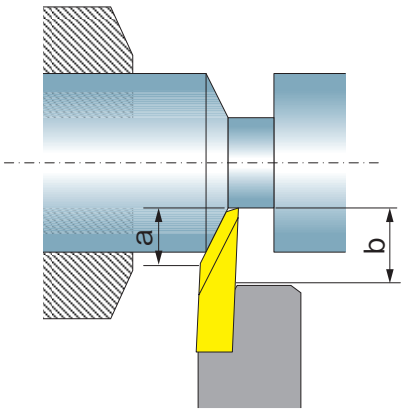
Insert	TBPA ➡G55		
Holder	CTPA ➡G54	TBPA-OH ➡G54 Coolant through	CH-TBPA ➡G54
a	~6.3mm		
b	~6.8mm		
Shift amount	3.4mm		

Insert	TBDP ➡G57		TB ➡G59	VC..1103.. ➡E49～50 TBVC ➡G56		VC..1303.. ➡E49
Holder	TBDP ➡G57	Y-TBDP ➡G57 Y-axis	TB ➡G58	TBVC ➡G56	CH-SVXCL ➡G56	SVAC...(N)w  ➡G62
a	3.5mm		~4.0mm	8.0mm	—	—
b	~5.0mm		~8.8mm	8.0mm	—	—
Shift amount	2.05mm		4.0mm	7.5/10mm	10mm	—

Insert	TBMH ➡G61					
Holder	GTT ➡G60	GTT-OH2/OH ➡G60 Coolant through	Y-GTT ➡G60 Y-axis	Y−GTT..-OH ➡G60 Y-axis/Coolant through	DS-GTT ➡G60	CH-GTT ➡G60
a	~1.3mm					
b	~2.7mm					
Shift amount	1.0/1.5mm					

Recommended Cutting conditions

Work Material		Cutting Speed (m/min)	CSV		TBP/TBPA-BM		TBP/TBPA/TBPS/ TBVC/TBMH		TB32/TB43	
Common Name	JIS		Grade	Feed Rate (mm/rev)	Grade	Feed Rate (mm/rev)	Grade	Feed Rate (mm/rev)	Grade	Feed Rate (mm/rev)
Low Carbon Steel	S10C ~ S30C	50 80 120	**DT4 VM1**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**TM4 DM4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**QM3 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Carbon Steel	S45C ~ S55C	50 80 100	**DT4 VM1**	X0.02 (0.005-0.03) Z0.02 (0.005-0.04)	**DM4 TM4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**QM3 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Alloy Steel	SCr415 ~ SCr440	50 80 100	**DT4 VM1**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**DM4 TM4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**QM3 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Stainless Steel (Austenitic)	SUS303	50 90 130	**ZM3 DT4**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**ST4 DT4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.07)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Stainless Steel (Austenitic)	SUS304 SUS316 SUS316L	40 70 100	**DT4 VM1**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**ST4 DT4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**QM3 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Stainless Steel (Ferritic)	SUS430 SUS430F	50 90 130	**VM1 ZM3**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**ST4 DT4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**VM1 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Stainless Steel (Martensitic) (Precipitation hardenic)	SUS440C SUS630	40 60 90	**DT4 VM1**	X0.02 (0.005-0.03) Z0.02 (0.005-0.04)	**ST4 DT4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**QM3 TM4**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.05 (0.03-0.1)
Sulfur free cutting steel Sulfur complex free cutting steel	SUM22 SUM23 SUM24L	50 120 150	**VM1 DT4**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**TM4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**VM1 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Electromagnetic soft iron	SUY-0 SUY-1 SUY-2	200 300 350	**VM1 DT4**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**DT4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**VM1 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Electromagnetic stainless		50 80 120	**DT4 VM1**	X0.02 (0.005-0.03) Z0.02 (0.005-0.04)	**DT4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**QM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
High-carbon chromium bearing steel	SUJ2	50 80 120	**DT4 VM1**	X0.02 (0.005-0.03) Z0.02 (0.005-0.04)	**DM4 TM4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**QM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Titanium alloy	6AL-4V 6AL-4VELI	50 70 110	**DT4 ZM3**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**TM4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**TM4 ZM3**	X0.02 (0.01-0.03) Z0.04 (0.02-0.06)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.1)
Aluminum alloy	A5052 A6061 A7025	50 160 250	**ZM3**	X0.02 (0.005-0.03) Z0.03 (0.005-0.04)	**TM4**	X0.02 (0.01-0.03) Z0.06 (0.05-0.1)	**PD1 KM1**	X0.02 (0.01-0.03) Z0.04 (0.02-0.07)	**ZM3**	X0.02 (0.01-0.04) Z0.06 (0.03-0.15)



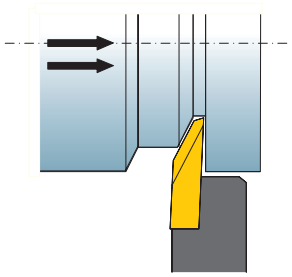
Recommended max. depth of cut for each pass

(Multiply this ratio by the length of blade (a) to obtain the max. depth of cut for each pass)

Work material \ Grade	PVD Coated Carbide ST4·QM3·DT4·DM4·TM4·VM1·ZM3
Steel	a x 0.7
Stainless Steel	a x 0.6
Non-ferrous material	a x 0.9
Plastic	a x 0.9

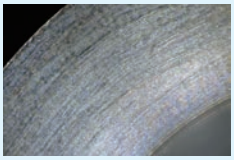
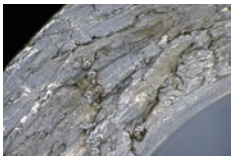
a : Length of Blade b : Max. Depth of Cut

When the length of blade (a) is not long enough

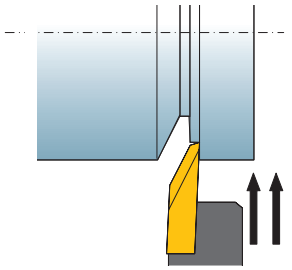


Back turning can be performed multiple times until the total depth of cut reaches (b).

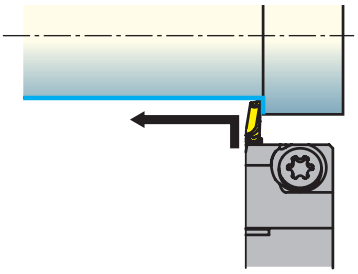
End face

NTK BM-chipbreaker	Competitor
	
Excellent surface	Rough surface

When experiencing rough finish on shoulder



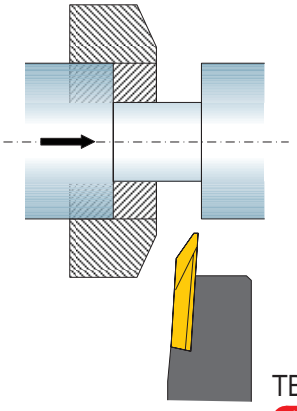
Turning the shoulder twice can improve the finish.
This problem can be solved by using TBP-BM, TBPA-BM, TBDP inserts without increasing the number of passes



TBP-BM, TBPA-BM, TBDP come with NTK's uniquely designed molded chipbreaker providing single pass machining. These inserts can provide excellent surface finish.

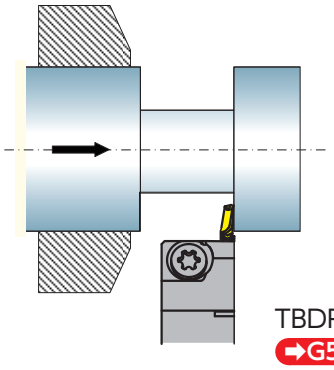
TBP-BM ➡G53
TBPA-BM ➡G55
TBDP ➡G57

Finishing cut



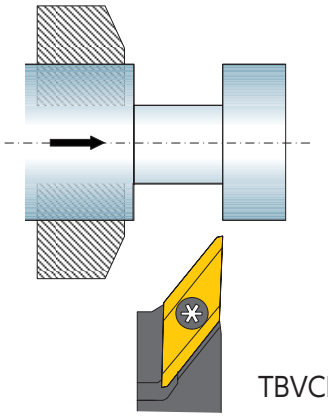
Roughed section goes into the guide bushing when performing finish cuts. (Deburring may be needed upon roughing)

TBP
➡G52



TBDP-L
➡G57

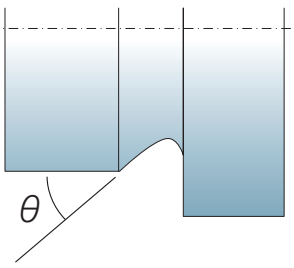
TBDP Left-hand toolholder will eliminate the risky process of pulling back the turned bar stock into the guide-bushing for finishing process, because its cutting point is away from the guide-bushing.



TBVCR··F10
➡G56

Cutting edge is located away from the guide-bushing. Roughing can be performed without retracting roughed part from guide-bushing.

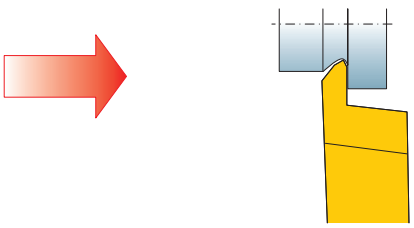
Undercut



Assume undercut exists on back turning section

$\theta = 22^\circ$ type

$\theta = 45^\circ$ type



TBMH style inserts should be used to cut the undercut

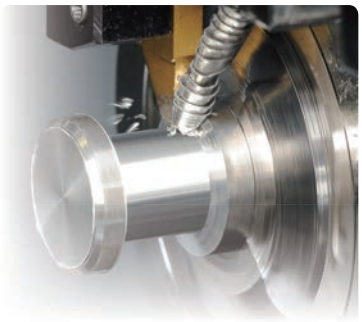
Inserts ➡G61

Holders ➡G60

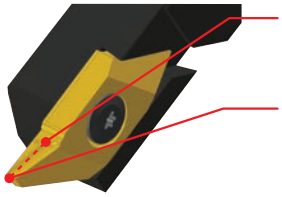
TBP-BM / TBPA-BM for Back Turning

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

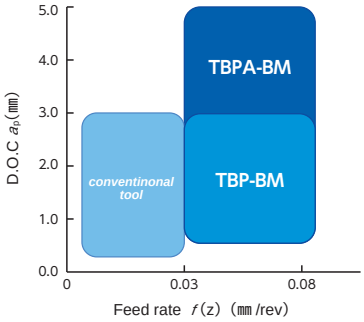


- Prevents the rough end face from hitting the chip
- Wiper flat on cutting edge creates excellent surface finishes

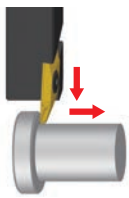
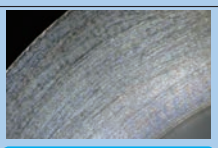
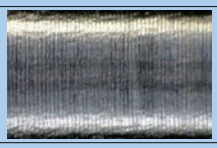
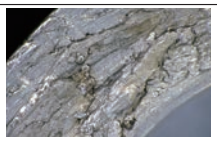
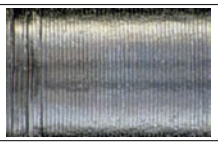
Best Solution for Chip Control

Coolant through toolholders now available

TBP-OH2 / OH TBPA-OH	Y-TBP-OH

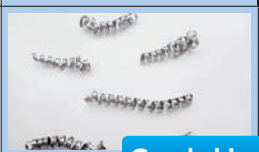
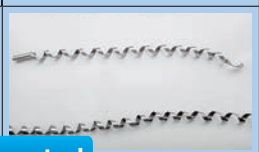
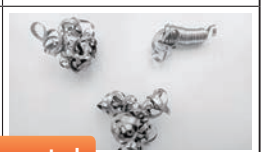
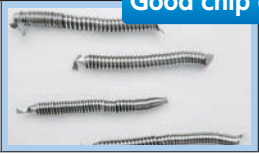
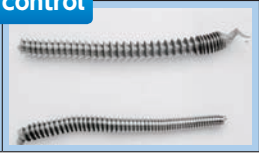
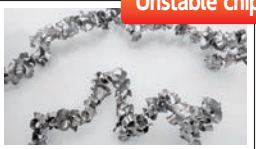
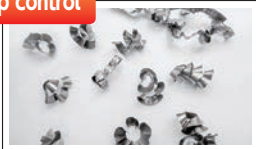


Superior Surface Finish

1Pass	BM chipbreaker		Competitor's tool	
	End face	OD	End face	OD
				
	Excellent surface	Ra : 0.72 μm Rz : 4.46 μm	Rough surface	Ra : 1.65 μm Rz : 6.01 μm

Material : SUS304 (φ16) , Cutting condition : v_c=80m/min f (x)=0.02mm/rev f (z)=0.08mm/rev a_p=3.0mm WET

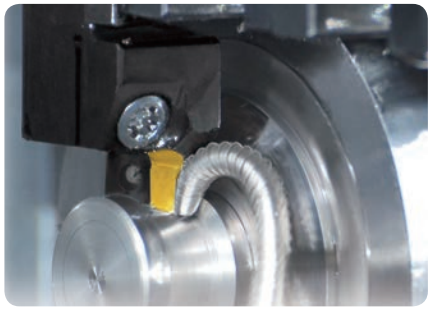
Excellent Chip Control

Feed rate f (z) (mm/rev) / D.O.C a_p (mm)	BM chipbreaker		Competitor	
	0.05	0.08	0.05	0.08
0.5				
3.0				
	Good chip control		Unstable chip control	

Material : SUS304 (φ16) , Cutting condition : v_c=80m/min WET

➡G53 • G55

BACK DUO

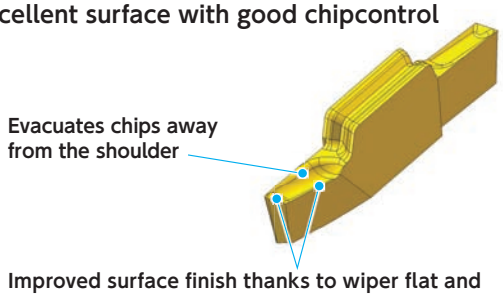


Features

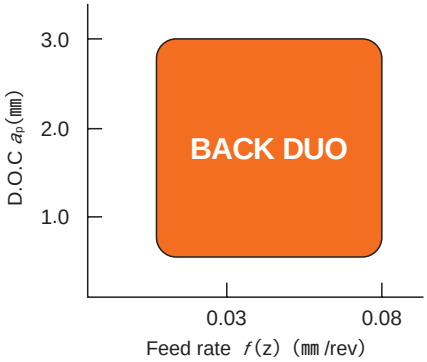
- New chipbreaker covers a wide range of cutting conditions
- No-compromise quality back turning tools
- High quality finish in a single pass
- No finishing cut required ➡ Reduced cycle time
- Multi point clamping system ensures rigidity

New 3D chipbreaker

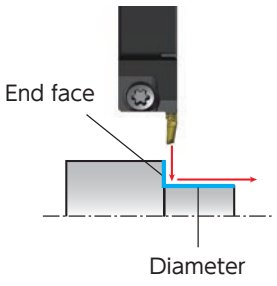
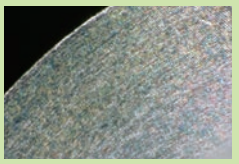
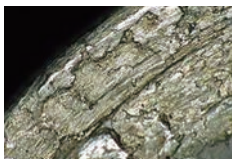
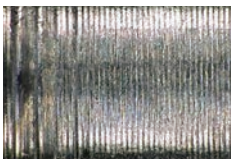
Excellent surface with good chipcontrol



Chip control range



Surface finish comparison for SUS304

1Pass	BACK DUO		Competitor	
	End face	Diameter	End face	Diameter
				
	Excellent surface	Ra : 0.90 μm Rz : 4.11 μm	Rough surface	Ra : 2.16 μm Rz : 10.28 μm

Work material : SUS304 Holder : TBDPR12 Insert : TBDP2201MR TM4
Cutting condition : v_c=80m/min f (x)=0.02mm/rev f (z)=0.08mm/rev a_p=3.0mm WET

Chip control comparison

SUS304		BACK DUO		Competitor	
		f (z) (mm/rev)			
		0.05	0.08	0.05	0.08
Depth of cut a_p (mm)	3.0	Incredible chip control		Unstable chip control	

Work material : SUS304 Holder : TBDPR12 Insert : TBDP2201MR TM4
Cutting condition : v_c=80m/min f (x)=0.02mm/rev f (z)=0.08mm/rev a_p=3.0mm WET

Holders ➡ G57 Inserts ➡ G57

CSV Series Best for up to 5㎜ diameter material

CSV
For Cam-style machine

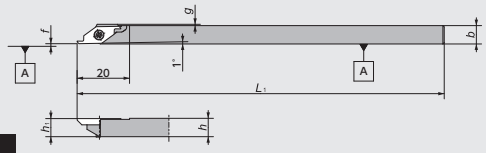


Figure-1

●Right-Hand style shown

CSV-NC
For Gang-style machine

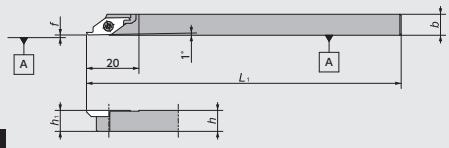


Figure-2

●Right-Hand style shown

CSV-NC-F
For Gang-style machine

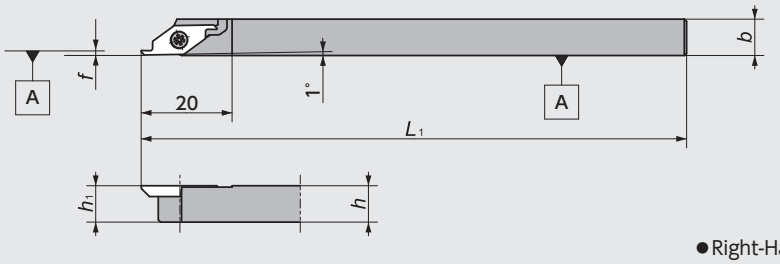


Figure-3

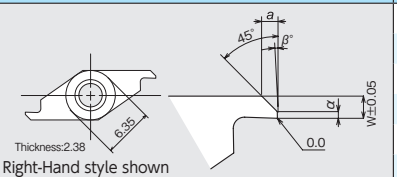
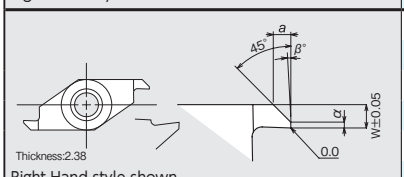
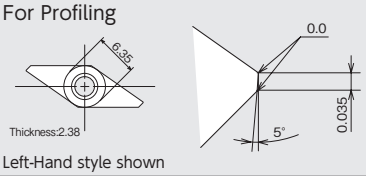
●Right-Hand style shown

CSV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5492962		CSVR/L 07GX	●		7	7	85	7	0.1	0.5	CSVB	LRIS-2.5*7	CLR-15S
	5303169	5303193	07	●	●			140						
	5492954		08GX	●		8	8	85	8		0.0			
	5303151	5303201	08	●	●			140						
	5303136		095	●		9.5	9.5		9.5					
	5303144	5303177	10	●	●	10	10		10					
	5474770		12GX	●		12	12	85	12					
	5327929		12	●				140						
2	5514062	5514070	CSVR/L 08NC	●	●	8	8	120	8	0.1	—	CSVB	LRIS-2.5*7	CLR-15S
	5563010		10GXNC	●		10	10	85	10	0.1				
	5477492	5477542	10NC	●	●			120						
	5477534	5477500	12NC	●	●	12	12		12					
3	5789615		CSVR/L 08NC-F	●		8	8	120	8	0.0~0.1	—	CSVB	LRIS-2.5*7	CLR-15S

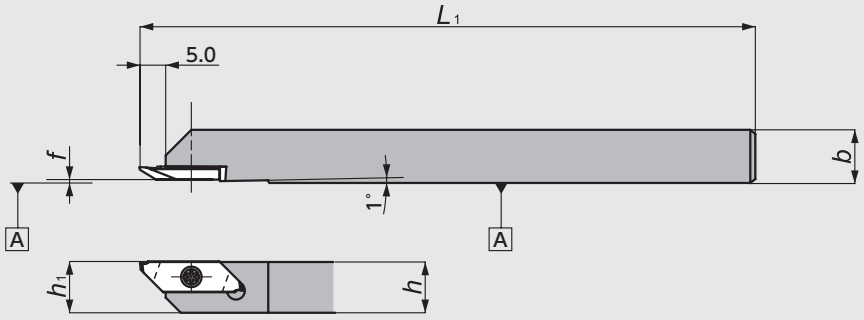
☆All the inserts can use the same toolholder　CSV series ➡ G94

CSV Series - Inserts Mirror finish

Shape	Item Number	Chip-breaker	Length of Blade a	Max Depth of cut b	Dimensions (㎜) W	Edge Geometry (α×β)	PVD Coated Carbide ZM3 R	ZM3 Stock	VM1 R	VM1 Stock	VM1 L	VM1 Stock	DT4 R	DT4 Stock
 Right-Hand style shown	CSVB11FR/L V Ⓜ	No	0.7	2.0	1.00	0.3×5°			5303573	●	5303532	●		
	11FR/L V-A Ⓜ					0.3×2°			5358791	●				
	11FR/L V-M Ⓜ					0.15×2°	5435995	●	5386289	●	5386297	●	5827480	●
	11FR/L V-C Ⓜ					0.15×5°			5358809	●				
	11FR/L V12 Ⓜ		0.8		1.20	0.3×5°			5344890	●				
	11FR/L V14 Ⓜ		1.0		1.40				5344908	●				
 Right-Hand style shown	CSVB11FR/L VB Ⓜ	Yes	0.7	2.0	1.00	0.3×5°			5358825	●				
	11FR/L VB-A Ⓜ					0.3×2°			5358833	●				
	11FR/L VB-M Ⓜ					0.15×2°	5435987	●	5386305	●	5386313	●	5827472	●
	11FR/L VB-C Ⓜ					0.15×5°			5358841	●				
	11FR/L VB12 Ⓜ		0.8		1.20	0.3×5°			5358718	●				
	11FR/L VB14 Ⓜ		1.0		1.40				5358726	●				
For Profiling  Left-Hand style shown	CSVB11FR/L VX Ⓜ	No	—	—	—	—					5358817	●		

CTPS Series

CTPS



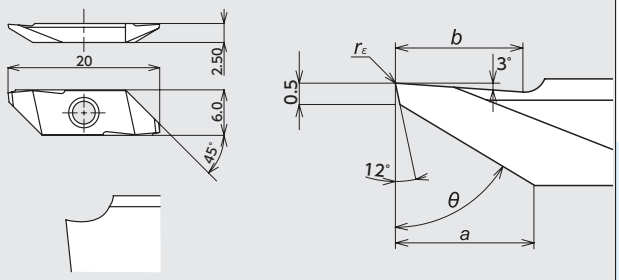
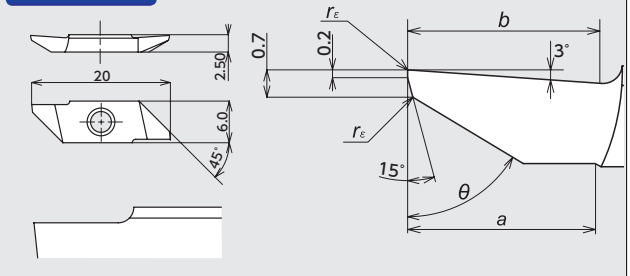
●Right-Hand style shown

CTPS Series - Toolholders

Code No.	Item Number	Stock	Dimensions (mm)					Gage insert	Spare Parts	
			h	b	L_1	h_1	f		Clamp Screw	Wrench
5346572	**CTPSR10**	●	10	10	120	10	0.0	TBPS	LR1S-2.5*7	CLR-15S
5397187	**R12**	●	12	12		12				

☆All the inserts can use the same toolholder　CTPS series ➡ G98

TBPS Series - Inserts

Shape	Item Number	Chip-breaker	Length of Blade a	Max Depth of cut b	Dimensions (mm) θ	Dimensions (mm) r_ε	PVD Coated Carbide ZM3	Stock	PVD Coated Carbide VM1	Stock
⟨with Chipbreaker⟩  ●Right-Hand style shown	**TBPS 60FR00**	Yes	3.1	3.5	60°	0.0	5346150	●	5362553	●
	60FR10					0.1	5346168	●	5362561	●
⟨without Chipbreaker⟩ Mirror finish  ●Right-Hand style shown	**TBPS 60FRV** Ⓜ	No	4.8	4.8	60°	0.0	5357058	●	5362579	●

Note: All angles shown are obtained when insert is set in the holder.

TBP Series

TBP

Screw accesssible from both sides

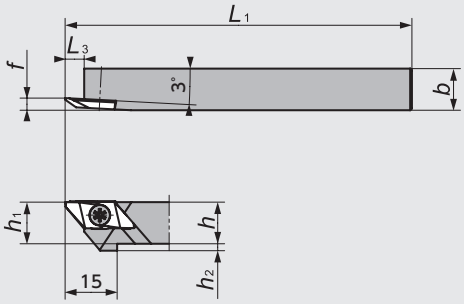
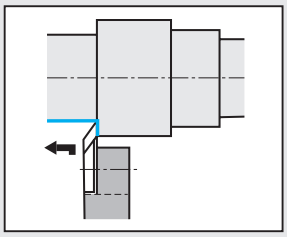


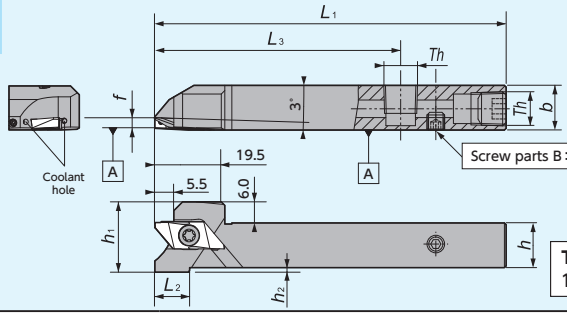
Figure-1



●Right-Hand style shown

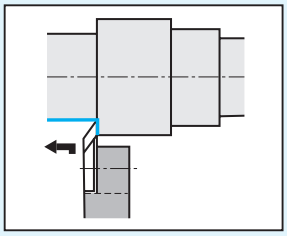
TBP-OH2

(Coolant through)
Screw accesssible from both sides



Th (Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

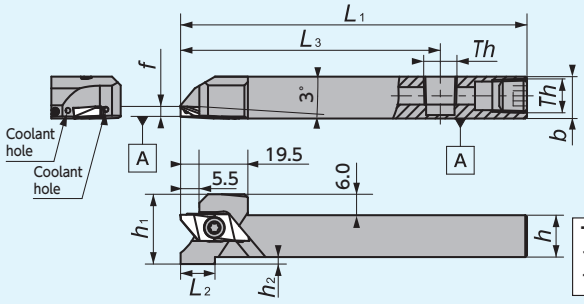
Figure-2



●Right-Hand style shown

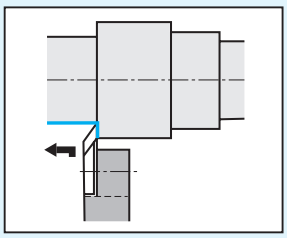
TBP-OH

(Coolant through)
Screw accesssible from both sides



Th (Screw parts A)
1012 size : SS0605SC (M6×1.0)
1212/1616 size : SPR1/8(Rc1/8)

Figure-3



●Right-Hand style shown

Y-TBP

Screw accesssible from both sides

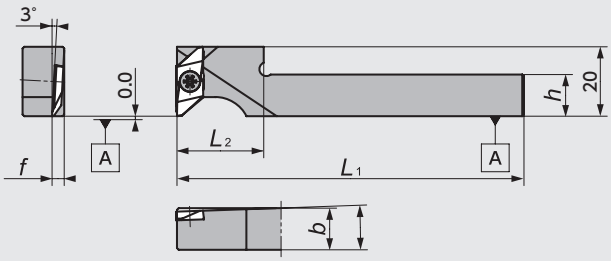
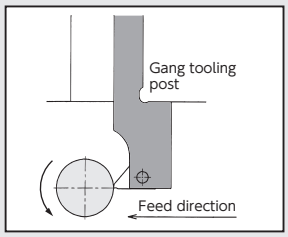


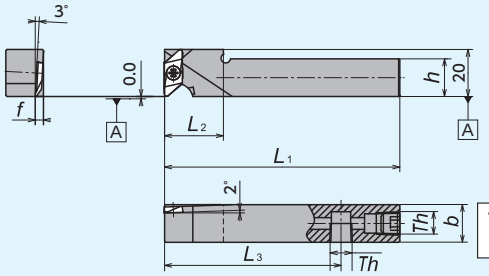
Figure-4



●Right-Hand style shown
☆Takes Right-hand insert

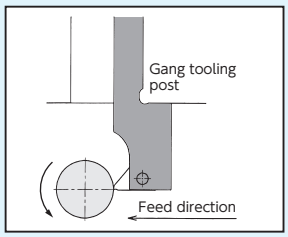
Y-TBP-OH

(Coolant through)
Screw accesssible from both sides



Th (Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

Figure-5



●Right-Hand style shown
☆Takes Right-hand insert

DS-TBP

(DS Holder)

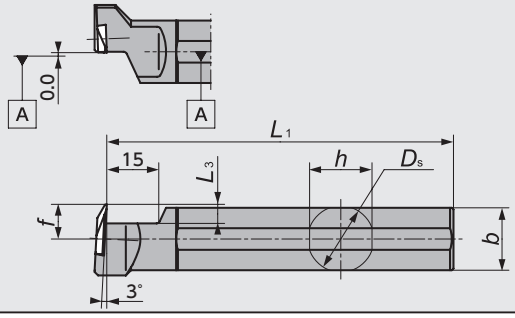
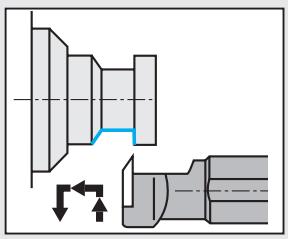


Figure-6

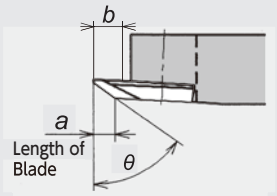


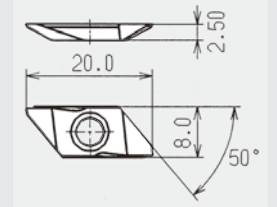
●Left-Hand style shown
☆Takes Right-hand insert

TBP Series - Toolholders

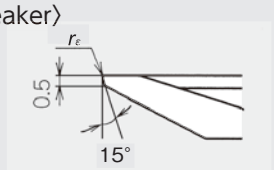
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	D_s	h	b	L_1	h_1	h_2	f	L_2	L_3	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5133285	5133293	TBP$^{R}_{L}$08	●	●	–	8	10	120	8	4	3.5	–	5.5	TBP	LRIS-4*10PW (A)	CLR-15S (A)
	5873856		10H	●			10		100	10	2						
	5090436	5090444	10	●	●				120								
	5459771		12GX	●			12	12	85	12	0					LRIS-4*12PW (A)	
	5090451	5090469	12	●	●				120								
	5090477	5090485	13	●			13	13		13							
	5459789		16H	●			16	16	100	16							
	5270822	5270830	16	●	●				120								
2	5037965		TBPR$^{R}_{L$12H-OH2	●		–	12	12	100	12	2	3.5	10	70	TBP	LRIS-4*12PW (A)	CLR-15S (A)
	5043971		16X-OH2	●			16	16	120	16	0		0				
3	5925722		TBP$^{R}_{L$1012H-OH	●		–	10	12	100	10	4	3.5	19	75	TBP	LRIS-4*10PW	CLR-15S (A)
	5925730		12H-OH	●			12	12		12	2		10			LRIS-4*12PW	
	5925748		16H-OH	●			16	16		16	0		0				
4	5371554		Y-TBP$^{R}_{L$10S	●		–	10	10	120	–	–	3.5	20	–	TBP	LRIS-4*10PW(A)	CLR-15S (A)
	5950399		10MS	●			10	10					22			LRIS-4*10PW(A)	
	5371588		12S	●			12	12					20			LRIS-4*12PW(A)	
	5950407		12MS	●			12	12					22			LRIS-4*10PW(A)	
5	5911508		Y-TBP$^{R}_{L$12HS-OH	●		–	12	12	100	–	–	3.5	20	–	TBP	LRIS-4*12PW (A)	CLR-15S (A)
	5911516		16H-OH	●			16	16					25				
6		5540414	DS-TBP$^{R}_{L$19		●	19.050	18	18	120	–	–	10.0	–	5.5	TBP	LRIS-4*10 (B)	LLR-25S -20*65 (B)
		5540422	20		●	20.000	19	19									
		5540430	25		●	25.400	24	24	150								

TBP Series - Inserts

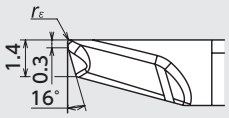




〈with Chipbreaker〉

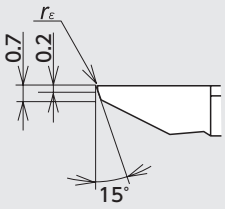


〈with BM-Chipbreaker〉

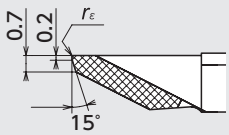


〈without Chipbreaker〉

Mirror finish



〈PD1〉 PCD tipped



●Right-Hand style shown

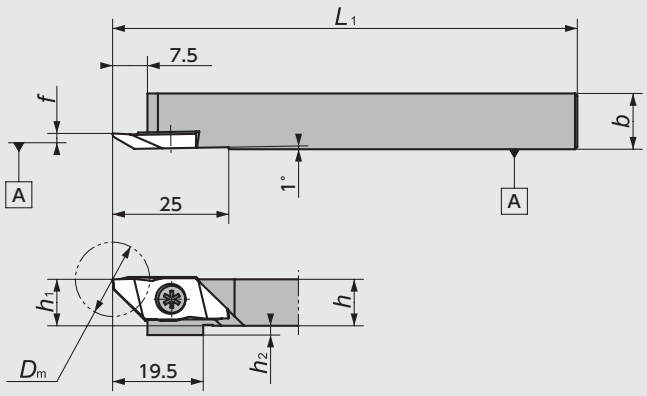
Item Number	Chip-breaker	Length of Blade a	Max Depth of cut b	Dimensions θ	Dimensions rε	PVD Coated Carbide ST4 R	ST4 Stock	ZM3 R	ZM3 Stock	ZM3 L	ZM3 Stock	QM3 R	QM3 Stock	VM1 R	VM1 Stock	VM1 L	VM1 Stock	TM4 R	TM4 Stock	DT4 R	DT4 Stock	DM4 R	DM4 Stock	Carbide KM1 R	Carbide KM1 Stock	PCD PD1 R	PCD PD1 Stock
TBP72FR05-BM	Yes	3.5	5.3	72°	0.05	5039524	●											5868310	●			5868401	●				
72FR10M-BM					0.08	5039532	●											5868351	●			5868419	●				
72FR20M-BM					0.18	5039540	●											5868336	●			5868393	●				
TBP55FR$_{L}$00	Yes	3.0		55°	0.00			5090378	●	5090360	●			5270855	●												
55FR$_{L}$10					0.10			5090352	●	5090386	●			5294301	●												
TBP60FR$_{L}$00		3.7		60°	0.00			5090410	●	5090428	●	5494711	●	5275508	●			5710108	●	5850805	●						
60FR$_{L}$05					0.05																						
60FR$_{L}$10					0.10			5090402	●	5090394	●	5362488	●	5269949	●			5706114	●								
60FR$_{L}$10M					※0.08							5486964	●	5476403	●					5850813	●						
60FR$_{L}$20					0.2													5738844	●								
60FR$_{L}$V Ⓜ	No	4.8		60°	0.00			5345715	●					5264940	●	5264957	●							5299276	●		
60FRV00-P		4.0			0.00																					5781745 (1 corner)	●
60FR$_{L}$V05 Ⓜ		4.8			0.05									5440680	●									5575675	●		
60FR$_{L}$V10 Ⓜ					0.10			5482690	●					5440698	●									5575683	●		
60FRV10-P		4.0			0.10																					5785118 (1 corner)	●

※Inserts having "10M" the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1
Note: All angles shown are obtained when insert is set in the holder.

TBPA Series

CTPA

Screw accessible
from both sides



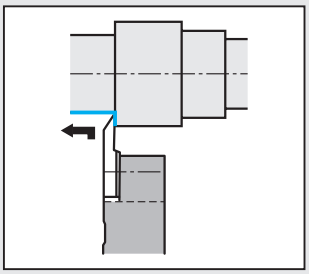
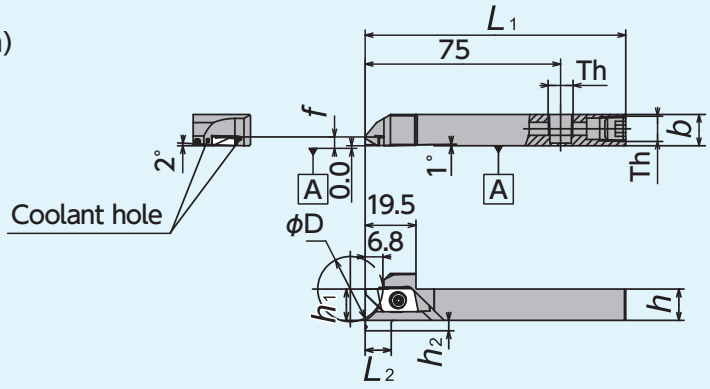


Figure-1

●Right-Hand style shown

TBPA-OH

(Coolant through)
Screw accesssible
from both sides



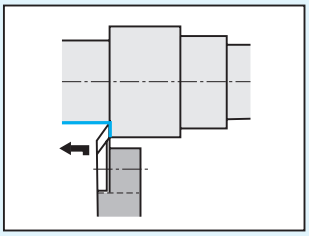


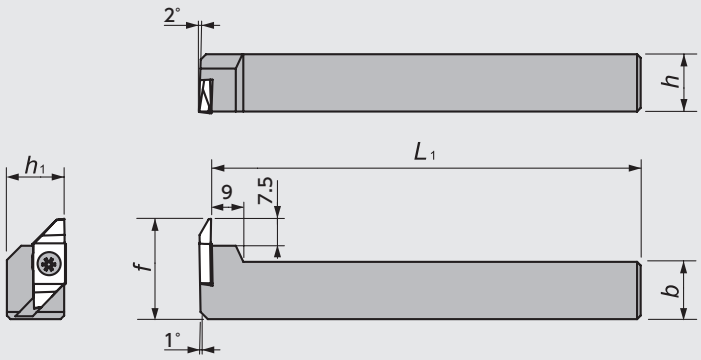
Figure-2

●Left-Hand coolant through holders are designed for Right-Hand machines.

Th	□12, □16, □20 : Rc1/8 (PT1/8)

●Right-Hand style shown

CH-TBPA



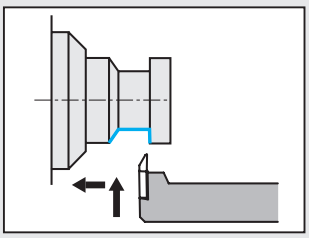


Figure-3

●Left-Hand style shown
☆Takes Right-hand insert

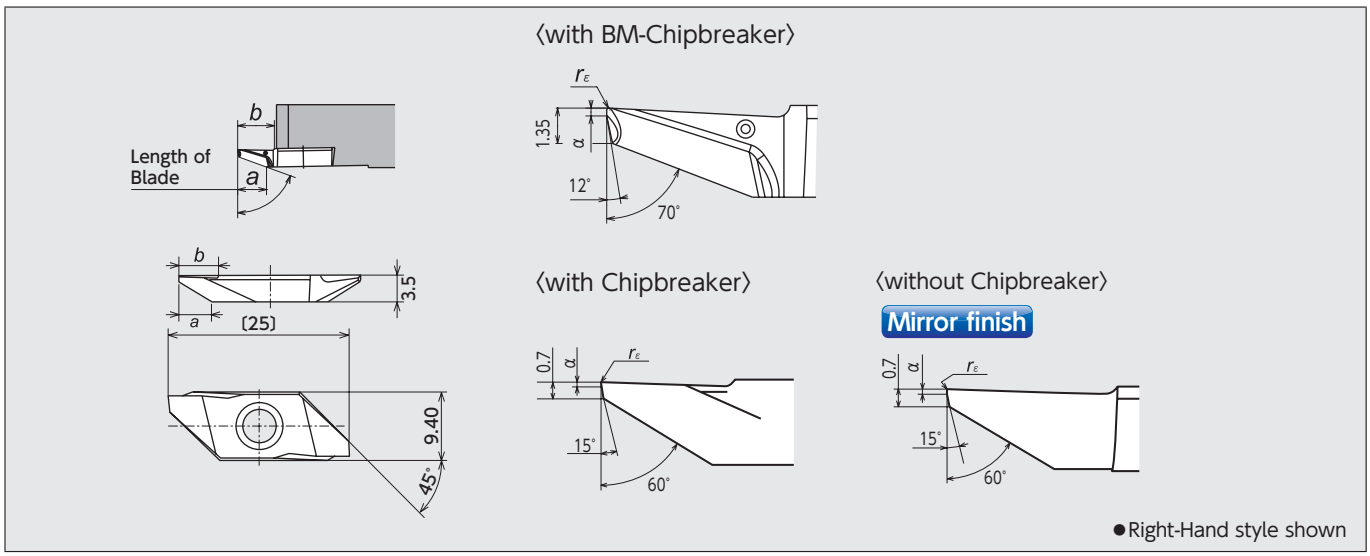
TBPA Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	h_2	D_m	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5199187	5199153	CTPA R/L 10	●	●	10	10	120	10	3.4	2	16	TBPA (Back Turning) CTPA (Cut-off)	LRIS-4*10PW(A)	CLR-15S (A)
	5199195	5199161	12	●	●	12	12		12		0			LRIS-4*12PW(A)	
	5199203	5199179	16	●	●	16	16		16						
	5459540	5459557	20F	●	●	20	20	80	20					LRIS-4*10(B)	LLR-25S(B)

Figure	Code No.	Item Number	Stock	Max Bar Dia ϕD (mm)	h	b	L_1	h_1	f	L_2	h_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
2	5932983	TBPAR12H-OH	●	25	12	12	100	12	3.4	10	4	TBPA (Back Turning)	LRIS-4*12PW	CLR-15S
	5932991	16H-OH	●	35	16	16		16			2			
	5945811	20H-OH	●	50	20	20		20		0	0			

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
3		5884945	CH-TBPA R/L 16		●	16	16	120	16	28	TBPA (Back Turning)	LRIS-4*10	LLR-25S
		5884952	20		●	20	20		20	32			

TBPA Series - Inserts



●Right-Hand style shown

Item Number	Chip-breaker	Length of Blade a	Max Depth of cut b	Dimensions (mm) α	Dimensions (mm) r_ε	PVD Coated Carbide ST4 R	ST4 Stock	ZM3 R	ZM3 Stock	ZM3 L	ZM3 Stock	QM3 R	QM3 Stock	VM1 R	VM1 Stock	TM4 R	TM4 Stock	DT4 R	DT4 Stock	DM4 R	DM4 Stock
TBPA70FR05-BM	Yes	5.5	6.5	0.3	0.05	5039557	●									5892583	●			5892591	●
70FR10M-BM					0.08	5039565	●									5892567	●			5892575	●
70FR20M-BM					0.18	5039573	●									5892542	●			5892559	●
TBPA60F R/L VB Ⓜ		4.5	5.3	0.2	0.0			5344833	●	5362538	●			5439344	●			5850847	●		
60F R/L PB10 Ⓜ				0.3	0.1			5344858	●	5362520	●			5379151	●						
60F R/L 10M					*0.08							5486956	●								
60F R/L PB10M Ⓜ														5476395	●			5850821	●		
60F R/L PB20M Ⓜ					*0.18													5850839	●		
60F R/L V Ⓜ	No	6.3	6.8	0.2	0.0			5344817	●	5362546	●			5439336	●						

※Inserts having "10M", "20M" as the R code can be used for machining when the component drawing specifies that the radius is less than R=0.1, R=0.2
Note: All angles shown are obtained when insert is set in the holder.

TBVC Series

TBVC

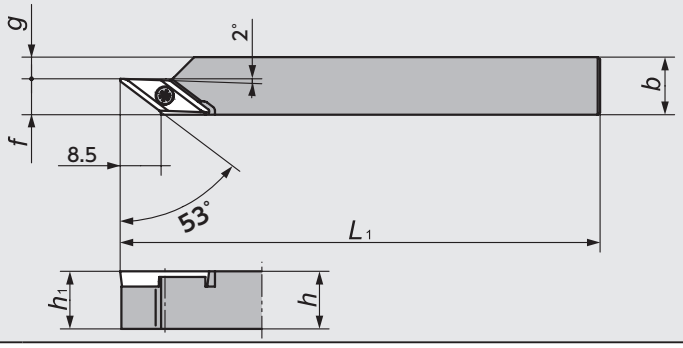
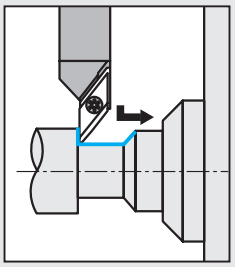


Figure-1



●Right-Hand style shown
※For non-ferrous materials

TBVC-F10

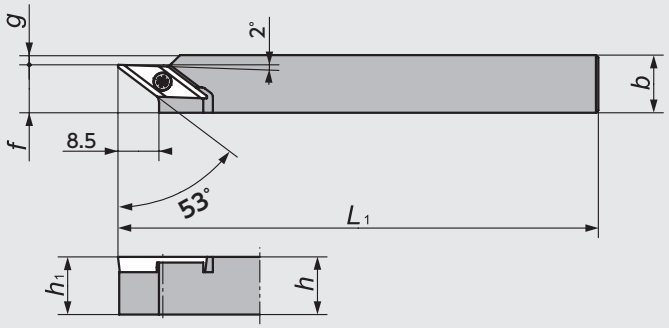
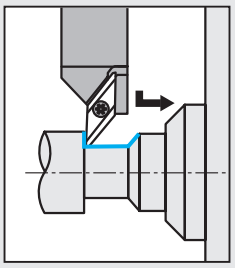


Figure-2



●Right-Hand style shown
※For steel materials

CH-SVXCL

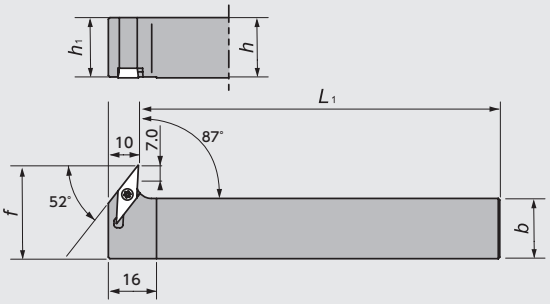
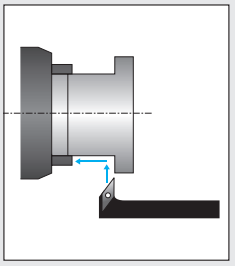


Figure-3

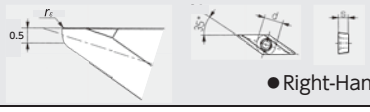


●Left-Hand style shown
☆Takes Right-hand or Neutral insert

TBVC Series - Toolholders

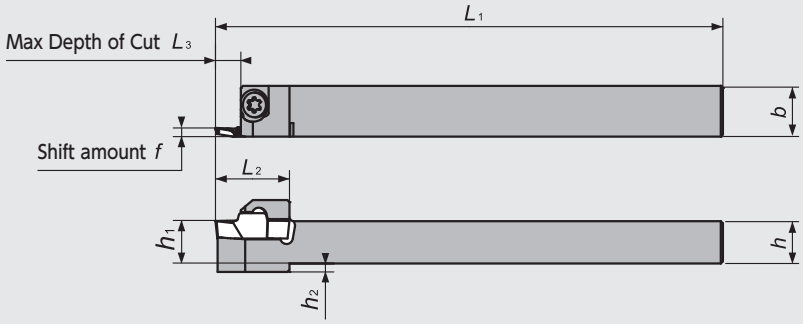
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L1	h1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5204953		TBVCR/L10	●		10	10	120	10	7.5	2.5	TBVC VCGT1103 **E49~50**	LRIS-2.5*7	CLR-15S
	5204946		12	●		12	12		12		4.5			
	5204920		16	●		16	16		16		8.5			
2	5344254		TBVCR/L10-F10	●		10	10	120	10	10	0	TBVC VCGT1103 **E49~50**	LRIS-2.5*7	CLR-15S
	5459797		12GX-F10	●		12	12	85	12		2			
	5344262		12-F10	●				120						
	5459805		16H-F10	●		16	16	100	16		6			
	5344270		16-F10	●				120						
	5459565		20F-F10	●		20	20	80	20		10			
3		5890637	CH-SVXCR/L1616X11		●	16	16	120	16	27	—	VC□□1103 **E49~50**	LRIS-2.5*7	CLR-15S
		5890645	2020X11		●	20	20		20	31	—			

TBVC Series - Inserts

Shape	Item Number	Dimensions (mm) d	s	r_ε	PVD Coated Carbide ZM3	Stock	VM1	Stock
 ●Right-Hand style shown	TBVC11FR05U	6.35	3.18	0.05	5204870	●		
	11FR10U			0.10	5204888	●	5341763	●
	11FR10S	6.35	3.18	0.10	5433107	●		

TBDP (Back Duo) Series

TBDP



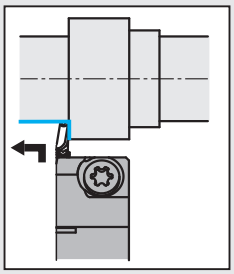
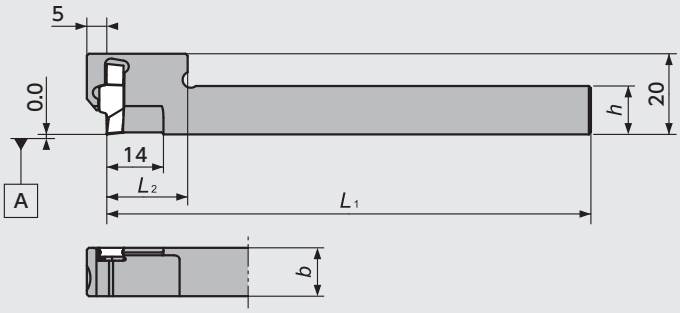


Figure-1

●Right-Hand style shown

Y-TBDP



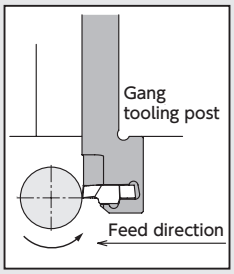


Figure-2

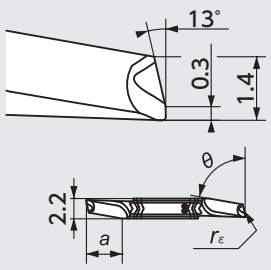
●Right-Hand style shown

TBDP Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	L_3	h_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5873864		TBDP$^{R}_{L}$1012H	●		10	12	100	10		15	3	2	TBDP	LR1S-4＊12	LLR-25S
	5814678	5837265	1012	●	●			120								
	5810445	5837273	12	●	●	12	12		12	2.05	18	5	0			
	5810452	5837281	16	●	●	16	16		16		19.5					
	5842414		20	●		20	20		20		19.5					
2	5839139		Y-TBDP$^{R}_{L}$12S	●		12	12	120	—	2.05	20	5.0	—			

※Do not tighten clamp screw without installing insert as it may damage the insert pocket.

TBDP Series - Inserts

Shape	Item Number	Length of Blade a	Dimensions (mm) θ	Dimensions (mm) r_ε	PVD Coated Carbide QM3	Stock	TM4	Stock	DM4	Stock
	TBDP22005R	3.5	80	0.05	5833116	●	5810460	●	5877865	●
	2201MR			0.08	5833132	●	5810486	●	5903125	●
	2202MR			0.18	5833140	●	5810577	●	5902408	●

TB Series

TBT

Screw accessible from both sides

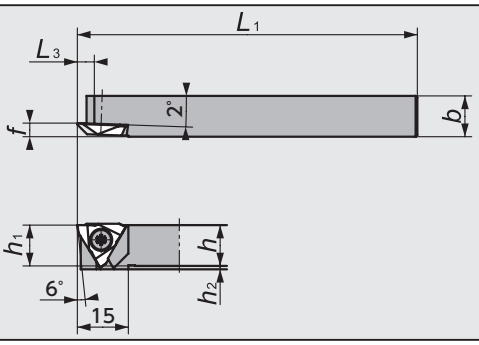
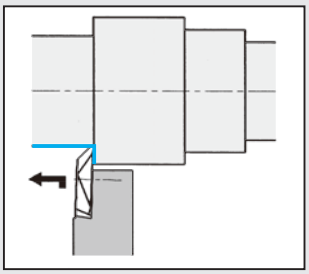


Figure-1



●Right-Hand style shown

TB-N

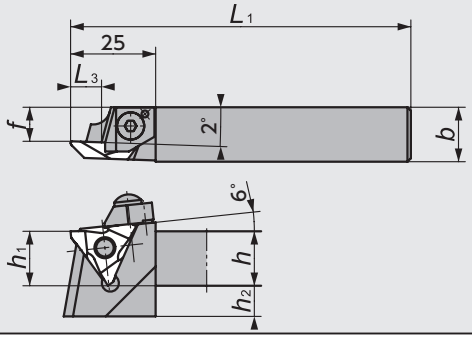
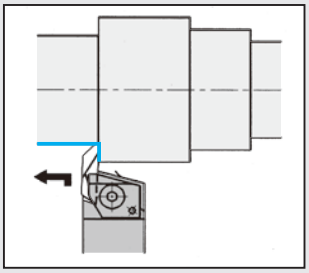


Figure-2



●Right-Hand style shown

TB-F

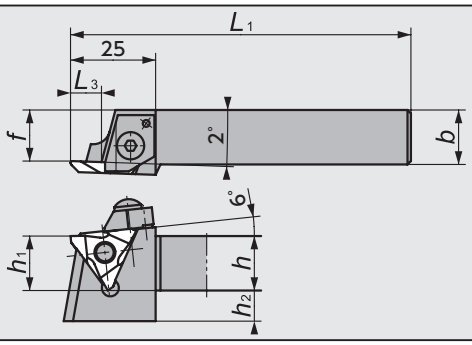
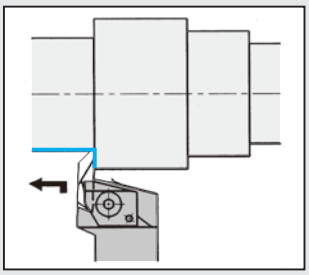
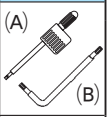


Figure-3

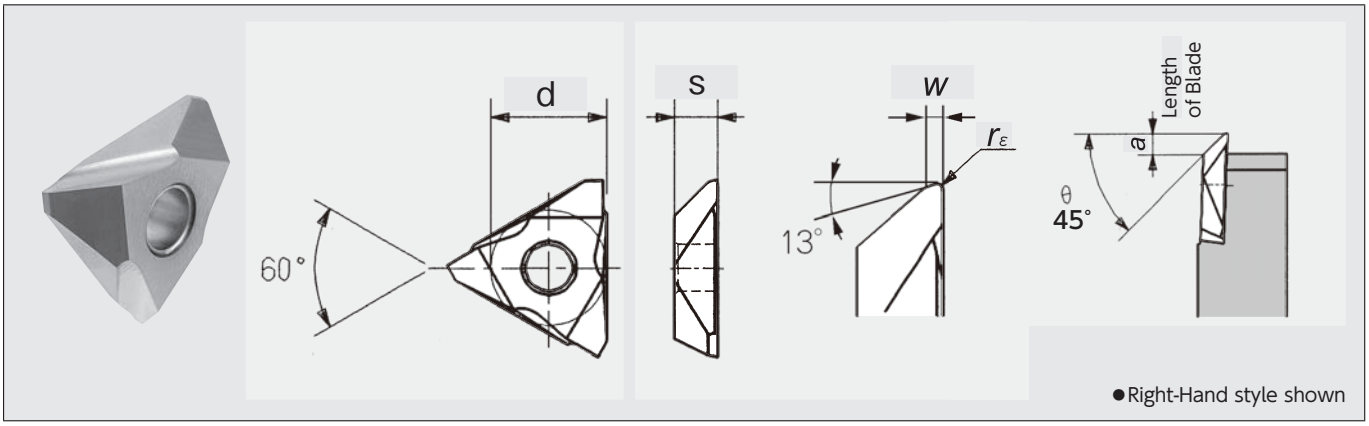


●Right-Hand style shown

TB Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	h_1	h_2	f	L_3	Gage insert	Spare Parts: Clamp Screw	Clamp	Clamp Bolt	Spring	Wrench
																		
1	5107511	5107503	TBT R/L 08F	●	●	8	8	80	8	5	4	5.0	TB32	LR-S-4*10PW	—	—	—	CLR-15S (A)
	5107578	5107560	08K	●	●			120										
	5107495	5107487	10F	●	●	10	10	80	10	3								
	5107552	5107545	10K	●	●			120										
	5107479	5107461	12F	●	●	12	12	80	12	1								
	5107537	5107529	12K	●	●			120										
2	5837141		TB R/L 16N-42	●		16	16	78	16	9	11.5	9.0	TB42	—	CPR/L5S	A0S-5*25	ASG-5	LW-2.5 (B)
	5504543		16NS	●							10	5.0	TB43					
	5504550	5524145	16N	●	●													
	5820618		16N-H	●				100				9.0						
	5848288		16N-K	●				125										
	5553540	5524152	20N	●	●	20	20	100	20	5	14							
		5524160	25N		●	25	25	150	25	0	19							
3	5505029		TB R/L 16FS	●		16	16	100	16	9	15	5.0	TB43	—	CPR/L5	A0S-5*25	ASG-5	LW-2.5 (B)
	5505037		16F	●								9.0						
	5526298		20FS	●		20	20		20	5	20	5.0						
	5505052		20F	●								9.0						
	5519723		25F	●		25	25	150	25	0	25							

TB Series - Inserts



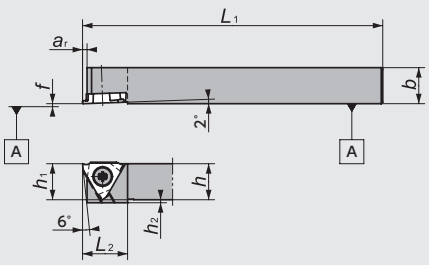
Item Number	Chip-breaker	Length of Blade *a*	Max Depth of cut *b*	Dimensions (mm) θ	r_ε	*w*	*d*	*s*	PVD Coated Carbide ZM3 R	Stock	L	Stock
TB3200R/L	Yes	2.7	4.8	45°	0.00	0.5	9.525	3.18	5810544	●		
TB3205R/L					0.05				5810536	●	5982335	●
TB3215R/L					0.15				5810528	●	5033550	●
TB3220R/L					0.20				5160544	●		
TB4215R/L		2.3	8.8	45°	0.15	1.0	12.70	3.18	5914270	●		
TB4305R/L		4.0	4.8※1 8.8	45°	0.05	1.0	12.70	4.76	5810502	●		
TB4315R/L					0.15				5756614	●		
TB4340R/L		3.9			0.40				5796412	●		

Note: All angles shown are obtained when insert is set in the holder.

GTT Series

GTT

Screw accessible
from both sides



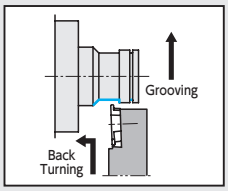
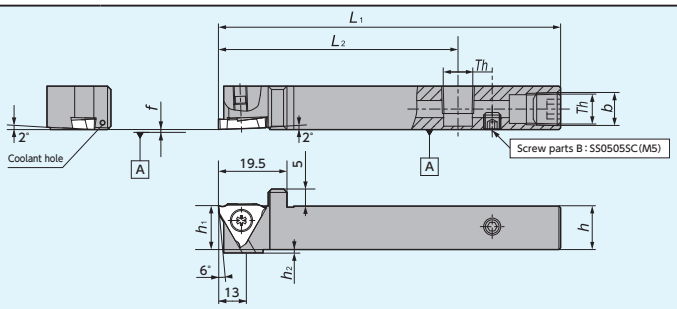


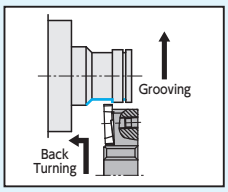
Figure-1

●Right-Hand style shown

GTT-OH2

(Coolant through)
Screw accesssible
from both sides





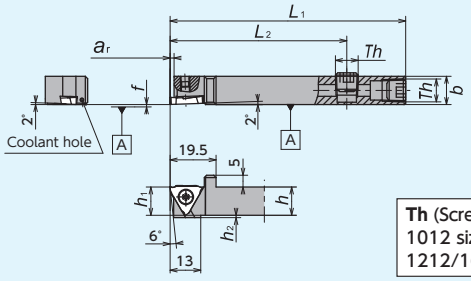
Th (Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

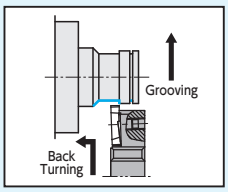
Figure-2

●Right-Hand style shown

GTT-OH

(Coolant through)
Screw accesssible
from both sides



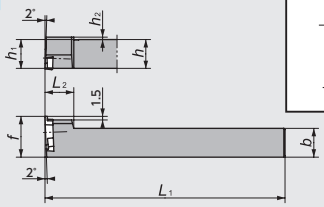


Th (Screw parts A)
1012 size : SS0605SC (M6×1.0)
1212/1616 size : SPR1/8(Rc1/8)

Figure-3

●Right-Hand style shown

CH-GTT



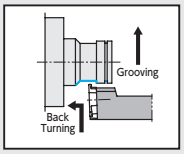
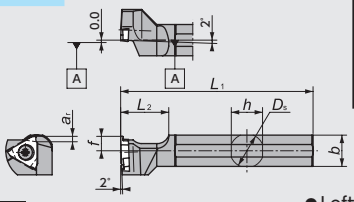


Figure-4

●Left-Hand style shown

DS-GTT



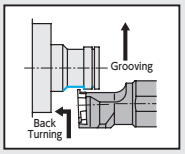
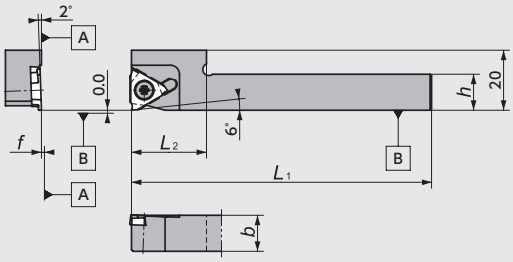


Figure-5

●Left-Hand style shown
☆Takes Right-hand insert

Y-GTT

Screw accessible
from both sides



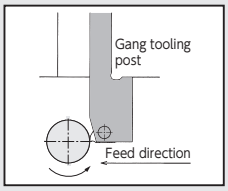
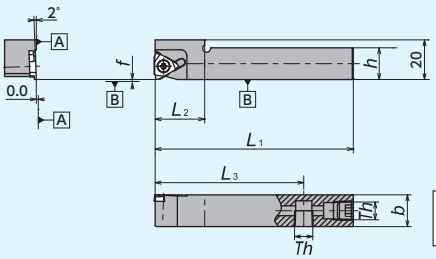


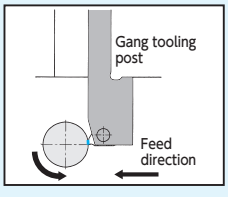
Figure-6

●Right-Hand style shown
☆Takes Right-hand insert

Y-GTT-OH

(Coolant through)
Screw accesssible
from both sides





Th (Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

Figure-7

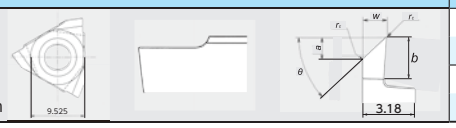
●Right-Hand style shown
☆Takes Right-hand insert

GTT Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	D_s	h	b	L_1	h_1	f	L_2	a_r	h_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5107305	5107313	GTT R/L 08F00	●	●	—	8	8	80	8	0	15	1.6	5	TBMH32 GTM32 GTMH32 GTMX32 H22 ∫ H25	R:LR-S-4*10PW (A) L:LR-S-4*5.8 (B)	CLR-15S (A)
	5608682		0810F00	●				10								LR-S-4*10PW (A)	
	5107206	5107214	08K00	●	●			8	120							R:LR-S-4*10PW (A) L:LR-S-4*5.8 (B)	
	5608690		0810K00	●				10									
	5107321	5107339	10F00	●	●		10	10	80	10				3		LR-S-4*10PW (A)	
	5107222	5107230	10K00	●	●				120								
	5107347	5107354	12F00	●	●		12	12	80	12				1			
	5107248	5107255	12K00	●	●				120								
	5459896	5551387	16H00	●	●		16	16	100	16				0			
	5173687	5173679	16K00	●	●				120								
	5530852	5780317	20K00	●	●		20	20	125	20			2.7				
	5780309	5780291	25M00	●	●		25	25	150	25							
	5107362	5107370	10F15	●	●		10	10	80	10				3			
	5107263	5107271	10K15	●	●				120								
	5537220	5537147	12F15	●	●		12	12	80	12				1			
	5537246	5537162	12K15	●	●				120								
	5537261	5537188	16H15	●	●		16	16	100	16				0			
	5537287	5537204	16K15	●	●				120								
	5107388	5107396	10F25	●	●		10	10	80	10				3			
	5107289	5107297	10K25	●	●				120								
	5537238	5537154	12F25	●	●		12	12	80	12				1			
	5537253	5537170	12K25	●	●				120								
	5537279	5537196	16H25	●	●		16	16	100	16				0			
	5537295	5537212	16K25	●	●				120								
2	5035381		GTT R/L 12H00-OH2	●		—	12	12	100	12	0	70	1.6	1		LR-S-4*10PW (A)	CLR-15S
	5043997		16X00-OH2	●			16	16	120	16				0			
3	5921705		GTT R/L 1012H00-OH	●		—	10	12	100	10	0	70	1.6	1		LR-S-4*10PW (A)	CLR-15S (A)
	5890157		12H00-OH	●			12			12				1			
	5921713		16H00-OH	●			16	16		16				0			
4		5659248	CH-GTT R/L 10H00		●	—	10	10	100	10	15	12	1.5	3		LR-S-4*9 (B)	RLR-20S (B)
		5659255	12H00		●		12	12		12	17			1			
		5960836	16H00		●		16	16		16	21			0			
5		5348560	DS-GTT R/L 14F		●	14.000	13	13	80	—	6	20	1.6	—		LR-S-4*9 (B)	RLR-20S (B)
		5348081	15H		●	15.875	15	15	100								
		5341532	16X※		●	16.000			95								
		5278288	19		●	19.050	18	18	120								
		5278304	20		●	20.000	19	19									
		5324041	22※		●	22.000	21	21									
		5483433	25MET		●	25.000	24	24	150		10						
		5317144	25		●	25.400	24	24	120								
		5937693	32		●	32.000	30	30	150								
6	5371604		Y-GTT R/L 10S	●		—	10	10	120	—	0	20	1.6	—		LR-S-4*10PW (A)	CLR-15S (A)
	5371620		12S	●			12	12				20					
7	5911466		Y-GTT R/L 12H00S-OH	●		—	12	12	100	—	0	20	1.6	—			
	5911474		16H00-OH	●			16	16				25					

※Compatible with 16mm / 22mm round shank DS Series holders. DS-Sleeve ➔ G103

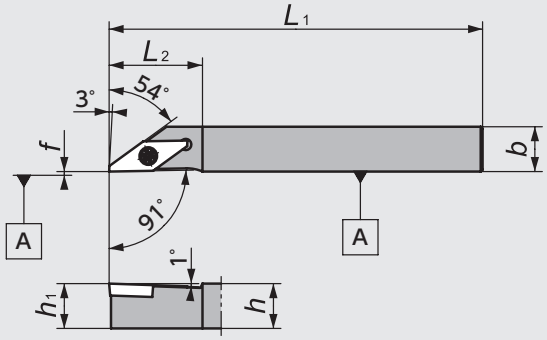
GTT Series - Inserts

Shape	Item Number	Chip-breaker	Length of Blade a	Max Depth of cut b	Dimensions (mm) w	θ	r_ε	PVD Coated Carbide ZM3	Stock
●Right-Hand style shown 	TBMH32100R05-22	Yes	0.3	1.8	1.0	22°	0.05	5395199	●
	100R05-45		0.9			45°		5395215	●
	TBMH32150R05-22		0.5	2.7	1.5	22°		5395207	●
	150R05-45		1.3	2.6		45°		5395223	●

Note: All angles shown are obtained when insert is set in the holder.

SVAC-W Series (For Front and Back Turning)

SVAC-NW



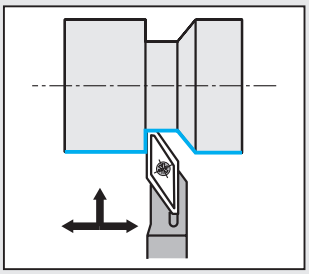
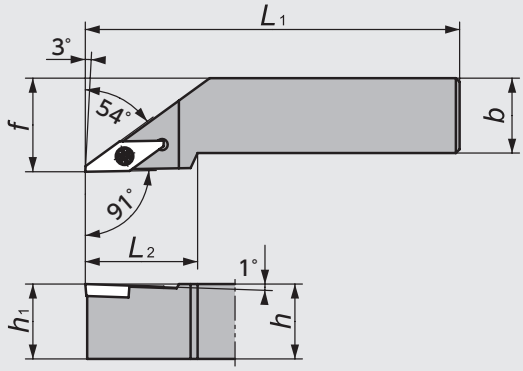


Figure-1

●Right-Hand style shown

SVAC-W



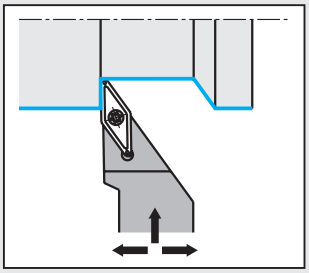


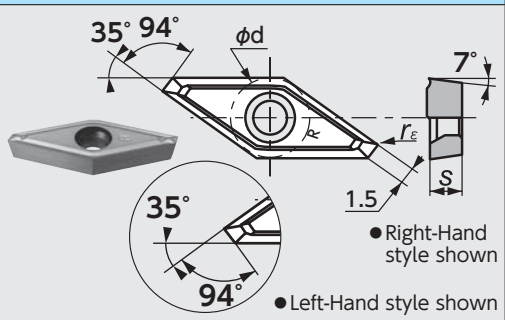
Figure-2

●Right-Hand style shown

SVAC-W Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) h	b	L_1	f	h_1	L_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5401724	5401708	SVAC[R/L]1010L13NW	●	●	10	10	140	0.0	10	25	VCGT1303	LR1S-3*8	RLR-20S
	5401732	5401716	1212L13NW	●	●	12	12			12				
	5401740	5431077	1616M13NW	●	●	16	16	150		16				
2	5474549		SVAC[R/L]2020M13W	●		20	20	150	25.0	20	30			

SVAC-W Series - Inserts

Shape	Item Number	Dimensions (mm) d	s	r_ε	PVD Coated Carbide DM4 R	Stock	L	Stock
 ●Right-Hand style shown ●Left-Hand style shown	VCGT130300F[R/L]2M	7.94	3.18	0.0	5969126	●	5969134	●
	VCGT130301F[R/L]2M	7.94	3.18	0.1	5969100	●	5969118	●

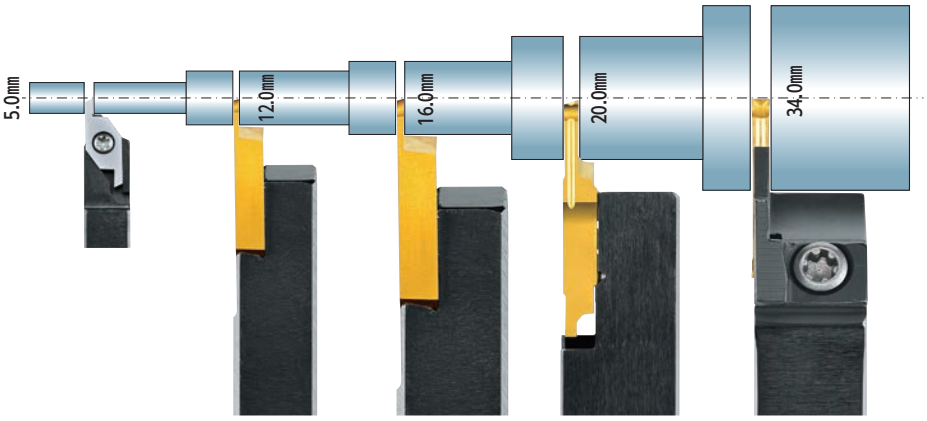
Cut-off / Parting

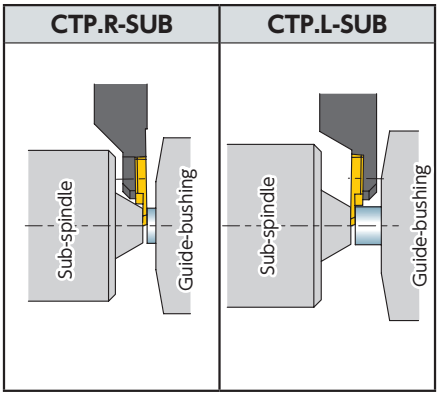
- Cut-off Tools ····· G64
- Cut-off Tool Selection Guide ····· G66
- Recommended Cutting Conditions ·· G68
- Tool List ····· G72

CSV Series (Up to dia. 5mm) ····· G72
CTPS Series (Up to dia. 4&10mm) ····· G73
CTP Series (Up to dia. 12mm) ····· G74
CTPA Series (Up to dia. 16mm) ····· G80
CTPW Series (Up to dia. 20mm) ····· G86
CTV-S Series (Up to dia. 20mm) ····· G87
CTDP Series (Up to dia. 34mm) ····· G88
CTWP Series (Up to dia. 42mm) ····· G89
CTV Series (Up to dia. 45mm) ····· G90

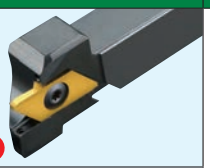
NTK Cut-off Tools - Product Lines

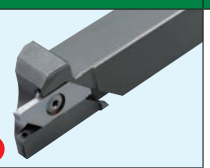
NTK offers a variety of cut-off tools with as narrow a width as 0.5mm
NTK cut-off tools are specialized for small part applications

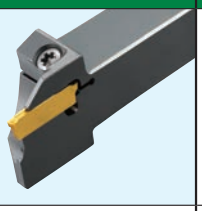




Insert	CSV ➡G72	CTPS ➡G73	CTPS-001 ➡G73
Holder	CSV-NC ➡G72	CTPS ➡G73	CTPSR-SUB ➡G73
Max Cut-off Diameter	~5.0mm	~10.0mm	~4.0mm
Blade width	0.6 - 1.5mm	1.2 - 2.0mm	0.7mm

Insert	CTP ➡G76～			
Holder	CTP ➡G74	CTP-OH2/OH  ➡G74 Coolant through	CTPR-SUB ➡G74	CTPL-SUB ➡G74
Max Cut-off Diameter	~12.0mm			
Blade width	0.5 - 2.0mm			

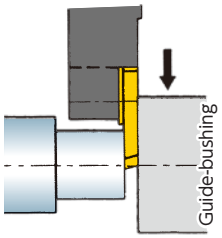
Insert	CTPA ➡G82～			
Holder	CTPA ➡G80	CTPA-OH2/OH  ➡G80 Coolant through	CTPAR-SUB ➡G80	CTPAL-SUB ➡G80
Max Cut-off Diameter	~16.0mm			
Blade width	0.7 - 3.0mm			

Insert	CTPW ➡G86	CTDP ➡G88	CTDP ➡G88	GWPFM ➡G89
Holder	CTPW ➡G86	CTDP ➡G88	CTDP-OH2/OH  ➡G88	CTWP ➡G89
Max Cut-off Diameter	~20.0mm	~34.0mm	~25.4mm	~φ42.0mm
Blade width	2.5mm	2.0 • 2.5mm	2.0 • 2.5mm	3.0mm

Insert	CTV-S ➡G87		CTV ➡G91		
Holder	CTV-K2 ➡G87	CTVN-K2 ➡G87	CTV-S ➡G90	CTV-M (B) ➡G90	CTV-X ➡G90
Max Cut-off Diameter	~20.0mm		~35.0mm	~45.0mm	~35.0mm
Blade width	2.2 - 2.5mm		2.5 • 3.0mm	2.5 • 3.0mm	3.0mm

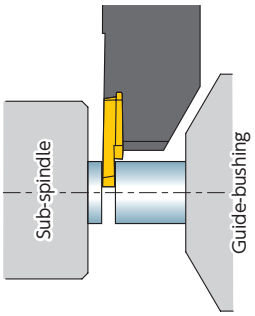
CTP/CTPA/CTPS/CTPW selection guide : Right hand? Or Left hand?

Right-hand recommended



R-hand Toolholder using a R-hand insert with lead angle

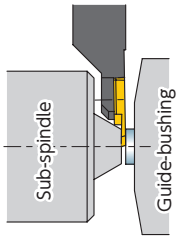
Left-hand recommended



L-hand Toolholder with a non-lead angle insert when the bar stock is held by sub-spindle

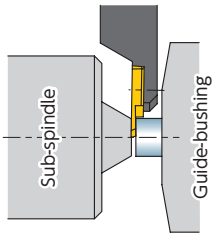
CTP/CTPA-SUB selection guide Right hand? Or Left hand?

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

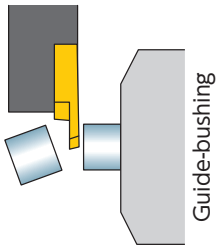


L-hand with L-hand insert with lead angle for short part

Cut-off Tool Selection Guide

Right-hand combination

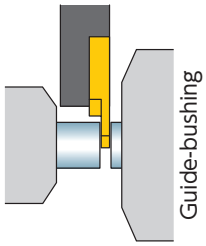
FR, FRFT, FRV Style



FRFT: Flat top
FRV : Flat top with mirror finish

- 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

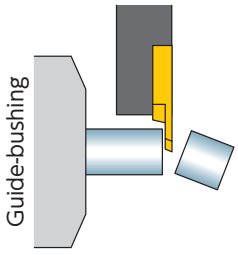
FRN, FRS,FRNV Style



FRS : Flat top
FRNV: Flat top with mirror finish

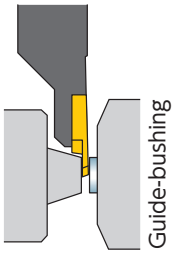
- Good for small diameter machining as it cuts near guide-bushing
- 1st recommendation when sub-spindle holds the part
- No lead angle helps to prevent scratches on both faces

FRK Style



- Used with inverse spindle rotation
- Short part length and using sub-spindle
- Less burrs with hollow work

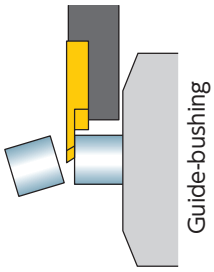
CTP. R-SUB



- 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

Left-hand combination

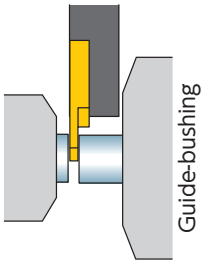
FLK, FLKFT, FLKV Style



FLKFT: Flat top
FLKV : Flat top with mirror finish

- Can cut-off closer to the sub-spindle
- Less burrs with hollow work
- Sub-spindle should hold the work

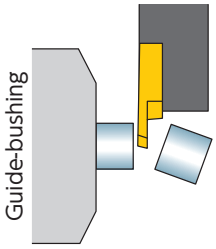
FLN, FLS Style



FLS: Flat top

- 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

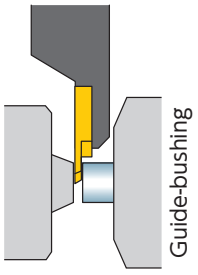
FL, FLV Style



FLV: Flat top with mirror finish

- Used with inverse spindle rotation
- Without sub-spindle
- Less burrs with hollow work

CTP. L-SUB



- 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

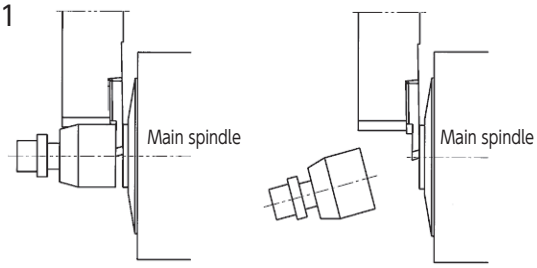
Notification about max cut-off diameter

※Max cut-off diameter in the catalog shows when X end point is 0.0.

①When cut-off

When X end point became over X0.0, the work material will fall off so that interference will not occur. (Fig 1)

Fig 1



②When cut-off while grabbing (When using neutral type)

Max cut-off diameter will depend on X end point, so please check the max cut-off diameter based on X end point.

※Please used the formula below.

【Calculation formula】

Possible machining diameter = Max cut-off diameter - X end point

(Value notice on the catalog) (Optional)

《Example》

When machining until X-1.0 using CTP15FRN

12.0 - 1.0 = 11.0 (Max workable diameter)

③When cut-off while grabbing (When using lead angle type)

Max cut-off diameter will depend on X end point, so please check the max cut-off diameter based on "dimension A" below (Fig.2) and X end point.

※Please used the formula below.

【Calculation formula】

Possible machining diameter = Max cut-off diameter - X end point

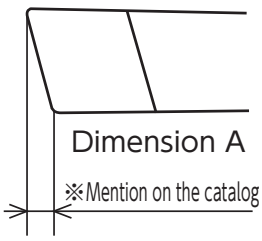
(Value notice on the catalog)

【How to decide X end point】

X end point ≧ dimension A × 2

(Fig.2)

Fig 2



《Example》

When using CTP15FR

X end point : 0.460 × 2 = 0.920

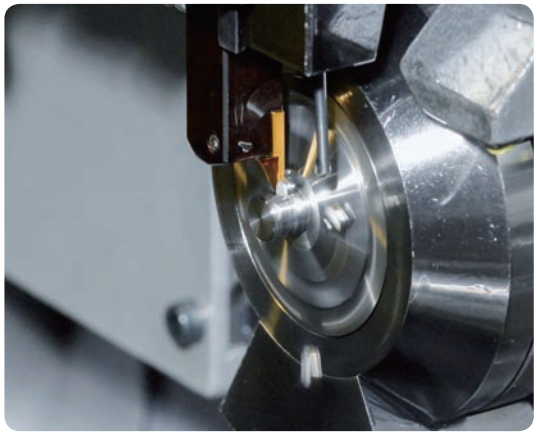
(dimension A)

12.0 - 0.920 = 11.08 (Max workable diameter)

Recommended Cutting conditions

Work Material		Cutting Speed (m/min)	CSV/CTPS		CTP/CTPA/CTPW		CTDP/CTV/CTWP	
Common Name	JIS		Grade	Feed Rate (mm/rev)	Grade	Feed Rate (mm/rev)	Grade	Feed Rate (mm/rev)
Low Carbon Steel	S10C ~ S30C	50 90 130	**VM1 ZM3**	0.03 (0.01-0.05)	**DT4 QM3**	0.04 (0.02-0.06)	**DM4 QM3**	0.08 (0.04-0.2)
Carbon Steel	S45C ~ S55C	50 80 120	**VM1 ZM3**	0.03 (0.01-0.05)	**QM3 DT4**	0.04 (0.02-0.06)	**DM4 QM3**	0.08 (0.04-0.2)
Alloy Steel	SCr415 ~ SCr440	50 80 120	**VM1 ZM3**	0.03 (0.01-0.05)	**QM3 DT4**	0.04 (0.02-0.06)	**DM4 QM3**	0.08 (0.04-0.2)
Stainless Steel (Austenitic)	SUS303	50 90 130	**VM1 ZM3**	0.03 (0.01-0.05)	**ST4 DT4**	0.04 (0.02-0.06)	**TM4 ZM3**	0.09 (0.05-0.2)
Stainless Steel (Austenitic)	SUS304 SUS316 SUS316L	40 70 100	**VM1 ZM3**	0.02 (0.01-0.03)	**ST4 QM3**	0.03 (0.02-0.05)	**DM4 QM3**	0.06 (0.04-0.15)
Stainless Steel (Ferritic)	SUS430 SUS430F	50 100 130	**VM1 ZM3**	0.03 (0.01-0.05)	**ST4 DT4**	0.04 (0.02-0.06)	**TM4 ZM3**	0.09 (0.05-0.2)
Stainless Steel (Martensitic) (Precipitation hardenic)	SUS440C SUS630	50 60 90	**VM1 ZM3**	0.02 (0.01-0.03)	**ST4 DT4**	0.03 (0.02-0.05)	**DM4 QM3**	0.05 (0.03-0.15)
Sulfur free cutting steel Sulfur complex free cutting steel	SUM22 SUM23 SUM24L	50 120 200	**VM1 ZM3**	0.03 (0.01-0.05)	**DT4 VM1**	0.04 (0.02-0.06)	**TM4 ZM3**	0.09 (0.05-0.2)
Electromagnetic soft iron	SUY-0 SUY-1 SUY-2	200 300 350	**VM1 ZM3**	0.03 (0.01-0.05)	**DT4**	0.04 (0.02-0.06)	**TM4 ZM3**	0.09 (0.05-0.2)
Electromagnetic stainless		50 80 120	**VM1 ZM3**	0.03 (0.01-0.05)	**DT4**	0.04 (0.02-0.06)	**DM4 QM3**	0.08 (0.04-0.2)
High-carbon chromium bearing steel	SUJ2	50 80 120	**VM1 ZM3**	0.03 (0.01-0.05)	**QM3 DT4**	0.04 (0.02-0.06)	**DM4 QM3**	0.08 (0.04-0.2)
Titanium alloy	6AL-4V 6AL-4VELI	50 70 120	**VM1 ZM3**	0.02 (0.01-0.03)	**TM4 DT4**	0.03 (0.02-0.05)	**TM4 ZM3**	0.06 (0.03-0.15)
Aluminum alloy	A5052 A6061 A7025	60 150 200	**ZM3**	0.03 (0.01-0.05)	**KM1 ZM3**	0.05 (0.03-0.07)	**ZM3 TM4**	0.1 (0.05-0.2)

CTP-CX / CTPA-CX for Cut-off



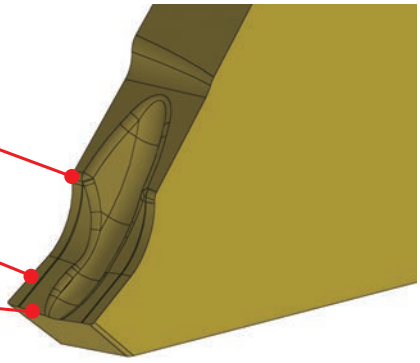
Features

- 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

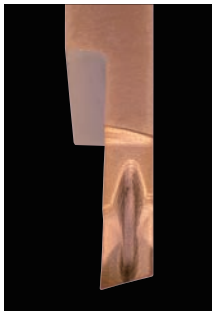
1 Fold chips from both ends strongly.

2 Up-sharp edge like ground inserts (15°)

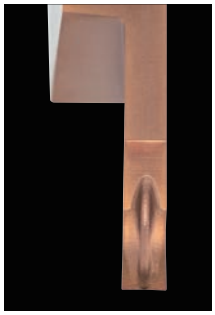
3 2 step V shape to keep nose-R shape and fold chips.



With lead angle



Neutral

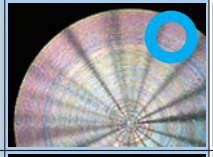
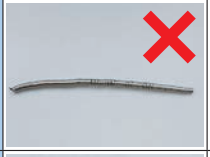
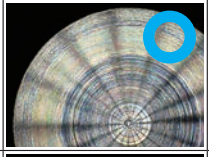
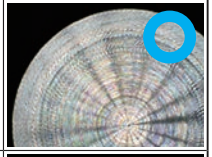
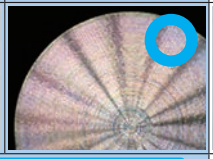
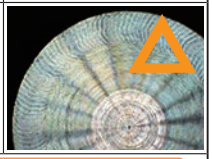


Best Solution for Chip Control

Coolant through toolholders now available

CTP-OH2 / OH, CTPA-OH2 / OH

Superior Surface Finish and Excellent Chip control

Feed f (mm /rev)	CX chipbreaker		Conventional (ground chipbreaker)		Competitor (3D chipbreaker)	
	Chip	Surface finish	Chip	Surface finish	Chip	Surface finish
0.02						
0.05						
	Excellent machined surface finish		*Rough surface finish*		*Vibration occurs by low rigidity*	

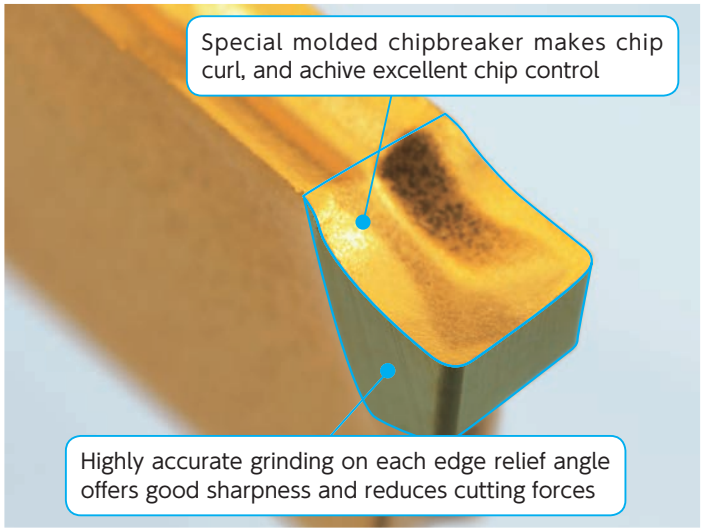
Material : SUS304 (φ8) , Cutting condition : v_c=80m/min WET Holder : CTPR12 Insert : CTP15FRN-CX DM4

➡G73 • G83

CUT DUO

Features

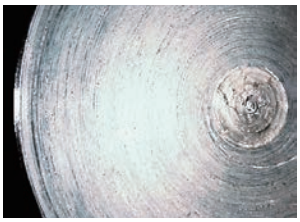
- Offers excellent chip control and superior surface finishes due to a special molded chipbreaker and precision grinding
- Achieves rigid clamping because of a 3-V point clamping design
- Wide toolholder selection for various diameters

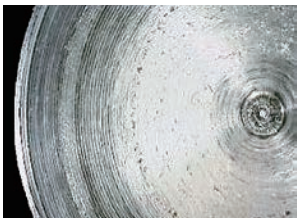


Chip control (Vc=80m/min)

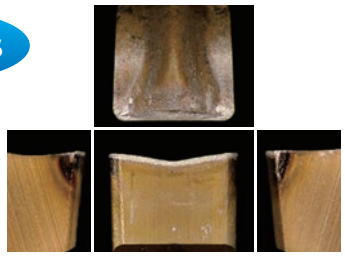
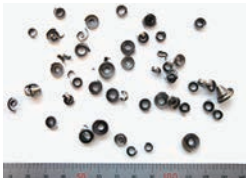
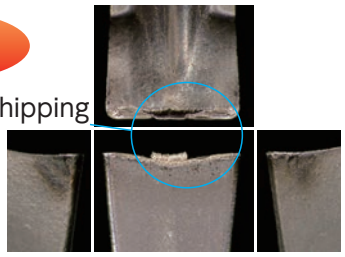
	0.05mm/rev	0.08mm/rev	0.12mm/rev
SCM435			
SUS304			

Surface finish


CUT DUO


Competitor's 3D chipberaker

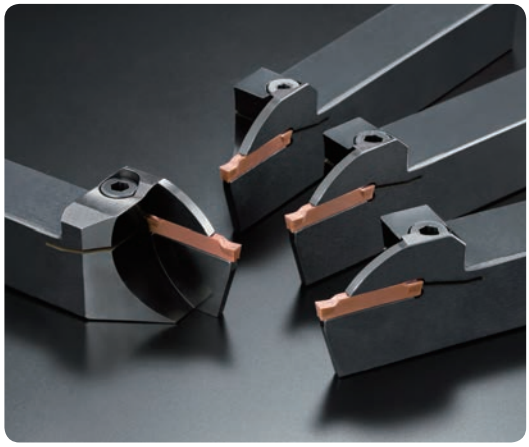
Chip control comparison

	Edge view	Chip control
NTK CTDPL12-20D20 CTDP20N02 DM4	100pcs 	Stable chip control  Beginnig of machining End of machining
Competitor's Carbide	50pcs chipping  chipped	Beginnig of machining End of machining

Work material : SUS304
Cutting condition : v_c=110m/min f =0.05mm/rev WET

➡G88

CUT DUO EXTRA

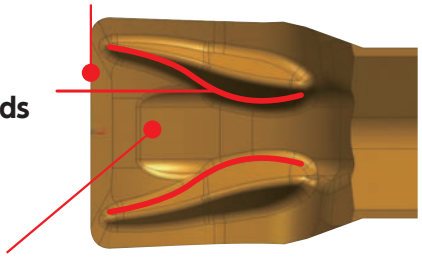


Features

- New double-edge cut-off tools with 3mm width for max. cut-off diameter of 42mm
- Original 'S' shape chipbreaker provides controlled chip evacuation

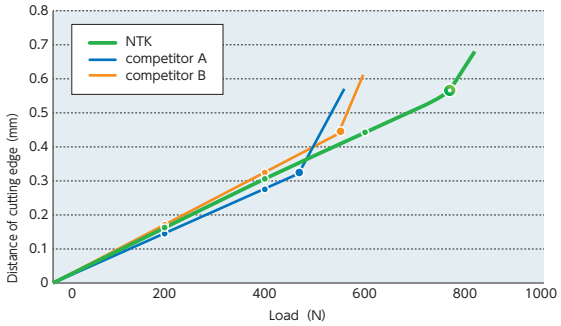
1 Chip control

- Straight design improves toughness of cutting edge
- Folds chips from both ends strongly



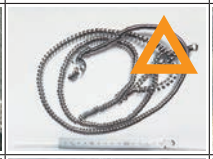
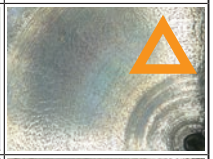
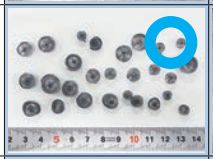
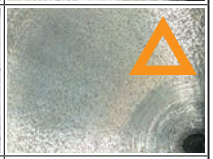
- High rake angle for up-sharp edge

2 High rigidity



- Improved reliability and productivity on high-load cut-off application

Case study

Feed f (mm/rev)	CUT DUO EXTRA		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
0.03						
0.05						
0.1						
	Excellent machined surface finish		In high feed rate area, rough surface finish		In low feed rate area, rough surface finish	

Cutting condition : v_c=100m/min WET Material : SUS304 (ϕ8)
Holder : CTWPR2020K-3D42 Insert : GWPFM300N02-GT DM4

➡G89

SS Tools for Cutting off

CSV Series Best for up to 5㎜ diameter material

CSV For Cam-style machine

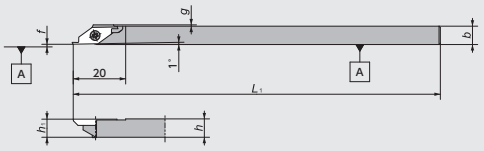


Figure-1

●Right-Hand style shown

CSV-NC For Gang-style machine

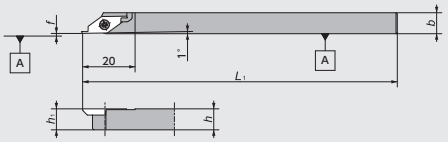


Figure-2

●Right-Hand style shown

CSV-NC-F For Gang-style machine

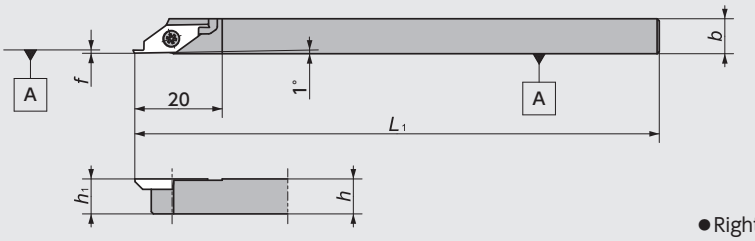


Figure-3

●Right-Hand style shown

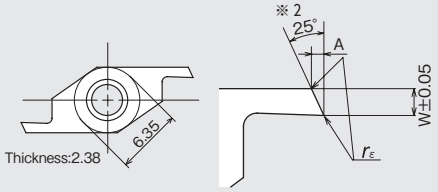
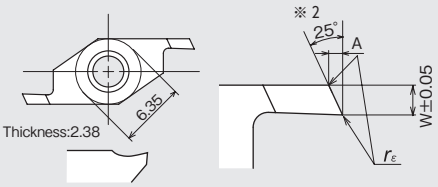
CSV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Max. Cut-off Dia (㎜) φD	Dimensions (㎜) h	b	L1	h1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5492962		CSVR/L 07GX	●		5.0※	7	7	85	7	0.1	0.5	CSVC	LR1S-2.5*7	CLR-15S
	5303169	5303193	07	●	●				140						
	5492954		08GX	●			8	8	85	8		0.0			
	5303151	5303201	08	●	●				140						
	5303136		095	●			9.5	9.5		9.5					
	5303144	5303177	10	●	●		10	10		10					
	5474770		12GX	●			12	12	85	12					
	5327929		12	●					140						
2	5514062	5514070	CSVR/L 08NC	●	●		8	8	120	8	0.1	—	CSVC	LR1S-2.5*7	CLR-15S
	5563010		10GXNC	●			10	10	85	10	0.1				
	5477492	5477542	10NC	●	●				120						
	5477534	5477500	12NC	●	●		12	12		12					
3	5789615		CSVR/L 08NC-F	●		5.0※	8	8	120	8	0.0~0.1	—	CSVC	LR1S-2.5*7	CLR-15S

※The Max. cut-off diameter varies depending on the insert used. Please refer to the below.

☆All the inserts can use the same toolholder CSV series ➔ G94

CSV Series - Inserts Mirror finish

Shape	Item Number	Chip-breaker	※1 Max. Cut-off Dia (㎜) φD	Dimensions (㎜) A	rε	W	PVD Coated Carbide VM1 R	Stock	L	Stock
 ●Right-Hand style shown	CSVC11FR/LV06 Ⓜ	No	3.0	0.31	0.0	0.6	5352547	●		
	11FR/LV07 Ⓜ		4.0	0.36		0.7	5324272	●	5330840	●
	11FR/LV08 Ⓜ			0.41		0.8	5324256	●	5330832	●
	11FR/LV09 Ⓜ			0.46		0.9	5352554	●		
	11FR/LV10 Ⓜ		5.0	0.51		1.0	5303490	●	5303599	●
	11FR/LV13 Ⓜ			0.65		1.3	5311824	●	5311816	●
	11FR/LV15 Ⓜ			0.74		1.5	5303615	●	5303631	●
 ●Right-Hand style shown	CSVC11FR/LVB06 Ⓜ	Yes	3.0	0.31		0.6	5358734	●		
	11FR/LVB07 Ⓜ		4.0	0.36		0.7	5358742	●		
	11FR/LVB08 Ⓜ			0.41		0.8	5358767	●		
	11FR/LVB09 Ⓜ			0.46		0.9	5358775	●		
	11FR/LVB10 Ⓜ		5.0	0.51		1.0	5358783	●		
	11FR/LVB13 Ⓜ			0.65		1.3	5358676	●		
	11FR/LVB15 Ⓜ			0.74		1.5	5358668	●		

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.

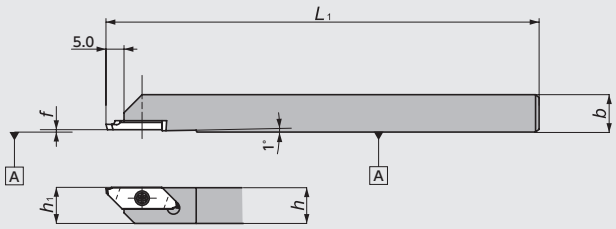
※2 : All angles shown are obtained when insert is set in the holder.

CTPS Series

CTPS

Best for up to 10mm diameter material

Figure-1

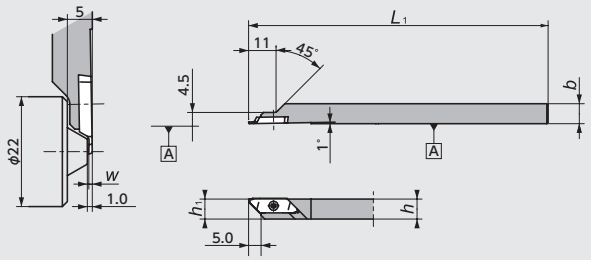


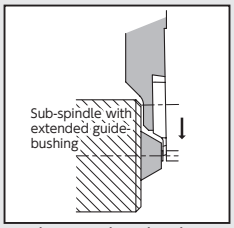
●Right-Hand style shown

CTPSR-SUB

Best for up to 4mm diameter material

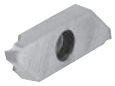
Figure-2





●Right-Hand style shown

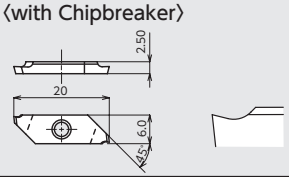
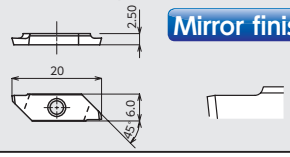
CTPS Series - Toolholders

Figure	Code No.	Item Number	Stock	Max. Cut-off Dia (mm) ϕD	Dimensions (mm) h	b	L_1	h_1	f	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
												
1	5346572	**CTPSR10**	●	**10.0**	10	10	120	10	0.0	CTPS、CTPS-001	LR1S-2.5*7	CLR-15S
	5397187	**R12**	●		12	12		12				
2	5486717	**CTPSR08-SUB04**	●	**4.0**	8	8	120	8	–	CTPS-001	LR1S-2.5*4.5	CLR-15S

☆All the inserts can use the same toolholder　CTPS series ➡ G98

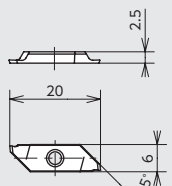
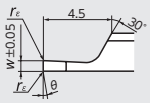
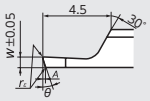
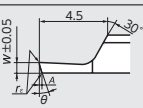
CTPS Series - Inserts

● CTPS

Shape	Item Number	Chip-breaker	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	θ ※2	r_ε	PVD Coated Carbide ZM3	Stock	VM1	Stock
〈with Chipbreaker〉  ●Right-Hand style shown	**CTPS12FR**	Yes	**4.0**	1.2	0.37	16°	0.05	5346275	●	5362587	●
	15FR		**5.0**	1.5	0.46			5346267	●	5362595	●
	18FR		**8.5**	1.8	0.55			5346283	●	5362603	●
	20FR		**10.0**	2.0	0.61			5374210	●	5374194	●
〈without Chipbreaker〉 Mirror finish  ●Right-Hand style shown	**CTPS12FRV**Ⓜ	No	**4.0**	1.2	0.47	20°	0.0	5346937	●	5362611	●
	15FRVⓂ		**5.0**	1.5	0.58			5346929	●	5362629	●
	18FRVⓂ		**8.5**	1.8	0.70			5346945	●	5362637	●
	20FRVⓂ		**10.0**	2.0	0.77			5374202	●	5374228	●

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

● CTPS-001

Shape	Item Number	Chip-breaker	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	θ ※2	r_ε	PVD Coated Carbide ZM3	Stock
  ●Right-Hand style shown	**CTPS07FRN-001**	Yes	**4.0**	0.7	–	0°	0.05	5460670	●
	**CTPS07FR-001**				0.23	16°	0.05	5441852	●
Mirror finish 	**CTPS07FRV-001**Ⓜ	No			0.28	20°	0.0	5441860	●

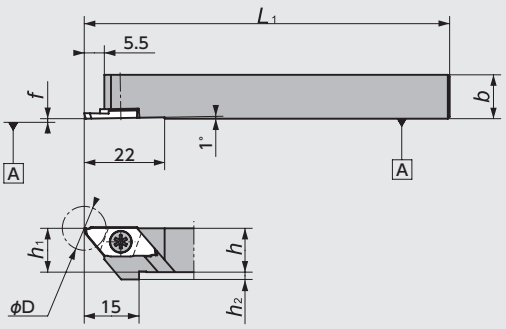
※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

SS Tools for Cutting off

CTP Series Max. Cut-off Dia. ~ 12.0mm

CTP

Screw accesssible from both sides



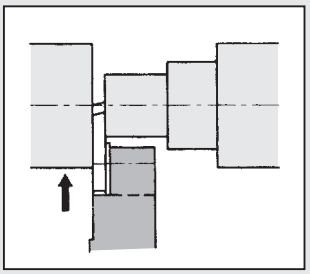
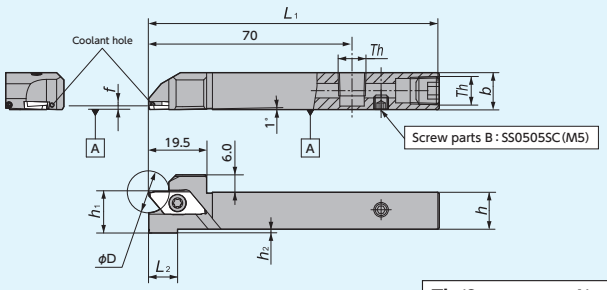


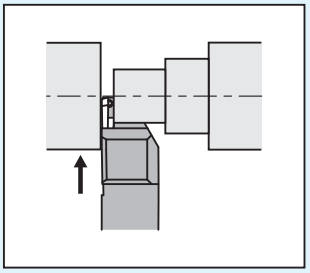
Figure-1

●Right-Hand style shown

CTP-OH2

(Coolant through)
Screw accesssible from both sides





Th (Screw parts A)
1212 size:SPR1/8(Rc1/8)

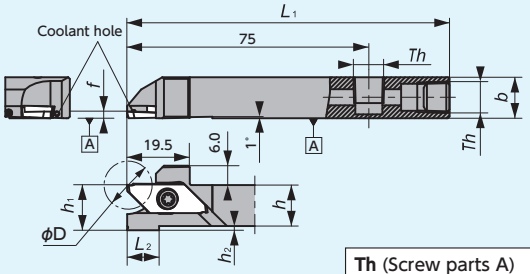
Figure-2

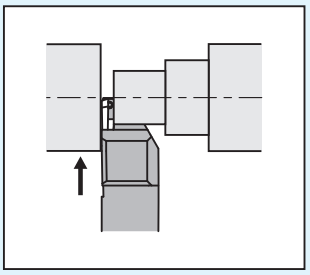
●Left-Hand holders are designed for Right-Hand machines

●Right-Hand style shown

CTP-OH

(Coolant through)
Screw accesssible from both sides





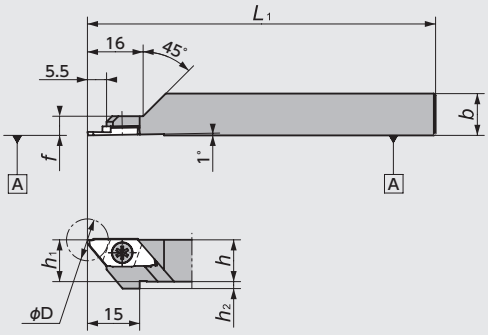
Th (Screw parts A)
1012 size : SS0605SC (M6×1.0)
1212/1616 size : SPR1/8(Rc1/8)

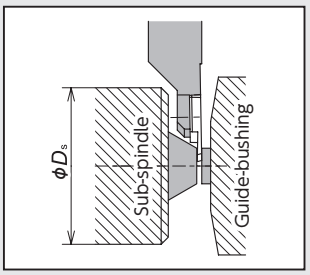
Figure-3

●Left-Hand holders are designed for Right-Hand machines

●Right-Hand style shown

CTPR-SUB



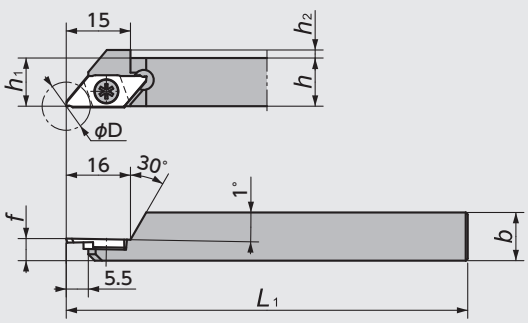


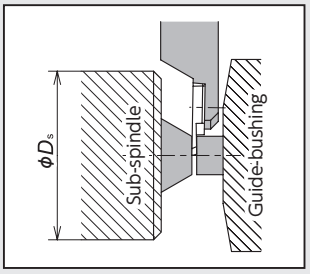
φDs
CTPR-SUB : φ30mm

Figure-4

●Right-Hand style shown

CTPL-SUB



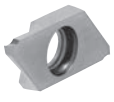
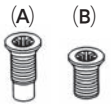
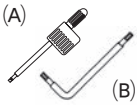


φDs
CTPL-SUB : φ30mm

Figure-5

●Left-Hand style shown

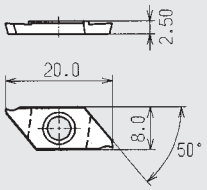
CTP Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Max. Cut-off Dia (mm) φD	Dimensions (mm) h	b	L_1	h_1	h_2	L_2	f	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
																
1	5131362	5131354	CTP R/L 08	●	●	12.0※	8	10	120	8	4	0	0.0	CTP-CX CTP CTP-X CTPX **G76～79**	LRIS-4*10PW (A)	CLR-15S (A)
	5873849	5893458	10H	●	●		10		100	10	2	0				
	5089644	5089636	10	●	●				120							
	5459730	5459748	12GX	●	●		12	12	85	12	0	0			LRIS-4*12PW (A)	
	5089651	5089669	12	●	●				120							
	5089677	5089685	13	●	●		13	13		13						
	5459755		16H	●			16	16	100	16						
	5183496	5183504	16	●	●				120							
2	5037874	5037866	CTP R/L 12H-OH2	●	●	12.0※	12	12	100	12	2	10	1.5※	CTP-CX CTP CTP-X CTPX **G76～79**	LRIS-4*12PW (A)	CLR-15S (A)
3	5921853	5921861	CTP R/L 1012H-OH	●	●	12.0※	10	12	100	12	4	19	1.5※	CTP-CX CTP CTP-X CTPX **G76～79**	LRIS-4*12PW (A)	CLR-15S (A)
	5918651	5918040	12H-OH	●	●		12	12			2	10				
	5921879	5921887	16H-OH	●	●		16	16		16	0	0				
4	5571831		CTPR 08-SUB	●		12.0※	8	8	120	8	4	0	5.5	CTP-CX CTP-FR (N) (V) (NV) CTP-FRX (FRNX) CTPX-FR (N) **G76～79**	LRIS-4*5 (B)	LLR-25S (B)
	5607999		08J-SUB	●					110							
	5391610		10F-SUB	●			10	10	80	10	2	0				
	5605282		10KX-SUB	●					120							
	5474580		12GX-SUB	●			12	12	85	12	0	0				
	5391628		12-SUB	●					120							
5		5570791	CTPL 08-SUB		●	12.0※	8	8	120	8	4	0	5.5	CTP-CX CTP-FLK CTP-FLKV CTP-FLN CTP-FLNV CTPX-FLN CTP-FLNX **G76～79**	LRIS-4*5 (B)	LLR-25S (B)
		5608005	08J-SUB		●				110							
		5499389	10GX-SUB		●		10	10	85	10	2	0				
		5482534	12GX-SUB		●		12	12		12	0	0				

※ Would be changed by insert.

SS Tools for Cutting off

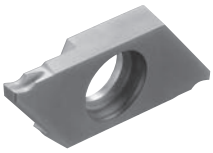
CTP Series - Inserts (Ground Chipbreaker)

Shape	Item Number	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ZM3	Stock	VM1	Stock	DT4	Stock
	CTP05FR-SH	5.0	0.5	0.17	16°	0.05	5788732	●				
	07FR	8.0	0.7	0.23			5126255	●				
	10FR	12.0	1.0	0.32			5089594	●			5847868	●
	10FR-SH	7.0	1.0	0.32			5788724	●			5847876	●
	13FR	12.0	1.3	0.40			5988704	●			5988738	●
	15FR	12.0	1.5	0.46			5089602	●	5284690	●		
	20FR		2.0	0.61			5125521	●	5432372	●		
	CTP05FRN-SH	5.0	0.5	–	0°	0.05	5788799	●				
	10FRN	12.0	1.0	–			5133327	●			5847884	●
	10FRN-SH	7.0	1.0	–			5788757	●			5847892	●
	13FRN	12.0	1.3	–			5988712	●			5988746	●
	15FRN	12.0	1.5	–			5133301	●	5306543	●		
	20FRN		2.0	–			5133335	●	5272224	●		
	CTP10FRK	11.0	1.0	0.32	16°	0.05	5131412	●				
	13FRK	12.0	1.3	0.40			5988720	●			5988761	●
	15FRK	11.0	1.5	0.46			5131404	●				
	20FRK		2.0	0.61			5131388	●				
	CTP07FL	8.0	0.7	0.23	16°	0.05	5126263	●				
	10FL	12.0	1.0	0.32			5089586	●				
	13FL		1.3	0.40			5988779	●			5988795	●
	15FL		1.5	0.46			5089610	●				
	20FL		2.0	0.61			5125513	●				
	CTP05FLN-SH	5.0	0.5	–	0°	0.05	5788773	●				
	10FLN	12.0	1.0	–			5133350	●			5847900	●
	10FLN-SH	7.0	1.0	–			5788765	●			5847918	●
	13FLN	12.0	1.3	–			5988787	●			5988811	●
	15FLN	12.0	1.5	–			5133319	●	5378526	●		
	20FLN		2.0	–			5133343	●	5273008	●		
	CTP05FLK-SH	5.0	0.5	0.17	16°	0.05	5788781	●				
	10FLK	11.0	1.0	0.32			5131420	●			5847926	●
	10FLK-SH	7.0	1.0	0.32			5788807	●			5847934	●
	13FLK	11.0	1.3	0.40			5926399	●			5988837	●
	15FLK		1.5	0.46			5131396	●	5328240	●		
	20FLK		2.0	0.61			5131370	●	5280722	●		
	15FLKB		1.5	0.46			5645254	●				

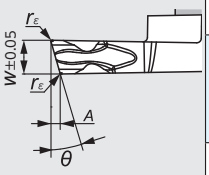
● Right-Hand style shown

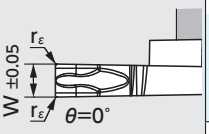
※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

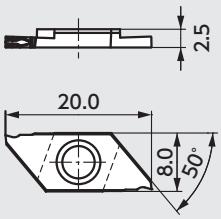
CTP Series - Inserts (3D Molded Chipbreaker)



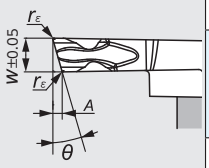
Item Number	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ST4	Stock	DM4	Stock
CTP10FR-CX	12.0	1.0	0.32	16°	0.05	5044722	●	5044714	●
CTP13FR-CX		1.3	0.40			5039318	●	5004726	●
CTP15FR-CX		1.5	0.46			5039383	●	5004734	●
CTP10FRN-CX		1.0	–	0°	0.05	5039300	●	5999669	●
CTP13FRN-CX		1.3	–			5039226	●	5965710	●
CTP13FRN02-CX			–		0.2	5039342	●	5965686	●
CTP15FRN-CX		1.5	–		0.05	5039391	●	5957725	●
CTP15FRN02-CX			–		0.2	5039409	●	5957717	●
CTP10FLK-CX	11.0	1.0	0.32	16°	0.05	5044748	●	5044730	●
CTP13FLK-CX		1.3	0.40			5039359	●	5004742	●
CTP15FLK-CX		1.5	0.46			5039417	●	5004759	●
CTP10FLN-CX	12.0	1.0	–	0°	0.05	5039292	●	5999677	●
CTP13FLN-CX		1.3	–			5039367	●	5965702	●
CTP13FLN02-CX			–		0.2	5039375	●	5965694	●
CTP15FLN-CX		1.5	–		0.05	5039433	●	5957733	●
CTP15FLN02-CX			–		0.2	5039441	●	5957741	●

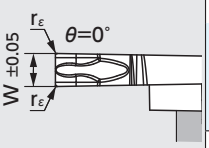






● Right-Hand style shown

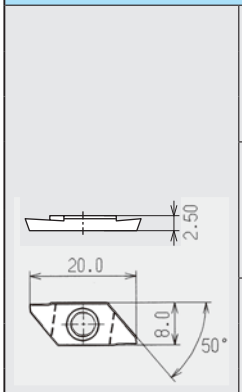




※ 1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※ 2 : All angles shown are obtained when insert is set in the holder.

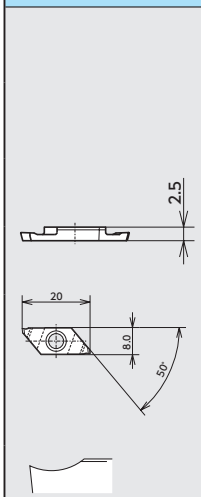
SS Tools for Cutting off

CTP Series - Inserts (Without Chipbreaker) Mirror finish

Shape	Item Number	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) w	A	※2 θ	r_ε	Carbide KM1	Stock	PVD Coated Carbide ZM3	Stock	VM1	Stock	DT4	Stock
 ●Right-Hand style shown	CTP10FRV Ⓜ	12.0	1.0	0.40	20°	0.0	5576079	●	5255708	●	5264841	●	5847942	●
	15FRV Ⓜ		1.5	0.58			5576087	●	5255682	●	5264858	●		
	20FRV Ⓜ		2.0	0.77			5576095	●	5255666	●	5264866	●		
	CTP15FRNV Ⓜ		1.5	–	0°		5576111	●						
	20FRNV Ⓜ		2.0	–			5576020	●						
	CTP10FLV Ⓜ	12.0	1.0	0.40	20°	0.0			5255641	●	5264882	●		
	15FLV Ⓜ		1.5	0.58					5255625	●	5264890	●		
	20FLV Ⓜ		2.0	0.77					5255609	●	5264908	●		
	CTP15FLNV Ⓜ		1.5	–	0°		5576012	●						
	20FLNV Ⓜ		2.0	–			5576004	●						
	CTP15FLKV Ⓜ	11.0	1.5	0.58	20°		5576103	●			5264874	●		
	20FLKV Ⓜ		2.0	0.77							5392691	●		

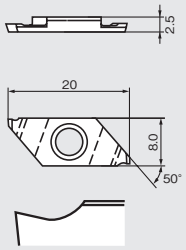
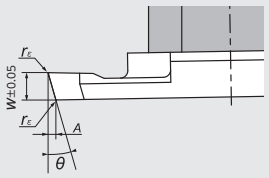
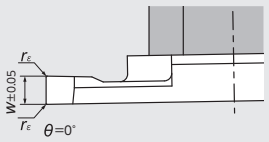
※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

CTP Series - Inserts (Ground Chipbreaker : cost advantage style)

Shape	Item Number	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ZM3	Stock	QM3	Stock	DT4	Stock
 ●Right-Hand style shown	CTPX15FR	12.0	1.5	0.46	16°	0.05	5334909	●	5535729	●	5827514	●
	20FR		2.0	0.61			5334834	●	5535745	●	5850169	●
	CTPX15FRN		1.5	–	0°				5535711	●	5850193	●
	20FRN		2.0	–					5535737	●	5850144	●
	CTPX15FL		1.5	0.46	16°						5850227	●
	20FL		2.0	0.61							5850185	●
	CTPX15FLN		1.5	–	0°				5535653	●	5850201	●
	20FLN		2.0	–					5535638	●	5830468	●
	CTPX15FLK	11.0	1.5	0.46	16°				5535646	●	5850219	●
	20FLK		2.0	0.61					5535620	●	5850177	●

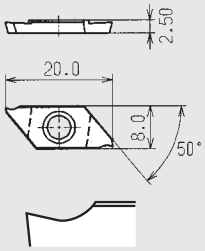
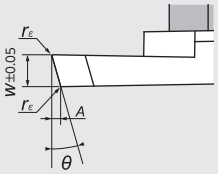
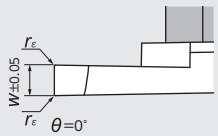
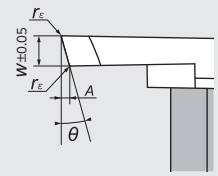
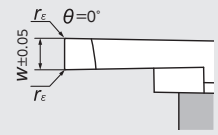
※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

CTP Series - Inserts (Ground Chipbreaker : Strengthen edge with land style)

Shape		Item Number	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ZM3	Stock
 ●Right-Hand style shown		CTP15FRX	12.0	1.5	0.46	16°	0.05	5360847	●
		20FRX		2.0	0.61			5360839	●
		CTP15FRNX		1.5	–	0°		5360813	●
		20FRNX		2.0	–			5360821	●

※ 1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※ 2 : All angles shown are obtained when insert is set in the holder.

CTP Series - Inserts (Ground Chipbreaker : Strengthen edge with land style)

Shape		Item Number	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ST4	Stock
 ●Right-Hand style shown		CTP10FR-TH	12.0	1.0	0.32	16°	0.05	5038823	●
		CTP15FR-TH		1.5	0.46			5040118	●
		CTP20FR-TH		2.0	0.61			5040167	●
		CTP10FRN-TH		1.0	–	0°		5038849	●
		CTP15FRN-TH		1.5				5040134	●
		CTP20FRN-TH		2.0				5040183	●
		CTP10FLK-TH	11.0	1.0	0.32	16°		5038856	●
		CTP15FLK-TH		1.5	0.46			5040142	●
		CTP20FLK-TH		2.0	0.61			5040191	●
		CTP10FLN-TH	12.0	1.0	–	0°		5038864	●
		CTP15FLN-TH		1.5				5040159	●
		CTP20FLN-TH		2.0				5040209	●

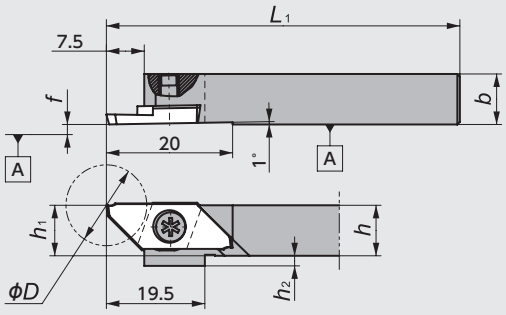
※ 1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※ 2 : All angles shown are obtained when insert is set in the holder.

SS Tools for Cutting off

CTPA Series Max. Cut-off Dia. ~ 16.0mm

CTPA

Screw accesssible from both sides



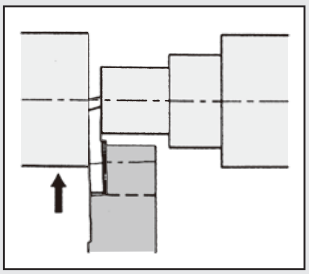


Figure-1

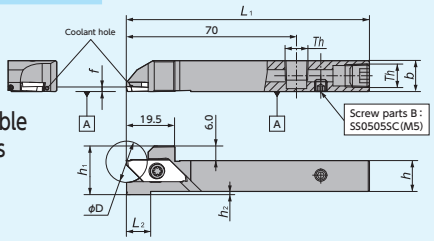
●Right-Hand style shown

CTPA-OH2

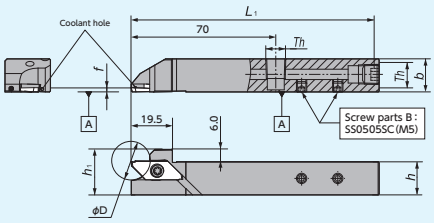
(Coolant through)

Screw accesssible from both sides

□12 : CTPA□12H-OH2



□16 : CTPA□16X-OH2



Th (Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

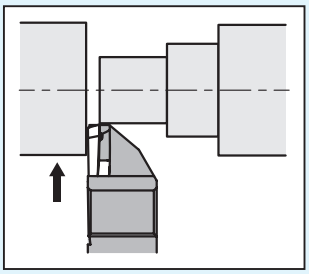


Figure-2

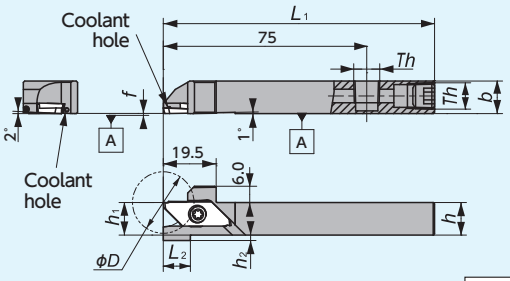
●Left-Hand holders are designed for Right-Hand machines

●Right-Hand style shown

CTPA-OH

(Coolant through)

Screw accesssible from both sides



Th
□12, □16 : Rc1/8 (PT1/8)

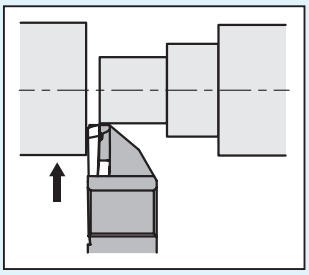
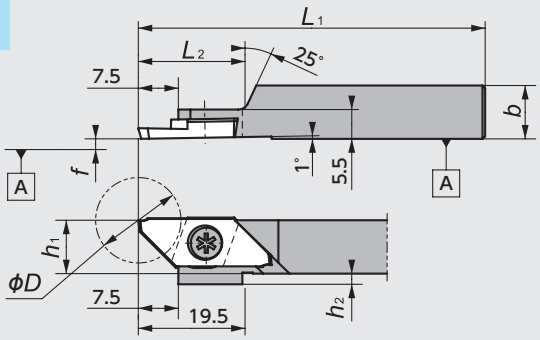


Figure-3

●Left-Hand holders are designed for Right-Hand machines

●Right-Hand style shown

CTPAR-SUB



ϕDs
CTPAR-SUB : ϕ36mm

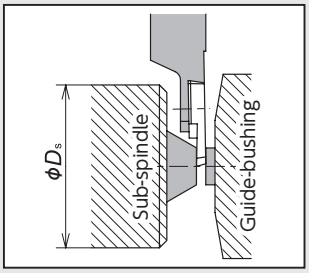
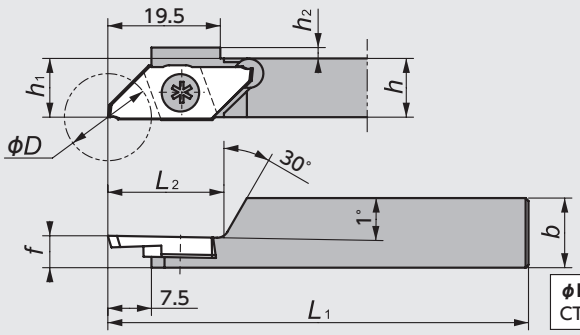


Figure-4

●Right-Hand style shown

CTPAL-SUB



ϕDs
CTPAL-SUB : ϕ36mm

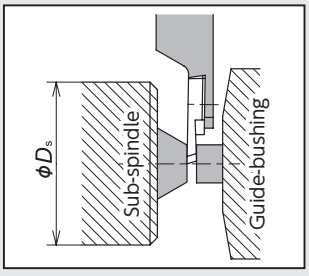


Figure-5

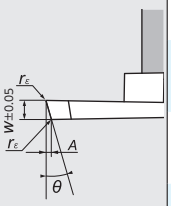
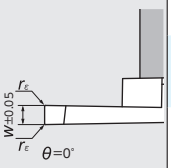
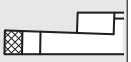
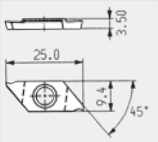
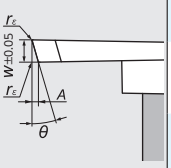
●Left-Hand style shown

CTPA Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Max. Cut-off Dia (mm) φD	Dimensions (mm) h	b	L_1	h_1	h_2	L_2	f	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5199187	5199153	CTPA R/L 10	●	●	16.0 ※	10	10	120	10	2	—	0.0	CTPA (Cut-off) G82～84 TBPA (Back Turning) G55	LRIS-4*10PW (A)	CLR-15S (A)
	5016209	5016217	12GX	●	●		12	12	85	12	0				LRIS-4*12PW (A)	
	5199195	5199161	12	●	●				120							
	5199203	5199179	16	●	●		16	16		16						
	5459540	5459557	20F	●	●		20	20	80	20					LRIS-4*10 (B)	LLR-25S (B)
2	5037932	5037924	CTPA R/L 12H-OH2	●	●	16.0 ※	12	12	100	12	2	10	2.0※	CTPA (Cut-off) G82～84	LRIS-4*12PW (A)	CLR-15S (A)
	5043872	5043864	16X-OH2	●	●		16	16	120	16	0	0	2.0※			
3	5931522	5931530	CTPA R/L 12H-OH	●	●	16.0 ※	12	12	100	12	2	10	2.0※	CTPA (Cut-off) G82～84	LRIS-4*12PW (A)	CLR-15S (A)
	5931548	5931563	16H-OH	●	●		16	16		16	0	0	2.0※			
4	5600770		CTPAR10GX-SUB	●		16.0 ※	10	10	85	10	2	20	0.0	CTPA-FR (N) (V) (NV) G82～84	LRIS-4*5 (B)	LLR-25S (B)
	5454681		12GX-SUB	●			12	12		12	0					
	5570676		12KX-SUB	●					120							
5		5505904	CTPAL10GX-SUB		●	16.0 ※	10	10	85	10	2	20	5.5	CTPA-FL (N)(K)(NV)(KV) G82～84	LRIS-4*5 (B)	LLR-25S (B)
		5454699	12GX-SUB		●		12	12		12	0					
		5570684	12KX-SUB		●				120							
		5604871	16GX-SUB		●		16	16	85	16		28				
		5981659	16KX-SUB		●				120							

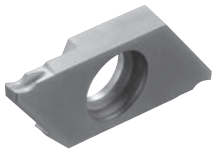
※ Would be changed by insert.

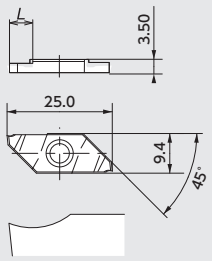
CTPA Series - Inserts (Ground Chipbreaker)

Shape	Item Number	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ZM3	Stock	QM3	Stock	VM1	Stock	DT4	Stock	PCD PD1	Stock
	CTPA07FR	8.0	0.7	0.23	16°	0.05	5501242	●								
	10FR	12.0	1.0	0.32			5501218	●								
	15FR	16.0	1.5	0.46			5248075	●	5270020	●	5439328	●	5855077	●		
	20FR		2.0	0.61			5194113	●	5229596	●	5439310	●	5854997	●		
	CTPA07FRN	8.0	0.7	–	0°	0.05	5512496	●								
	10FRN	12.0	1.0	–			5496880	●								
	15FRN	16.0	1.5	–			5271473	●	5556881	●	5415096	●	5855051	●		
	20FRN		2.0	–			5199146	●	5562715	●	5476338	●	5854989	●		
	20FRN-P			–		0.1									5781620 (1 corner)	●
〈PD1〉	30FRN		3.0	–		0.05			5789151	●						
	CTPA07FL	8.0	0.7	0.23	16°	0.05	5501234	●								
	10FL	12.0	1.0	0.32			5501226	●								
	15FL	16.0	1.5	0.46			5342688	●					5855101	●		
	20FL		2.0	0.61			5199138	●					5855036	●		
● Right-Hand style shown	CTPA10FLN	12.0	1.0	–	0°		5496898	●								
	10FLND	16.0		–			5789599	●								
	15FLN		1.5	–			5286349	●	5562707	●	5365747	●	5855085	●		
	20FLN		2.0	–			5199120	●	5250964	●	5439351	●	5854971	●		
	20FLN-P			–		0.1									5781646 (1 corner)	●
〈PD1〉	30FLN		3.0	–		0.05			5782677	●						
	CTPA07FLK	6.5	0.7	0.23	16°	0.05	5505912	●								
	10FLK	11.0	1.0	0.32			5496906	●								
	10FLKD	16.0		0.32			5789607	●								
	15FLK	14.5	1.5	0.46			5248083	●	5562699	●	5476320	●	5855093	●		
	20FLK		2.0	0.61			5199112	●	5250774	●	5439369	●	5855002	●		

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

CTPA Series - Inserts (3D Molded Chipbreaker)



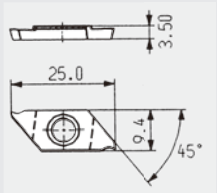


● Right-Hand style shown

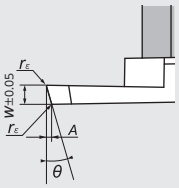
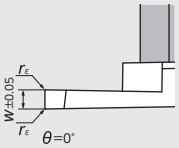
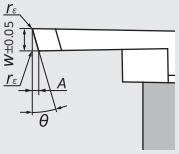
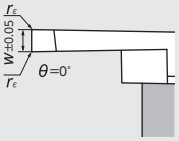
Item Number	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ST4	Stock	DM4	Stock
CTPA15FR-CX	16.0	1.5	0.46	16°	0.05	5044763	●	5044755	●
CTPA15FRN-CX	16.0	1.5	–	0°	0.05	5039458	●	5999685	●
CTPA15FLK-CX	14.5	1.5	0.46	16°	0.05	5044789	●	5044771	●
CTPA15FLN-CX	16.0	1.5	–	0°	0.05	5039466	●	5999693	●

※ 1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※ 2 : All angles shown are obtained when insert is set in the holder.

CTPA Series - Inserts (Ground Chipbreaker : Strengthen edge with land style)

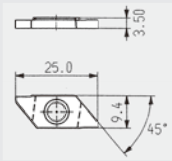
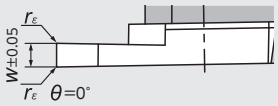
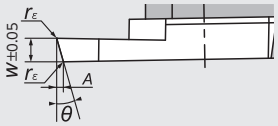
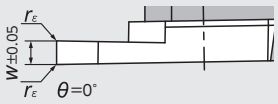
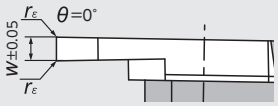
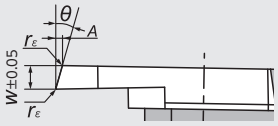
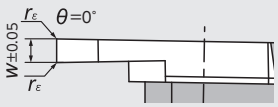
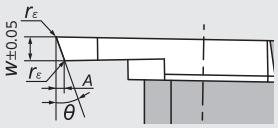


● Right-Hand style shown

Shape	Item Number	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	※2 θ	r_ε	PVD Coated Carbide ST4	Stock
	CTPA15FR-TH	16	1.5	0.46	16°	0.05	5040035	●
	20FR-TH		2.0	0.61			5040076	●
	CTPA15FRN-TH		1.5	–	0°		5040043	●
	20FRN-TH		2.0	–			5040084	●
	CTPA15FLK-TH	14.5	1.5	0.46	16°		5040050	●
	20FLK-TH		2.0	0.61			5040092	●
	CTPA15FLN-TH	16	1.5	–	0°		5040068	●
	20FLN-TH		2.0	–			5040100	●

※ 1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※ 2 : All angles shown are obtained when insert is set in the holder.

CTPA Series - Inserts (Without Chipbreaker)

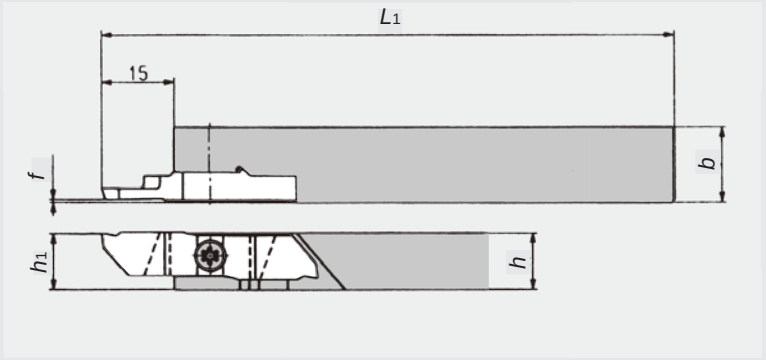
Shape		Item Number	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	※2 θ	r_ε	Carbide KM1	Stock	PVD Coated Carbide ZM3	Stock	VM1	Stock
 ● Right-Hand style shown		CTPA20FRS	16.0	2.0	–	0°	0.05			5378823	●		
	Mirror finish 	CTPA20FRV Ⓜ			0.77	20°	0.0	5576038	●			5264916	●
	Mirror finish 	CTPA20FRNV Ⓜ			–	0°		5576046	●				
		CTPA20FLS		2.0	–	0°	0.05			5225255	●		
	Mirror finish 	CTPA20FLV Ⓜ	16.0		0.77	20°	0.0					5264924	●
	Mirror finish 	CTPA20FLNV Ⓜ			–	0°		5576053	●				
	Mirror finish 	CTPA20FLKV Ⓜ	14.5		0.77	20°		5576061	●			5264932	●

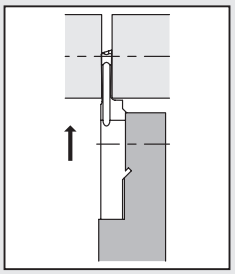
※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

MEMO

CTPW Series Max. Cut-off Dia. ~ 20.0mm

CTPW



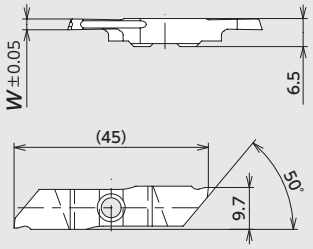
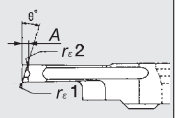
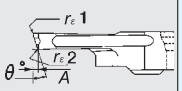
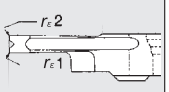
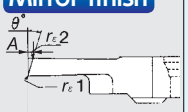
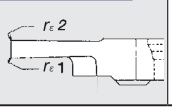


●Right-Hand style shown

CTPW Series - Toolholders

Code No. R	Code No. L	Item Number	Stock R	Stock L	Max. Cut-off Dia (mm) ϕD	Dimensions (mm) h	b	L_1	h_1	f	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
–	5487004	CTPWR/L10A	–	●	20.0	10	12	120	9.95	0.6	CTPW25□R/L	LR1S-4*10	LLR-25S
5443593	–	10	●	–			16						
–	5488150	12A	–	●		12	12		11.95				
5443601	–	12	●	–			16						
5443627	5486980	16	●	●		16	16		15.95				
5443635	5486998	20	●	●		20	20		19.95				

CTPW Series - Inserts

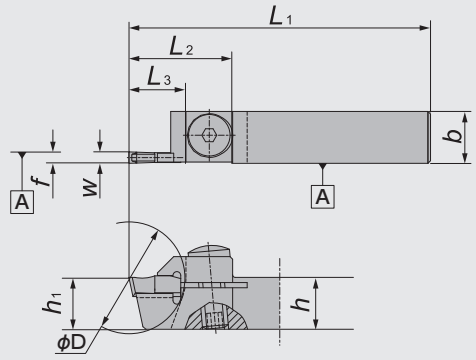
Shape		Item Number	Chip-breaker	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	A	※2 θ	$r_{\varepsilon 1}$	$r_{\varepsilon 2}$	PVD Coated Carbide ZM3 R	Stock	L	Stock
		CTPW25FR/L	Yes	20.0	2.5	0.81	17°	0.05	0.20	5437991	●	5487053	●
		CTPW25FR/LK				0.81	17°	0.05	0.20			5487012	●
		CTPW25FR/LN				–	0°	0.05	0.05	5438056	●	5487046	●
	Mirror finish 	CTPW25FR/LP Ⓜ	No			0.81	17°	0.05	0.20	5443650	●	5487038	●
●Left-Hand style shown	Mirror finish 	CTPW25FR/LNV Ⓜ				–	0°	0.00	0.00	5438049	●	5487020	●

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

CTV Series Max. Cut-off Dia. ~ 20.0mm

CTV-K2

Screw accesssible from both sides



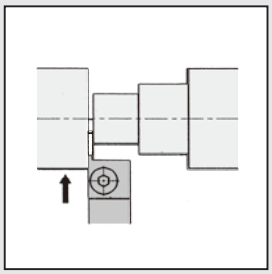
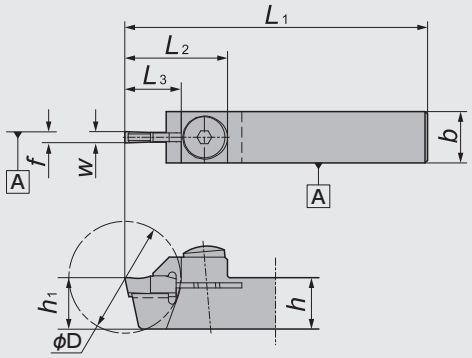


Figure-1

●Right-Hand style shown

CTVN-K2

Screw accesssible from both sides



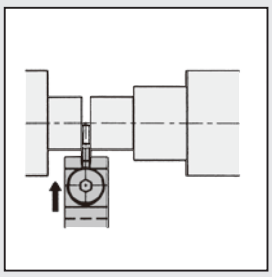


Figure-2

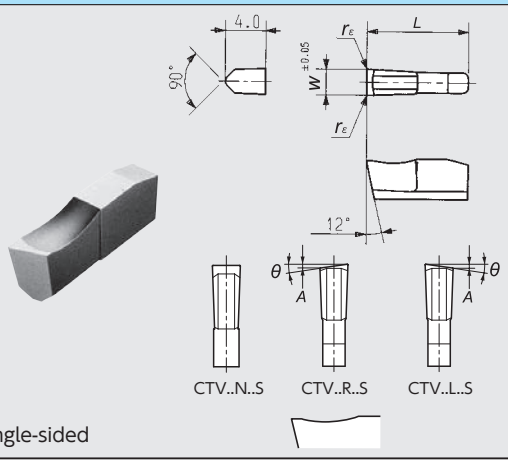
CTV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	※1 Max. Cut-off Dia (mm) ϕD	Dimensions (mm) w	h	b	L_1	h_1	f	L_2	L_3	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5111919	5111927	CTV R/L 10K2	●	●	20.0	2.2 (2.5)	10	10	120	10	0.0	20.0	11	CTV-S	AOS-5*16	LW-2.5S
		5459763	12GX2		●			12	12	85	12						
	5111950	5111935	12K2	●	●					120							
2	5208236		CTVN10K2	●		20.0	2.2 (2.5)	10	10	120	10	3.9	19.5	11	CTV-S	AOS-5*16	LW-2.5S
	5208244		12K2	●				12	12		12	4.9					

Note: f shows when takes CTV22.. insert.

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.

CTV Series - Inserts

Shape	Item Number	Dimensions (mm) w	L	A	※2 θ	r_ε	PVD Coated Carbide ZM3	Stock
	CTV22N05S	2.2	10	–	0°	0.05	5111976	●
	22N10S			–		0.10	5111992	●
	CTV25N05S	2.5		–		0.05	5112024	●
	25N10S			–		0.10	5112073	●
	CTV22R05S	2.2		0.74	17°	0.05	5111968	●
	22R10S			0.74		0.10	5112008	●
	CTV25R05S	2.5		0.83		0.05	5112032	●
	25R10S			0.83		0.10	5112065	●
	CTV22L05S	2.2		0.74		0.05	5111984	●
	22L10S			0.74		0.10	5112016	●
	CTV25L05S	2.5		0.83		0.05	5112040	●
	25L10S			0.83		0.10	5112057	●

Single-sided

※2 : All angles shown are obtained when insert is set in the holder.

SS Tools for Cutting off

CTDP (Cut Duo) Series Max. Cut-off Dia. ~ 20.0, ~ 25.4, ~ 32.0, ~ 34.0㎜

CTDP
Screw accesssible from both sides

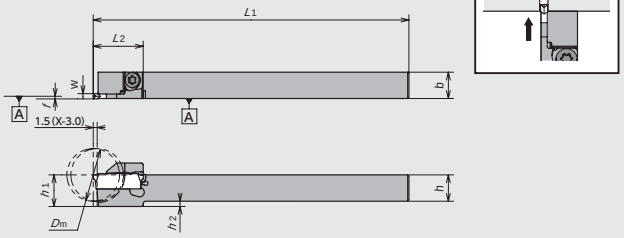


Figure-1

●Right-Hand style shown

CTDP-OH

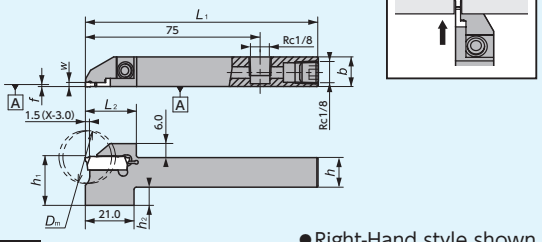


Figure-3

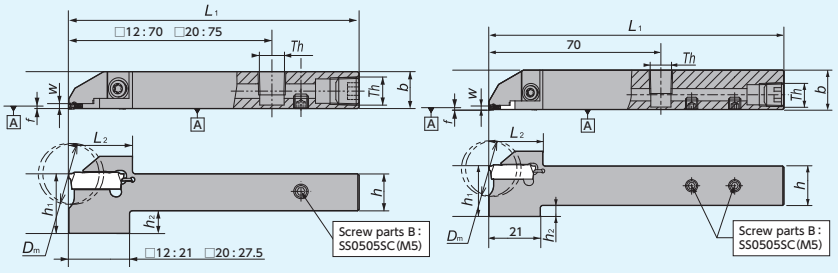
●Right-Hand style shown
●Left-Hand holders are designed for Right-Hand machines

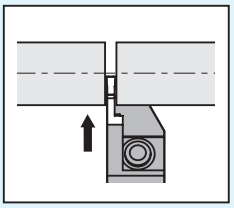
CTDP-OH2

CTDP R/L 12-20D25-OH2
CTDP R/L 20-25D34A-OH2

CTDP R/L 16-20D25-OH2

(Coolant through)





Th (Screw parts A)
1212/1616/2020 size : SPR1/8(Rc1/8)

Figure-2

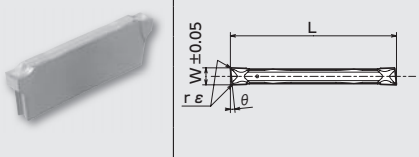
●Left-Hand holders are designed for Right-Hand machines
●Right-Hand style shown

CTDP Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Max. Cut-off Dia (㎜) D_m	Dimensions (㎜) w	h	b	L_1	h_1	h_2	f	L_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5750534	5750559	CTDP R/L 10-20D20	●	●	20.0	2.0	10	10	120	10	2	0.15	19.0	CTDP20	LRIS-4＊12	LLR-25S
	5717087	5717079	12-20D20	●	●		2.0	12	12	120	12	0		19.0			
	5717103	5717095	12-20D25	●	●	25.4	2.0	12	12	120	12	0		22.0			
	5750567	5750575	16-20D25	●	●		2.0	16	16	120	16	0		22.0			
	5842299	5842307	16-20D32A	●	●	32.0	2.0	16	16	120	16	0		27.5		LRIS5＊10	LLR-28S
	5842331	5842349	2012-20D32A	●	●		2.0	20	12	120	20	0		29.5			
	5842315	5842323	20-20D32A	●	●		2.0	20	20	120	20	0		29.5			
	5842356	5842364	16-25D34A	●	●	34.0	2.5	16	16	120	16	0		28.5	CTDP25	CS0516LSH	LW-3
	5842398	5842406	2012-25D34A	●	●		2.5	20	12	120	20	0		29.5			
	5842372	5842380	20-25D34A	●	●		2.5	20	20	120	20	0		29.5			
2	5037916	5037908	CTDP R/L 12-20D25-OH2	●	●	25.4	2.0	12	12	100	20.5	8.5	0.15	22.0	CTDP20	LRIS-4＊12	LLR-25S
	5043856	5043849	16-20D25-OH2	●	●		2.0	16	16	120	20.5	4.5		22.0	CTDP20		
	5043930	5043948	20-25D34A-OH2	●	●	34.0	2.5	20	20	120	24.0	4.0		28.5	CTDP25	CS0516LSH	LW-3
3	5972567	5972989	CTDP R/L 12-20D25-OH	●	●	25.4	2.0	12	12	100	20.5	8.5	0.15	22.0	CTDP20	LRIS-4＊12	LLR-25S
	5972575	5973003	16-20D25-OH	●	●		2.0	16	16	100	20.5	4.5		22.0			

※Do not tighten clamp screw without installing insert as it may damage the insert pocket.

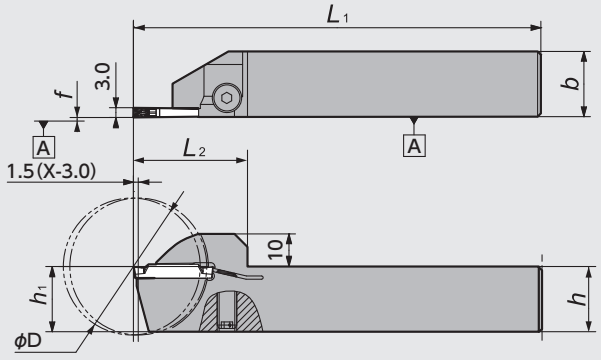
CTDP Series - Inserts

Shape	Item Number	Dimensions (㎜) w	L	θ	r_ε	PVD Coated Carbide TM4	Stock	QM3	Stock	DM4	Stock
	CTDP20N	2.0	19.1	0°	0.05	5717012	●	5717004	●	5844972	●
	20N02				0.2	5716998	●	5716980	●	5839352	●
	20R6			6°	0.05	5717038	●	5717020	●	5844956	●
	20R15			15°	0.05	5717061	●	5717046	●	5844964	●
	CTDP25N	2.5	21.2	0°	0.05	5750682	●	5750690	●	5846944	●
	25N02				0.2	5750708	●	5750732	●	5846936	●
	25R6			6°	0.05	5750740	●	5750757	●	5852694	●
	25R15			15°	0.05	5750765	●	5750773	●	5849377	●

CTWP (CUT DUO EXTRA) Series Max. Cut-off Dia. ～ 42.0㎜

CTWP

Screw accesssible from both sides



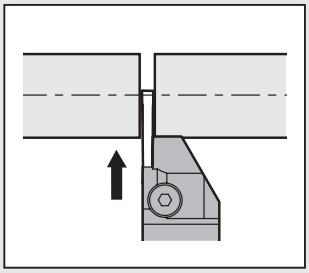
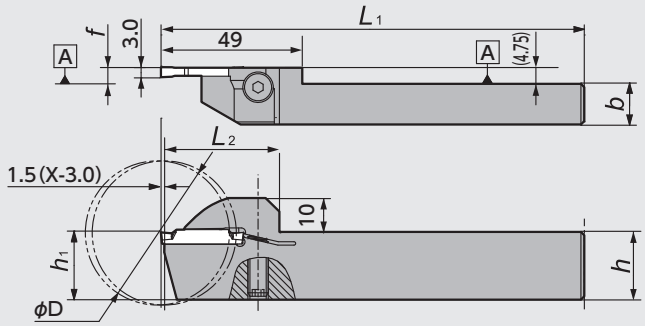


Figure-1

●Right-Hand style shown

CTWP-003

Screw accesssible from both sides



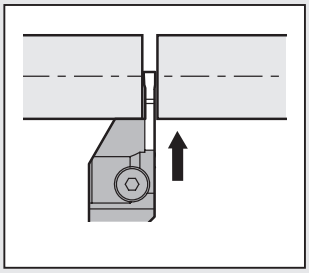


Figure-2

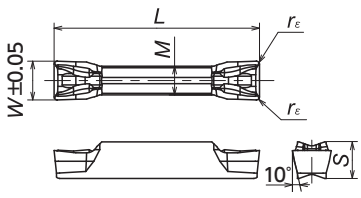
●Left-Hand style shown

CTWP Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Max. Cut-off Dia (㎜) φD	Dimensions (㎜) h	b	L1	h1	f	L2	Gage insert	Spare Parts Clamp Screw	Spare Parts Wrench
1	5973912	5973920	CTWP R/L 2012K-3D42	●	●	42	20	12	125	20	0.25	35	GWPFM300	CS0623LSHW	LW-3
1	5973870	5973904	2020K-3D42	●	●			20							
1	5973854	5973862	2525M-3D42	●	●		25	25	150	25					
2		5012976	CTWPL2012K-3D42-003		★		20	12	125	20	5	44			

※Do not tighten clamp screw without installing insert as it may damage the insert pocket.

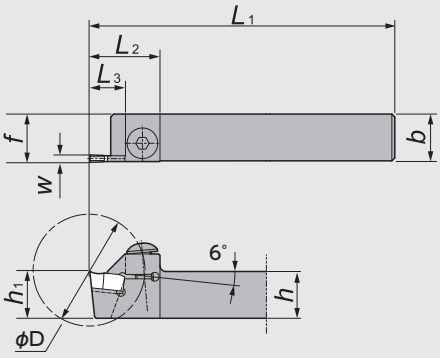
CTWP Series - Inserts

Shape	Item Number	Dimensions (㎜) w	rε	M	L	S	PVD Coated Carbide DM4	Stock
	GWPFM300N02-GT	3.0	0.2	2.2	24.5	(4.2)	5963251	●
	GWPFM300N04-GT		0.4				5963269	●

SS Tools for Cutting off

CTV Series Max. Cut-off Dia. ~ 45.0mm

CTV(-S)



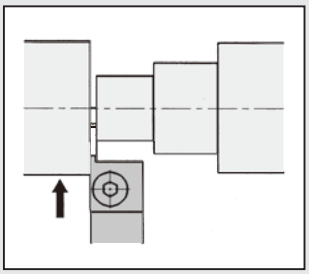
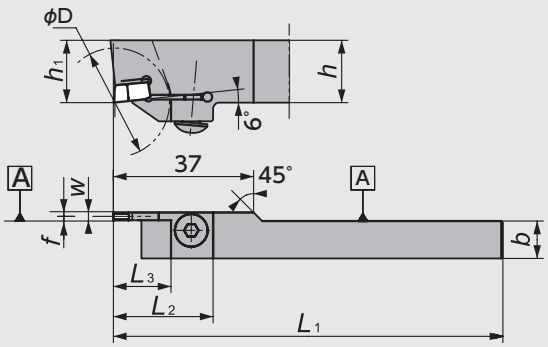


Figure-1

●Right-Hand style shown

CTV-X



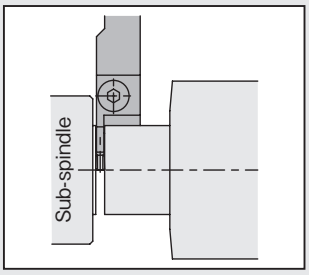
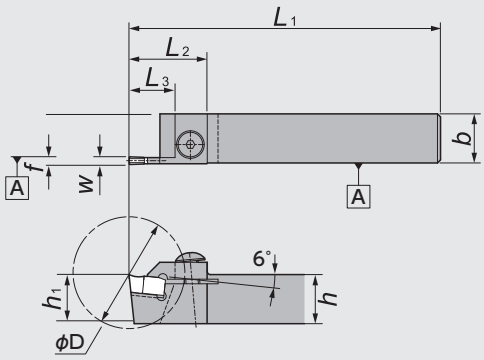


Figure-2

●Left-Hand style shown

CTV-M(B)



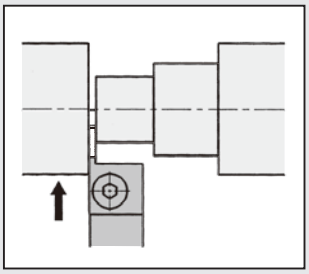


Figure-3

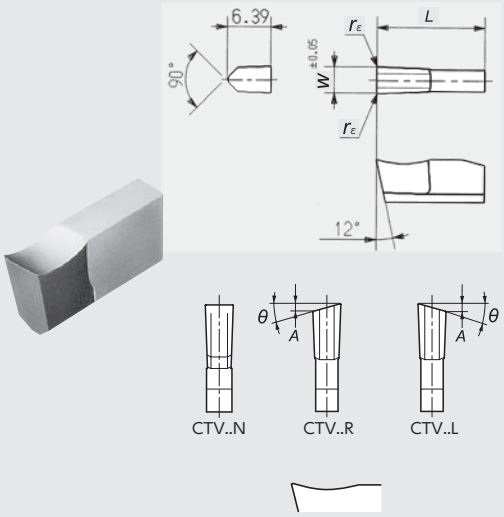
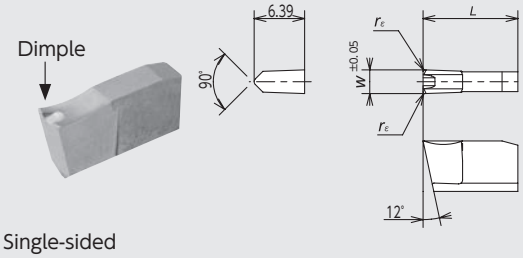
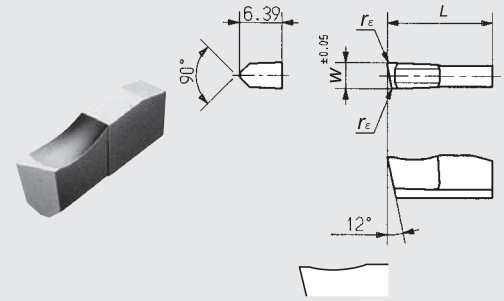
●Right-Hand style shown

CTV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) w	h	b	L1	h1	f	L2	L3	Gage insert	Spare Parts Clamp Screw	Spare Parts Wrench
1	5904131		CTV R/L 16K25S	●		23.0	2.5	16	16	125	16	16.5	24	12.2	CTV25□	BS0620	LW-4
	5904180		20K25S	●				20	20		20	20.5					
	5904149		16K30S	●			3.0	16	16		16	16.5			CTV30□		
	5904172		20K30S	●				20	20		20	20.5					
	5853619	5853627	16K25	●	●	35.0	2.5	16	16		16	16.5	32	18.5	CTV25□		
	5853643	5853635	20K25	●	●			20	20		20	20.5					
	5853593	5853601	16K30	●	●		3.0	16	16		16	16.5			CTV30□		
	5853577	5853585	20K30	●	●			20	20		20	20.5					
	5120423	5122197	1913L25	●	●		2.5	19	13	140	19	13.0			CTV25□		
	5120431	5122189	1913L30	●	●		3.0								CTV30□		
2		5595384	CTVL2012K30X-1		●			20	12	125	20	3.0					
3	5177100		CTV R/L 16-25M	●		28.0	2.5	16	16	120	16	0.5	25.5	15	CTV25□	BS0520	LW-3
	5185541		20-25M	●				20	20		20						
	5185566		16-30M	●			3.0	16	16		16				CTV30□		
	5183314		20-30M	●				20	20		20						
	5162219	5184528	25-30B	●	●	45.0		25	25	150	25		34.5	23.5		BS0625	LW-4

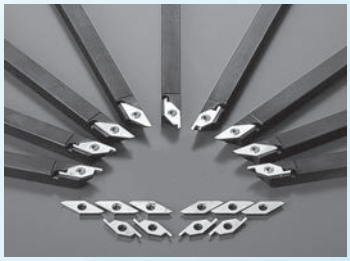
※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.

CTV Series - Inserts

Shape	Item Number	Dimensions (mm)					PVD Coated Carbide			
		w	*L*	*A*	※2 *θ*	r_ε	ZM3	Stock	QM3	Stock
 Single-sided	**CTV25N**	2.5	12	–	0°	0.20	5862248	●		
	30N	3.0		–			5864145	●	5972997	●
	25R	2.5		0.41	8°		5868633	●		
	30R	3.0		0.49			5866892	●		
	25L	2.5		0.41						
	30L	3.0		0.49			5129564	●		
 Single-sided	**CTV30N038**	3.0	12	–	0°	0.20	5524921	●		
 Single-sided	**CTV25R00A**	2.5	12	0.41	8°	0.05 max.	5162003	●		
	30R00A	3.0		0.49			5185327	●		
	25R00B	2.5		0.83	17°		5185178	●		
	30R00B	3.0		1.00			5183223	●		

※2 : All angles shown are obtained when insert is set in the holder.

MEMO



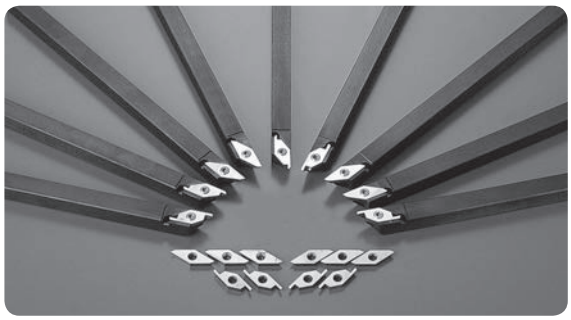
Original Series

- CSV Series ····· G94
- CTPS Series ····· G98
- Y-axis Toolholders ····· G100
- Shifted Toolholders ····· G103
- DS Sleeves ····· G104

CSV Series

Tooling for small diameter parts

Best tool for up to 5mm 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

CSV toolholder

CSVF

Front turning

CSVT

Threading

CSVB

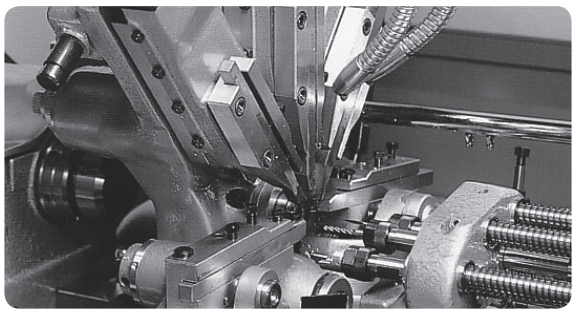
Back turning

CSVC

Cut-off

CSVG

Grooving



- Holders for Cam-style machine also available

CSV Series

CSV

For Cam-style machine

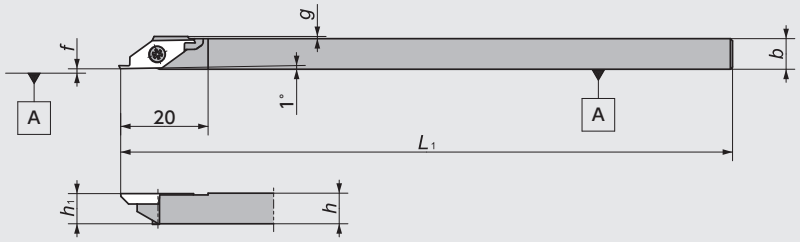


Figure-1

●Right-Hand style shown

CSV-NC

For Gang-style machine

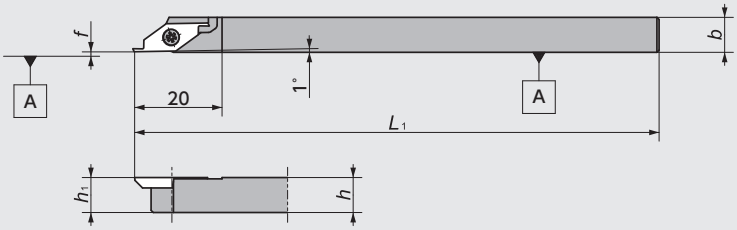


Figure-2

●Right-Hand style shown

CSV-NC-F

For Gang-style machine

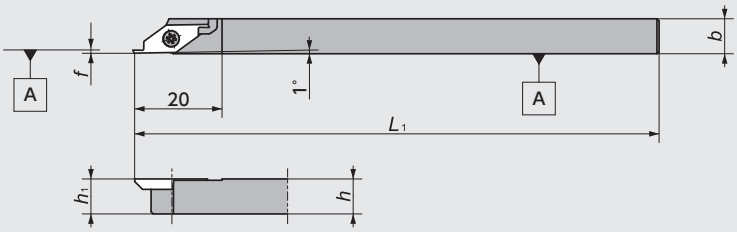


Figure-3

●Right-Hand style shown

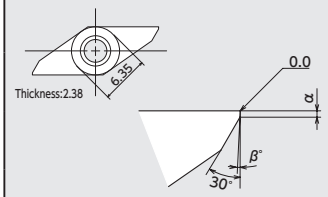
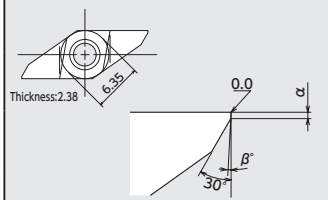
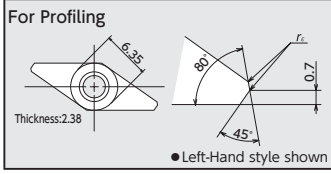
CSV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5492962		CSV[R/L]07GX	●		7	7	85	7	0.1	0.5	CSVF CSVB CSVC CSVG CSVT **G96～97**	LR1S-2.5*7	CLR-15S
	5303169	5303193	07	●	●			140						
	5492954		08GX	●		8	8	85	8		0.0			
	5303151	5303201	08	●	●			140						
	5303136		095	●		9.5	9.5		9.5					
	5303144	5303177	10	●	●	10	10		10					
	5474770		12GX	●		12	12	85	12					
	5327929		12	●				140						
2	5514062	5514070	CSV[R/L]08NC	●	●	8	8	120	8	0.1	—	CSVF CSVB CSVC CSVG CSVT **G96～97**	LR1S-2.5*7	CLR-15S
	5563010		10GXNC	●		10	10	85	10	0.1				
	5477492	5477542	10NC	●	●			120						
	5477534	5477500	12NC	●	●	12	12		12					
3	5789615		CSV[R/L]08NC-F	●		8	8	120	8	0.0～0.1	—	CSVF CSVB CSVC CSVG CSVT **G96～97**	LR1S-2.5*7	CLR-15S

CSV Series - Inserts

Front turning

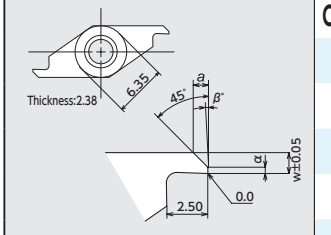
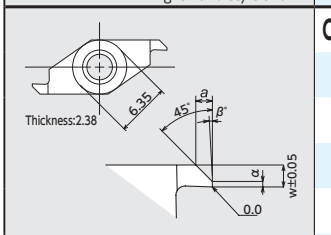
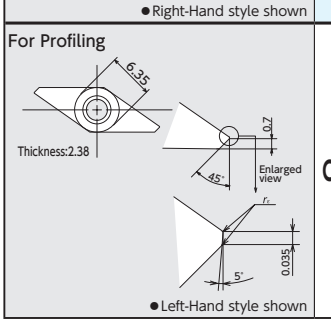
● CSVF Mirror finish

Shape	Item Number	Chip-breaker	Max Depth of cut (mm)	Dimensions (mm) Edge Geometry (α×β°)	Dimensions (mm) r_ε	PVD Coated Carbide ZM3 R	ZM3 Stock	ZM3 L	ZM3 Stock	VM1 R	VM1 Stock	VM1 L	VM1 Stock	DT4 R	DT4 Stock	DT4 L	DT4 Stock
 ●Right-Hand style shown	CSVF11F$^{R}_{L}$V Ⓜ	No	—	0.3×5°	0.0					5303516	●	5303557	●				
	11F$^{R}_{L$V-A Ⓜ			0.3×2°						5358858	●						
	11F$^{R}_{L$V-M Ⓜ			0.15×2°		5436019	●			5386248	●	5386255	●	5850235	●		
	11F$^{R}_{L$V-C Ⓜ			0.15×5°						5358577	●						
 ●Right-Hand style shown	CSVF11F$^{R}_{L$VB Ⓜ	Yes	3.0	0.3×5°	0.0					5313168	●	5313150	●				
	11F$^{R}_{L$VB-A Ⓜ			0.3×2°						5358692	●						
	11F$^{R}_{L$VB-M Ⓜ			0.15×2°		5436001	●			5386263	●	5386271	●	5850243	●		
	11F$^{R}_{L$VB-C Ⓜ			0.15×5°						5358700	●						
For Profiling  ●Left-Hand style shown	CSVF11F$^{R}_{L$VX Ⓜ	No	—	—	0.0							5358866	●				

Note: All angles shown are obtained when insert is set in the holder.

Back turning

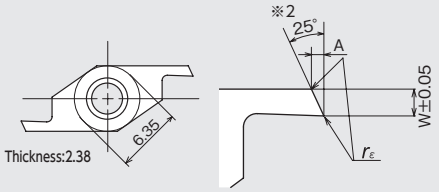
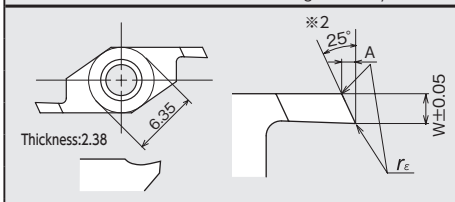
● CSVB Mirror finish

Shape	Item Number	Chip-breaker	Length of Blade a (mm)	Max Depth of cut (mm)	Dimensions (mm) W	Dimensions (mm) Edge Geometry (α×β°)	Dimensions (mm) r_ε	PVD Coated Carbide ZM3 R	ZM3 Stock	ZM3 L	ZM3 Stock	VM1 R	VM1 Stock	VM1 L	VM1 Stock	DT4 R	DT4 Stock	DT4 L	DT4 Stock
 ●Right-Hand style shown	CSVB11F$^{R}_{L$V Ⓜ	No	0.7	2.0	1.00	0.3×5°	0.0					5303573	●	5303532	●				
	11F$^{R}_{L$V-A Ⓜ		0.7			0.3×2°						5358791	●						
	11F$^{R}_{L$V-M Ⓜ		0.7			0.15×2°		5435995	●			5386289	●	5386297	●	5827480	●		
	11F$^{R}_{L$V-C Ⓜ		0.7			0.15×5°						5358809	●						
	11F$^{R}_{L$V12 Ⓜ		0.8		1.20	0.3×5°						5344890	●						
	11F$^{R}_{L$V14 Ⓜ		1.0		1.40							5344908	●						
 ●Right-Hand style shown	CSVB11F$^{R}_{L$VB Ⓜ	Yes	0.7	2.0	1.00	0.3×5°	0.0					5358825	●						
	11F$^{R}_{L$VB-A Ⓜ		0.7			0.3×2°						5358833	●						
	11F$^{R}_{L$VB-M Ⓜ		0.7			0.15×2°		5435987	●			5386305	●	5386313	●	5827472	●		
	11F$^{R}_{L$VB-C Ⓜ		0.7			0.15×5°						5358841	●						
	11F$^{R}_{L$VB12 Ⓜ		0.8		1.20	0.3×5°						5358718	●						
	11F$^{R}_{L$VB14 Ⓜ		1.0		1.40							5358726	●						
For Profiling  ●Left-Hand style shown	CSVB11F$^{R}_{L$VX Ⓜ	No	—	—	—	—	0.0							5358817	●				

Note: All angles shown are obtained when insert is set in the holder.

Cut-off

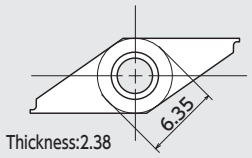
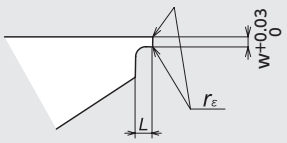
● CSVC Mirror finish

Shape	Item Number	Chip-breaker	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) A	r_ε	w	PVD Coated Carbide VM1 R	Stock	L	Stock
 ●Right-Hand style shown	CSVC11F[R/L]V06 Ⓜ	No	3.0	0.31	0.0	0.6	5352547	●		
	11F[R/L]V07 Ⓜ		4.0	0.36		0.7	5324272	●	5330840	●
	11F[R/L]V08 Ⓜ			0.41		0.8	5324256	●	5330832	●
	11F[R/L]V09 Ⓜ			0.46		0.9	5352554	●		
	11F[R/L]V10 Ⓜ		5.0	0.51		1.0	5303490	●	5303599	●
	11F[R/L]V13 Ⓜ			0.65		1.3	5311824	●	5311816	●
	11F[R/L]V15 Ⓜ			0.74		1.5	5303615	●	5303631	●
 ●Right-Hand style shown	CSVC11F[R/L]VB06 Ⓜ	Yes	3.0	0.31	0.0	0.6	5358734	●		
	11F[R/L]VB07 Ⓜ		4.0	0.36		0.7	5358742	●		
	11F[R/L]VB08 Ⓜ			0.41		0.8	5358767	●		
	11F[R/L]VB09 Ⓜ			0.46		0.9	5358775	●		
	11F[R/L]VB10 Ⓜ		5.0	0.51		1.0	5358783	●		
	11F[R/L]VB13 Ⓜ			0.65		1.3	5358676	●		
	11F[R/L]VB15 Ⓜ			0.74		1.5	5358668	●		

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

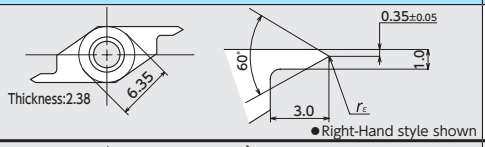
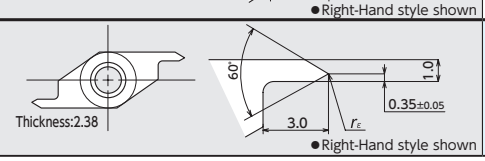
Grooving

● CSVG Mirror finish

Shape	Item Number	Chip-breaker	Max Depth of cut (mm)	Dimensions (mm) w	L	r_ε	PVD Coated Carbide VM1 R	Stock	L	Stock
  ●Right-Hand style shown	CSVG11F[R/L]V025 Ⓜ	No	0.15	0.25	0.50	0.0	5354634	●		
	11F[R/L]V030 Ⓜ			0.30			5344940	●		
	11F[R/L]V035 Ⓜ			0.35			5354402	●		
	11F[R/L]V040 Ⓜ			0.40			5344932	●		
	11F[R/L]V045 Ⓜ		0.45	0.45	1.00		5354394	●		
	11F[R/L]V050 Ⓜ			0.50			5354642	●		
	11F[R/L]V055 Ⓜ			0.55			5344924	●		
	11F[R/L]V060 Ⓜ			0.60			5344916	●		
	11F[R/L]V065 Ⓜ			0.65			5354410	●		
	11F[R/L]V070 Ⓜ			0.70			5354428	●		
	11F[R/L]V075 Ⓜ	No	1.40	0.75	2.00		5332812	●	5332820	●
	11F[R/L]V080 Ⓜ			0.80			5358650	●		
	11F[R/L]V085 Ⓜ			0.85			5354436	●		
	11F[R/L]V090 Ⓜ			0.90			5354444	●		
	11F[R/L]V095 Ⓜ			0.95			5332846	●	5332838	●
	11F[R/L]V100 Ⓜ			1.00			5352562	●		
	11F[R/L]V110 Ⓜ		2.60	1.10	3.00		5358643	●		
	11F[R/L]V120 Ⓜ			1.20			5352570	●	5357561	●
	11F[R/L]V130 Ⓜ			1.30			5358627	●		
	11F[R/L]V140 Ⓜ			1.40			5358619	●		
	11F[R/L]V150 Ⓜ			1.50			5358601	●		

Threading

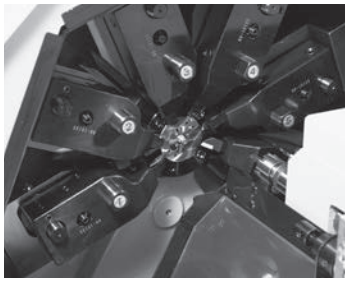
● CSVT Mirror finish

Shape	Item Number	Chip-breaker	Pitch	Dimensions (mm) r_ε	PVD Coated Carbide VM1 R	Stock	L	Stock
 ●Right-Hand style shown	CSVT11F[R/L]P60-035A Ⓜ	No	0.2 ~ 0.5	R0.03MAX	5344874	●	5386909	●
 ●Right-Hand style shown	CSVT11F[R/L]P60-035B Ⓜ	No	0.2 ~ 0.5	R0.03MAX	5344882	●	5386917	●

Note: All angles shown are obtained when insert is set in the holder.

CTPS Series

Best tool for Cam-style machine !!



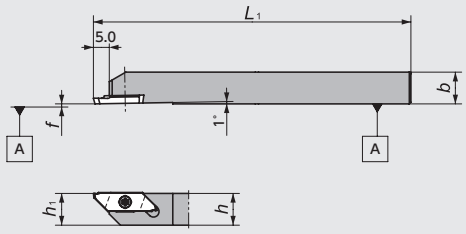
Features

- All the inserts can use the same toolholder
- Designed to be used for back turning, cut-off, grooving and threading
- The dedicated SVAC-N type is offered for front turning

CTPS

Best for up to 10mm diameter material

Figure-1

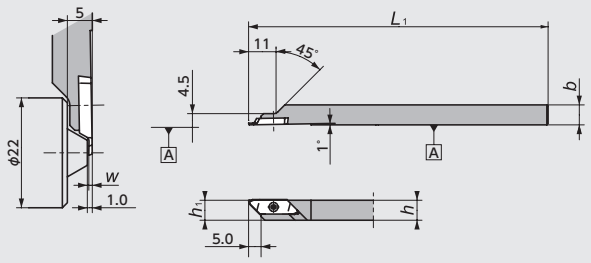


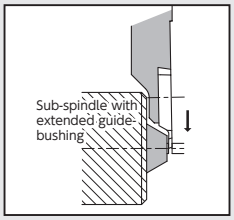
●Right-Hand style shown

CTPSR-SUB

Best for up to 4mm diameter material

Figure-2





●Right-Hand style shown

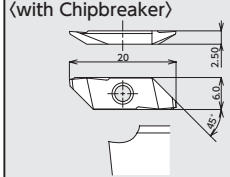
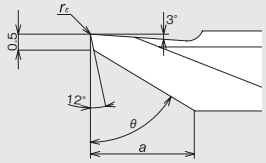
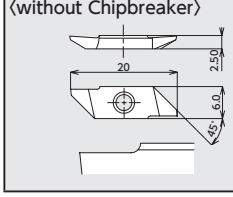
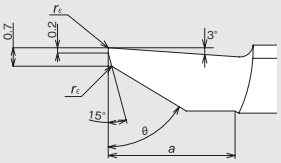
CTPS Series - Toolholders

Figure	Code No.	Item Number	Stock	Dimensions (mm)					Gage insert	Spare Parts	
				h	*b*	L_1	h_1	*f*		Clamp Screw	Wrench
1	5346572	**CTPSR10**	●	10	10	120	10	0.0	TBPS CTPS GTPS TTPS **G98 ~ 99**	LR1S-2.5*7	CLR-15S
	5397187	**R12**	●	12	12		12				
2	5486717	**CTPSR08-SUB04**	●	8	8	120	8	–	CTPS-001 **G99**	LR1S-2.5*4.5	CLR-15S

CTPS Series - Inserts

Back turning

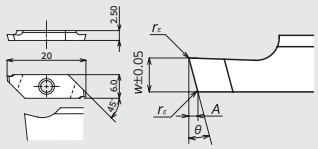
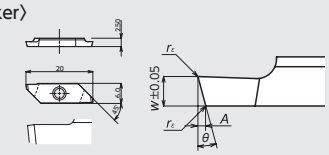
● TBPS

Shape	Item Number	Chipbreaker	Length of Blade *a*	Max Depth of cut *b*	Dimensions (mm) θ	Dimensions (mm) r_ε	PVD Coated Carbide ZM3	Stock	PVD Coated Carbide VM1	Stock
⟨with Chipbreaker⟩   ●Right-Hand style shown	**TBPS60FR00**	Yes	3.1	3.5	60°	0.0	5346150	●	5362553	●
	60FR10					0.1	5346168	●	5362561	●
⟨without Chipbreaker⟩   ●Right-Hand style shown	**TBPS60FRV**	No	4.8	4.8	60°	0.0	5357058	●	5362579	●

Note: All angles shown are obtained when insert is set in the holder.

Cut-off

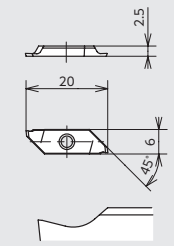
● CTPS

Shape	Item Number	Chip-breaker	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) w	A	θ ※2	r_ε	PVD Coated Carbide ZM3	Stock	VM1	Stock
⟨with Chipbreaker⟩  ●Right-Hand style shown	CTPS12FR Ⓜ	Yes	4.0	1.2	0.37	16°	0.05	5346275	●	5362587	●
	15FR Ⓜ		5.0	1.5	0.46			5346267	●	5362595	●
	18FR Ⓜ		8.5	1.8	0.55			5346283	●	5362603	●
	20FR Ⓜ		10.0	2.0	0.61			5374210	●	5374194	●
⟨without Chipbreaker⟩ Mirror finish  ●Right-Hand style shown	CTPS12FRV Ⓜ	No	4.0	1.2	0.47	20°	0.0	5346937	●	5362611	●
	15FRV Ⓜ		5.0	1.5	0.58			5346929	●	5362629	●
	18FRV Ⓜ		8.5	1.8	0.70			5346945	●	5362637	●
	20FRV Ⓜ		10.0	2.0	0.77			5374202	●	5374228	●

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

Cut-off

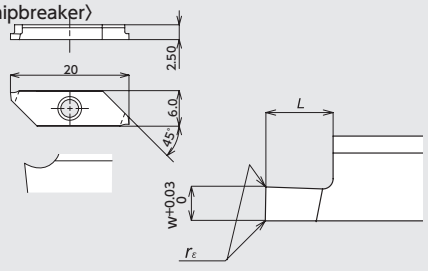
● CTPS-001

Shape	Item Number	Chip-breaker	※1 Max. Cut-off Dia (mm) φD	Dimensions (mm) w	A	θ ※2	r_ε	PVD Coated Carbide ZM3	Stock
 ●Right-Hand style shown	CTPS07FRN-001	Yes	4.0	0.7	—	0°	0.05	5460670	●
	CTPS07FR-001				0.23	16°	0.05	5441852	●
Mirror finish	CTPS07FRV-001 Ⓜ	No			0.28	20°	0.0	5441860	●

※1 : Max. cut-off diameter shows when X end point is 0.0. For more information, see page G67.
※2 : All angles shown are obtained when insert is set in the holder.

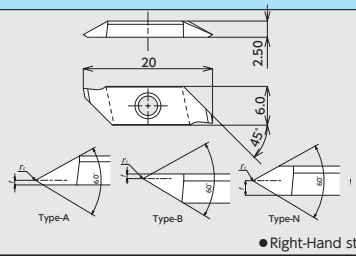
Grooving

● GTPS

Shape	Item Number	Max Depth of cut (mm)	Dimensions (mm) w	L	r_ε	PVD Coated Carbide ZM3	Stock	VM1	Stock
⟨with Chipbreaker⟩  ●Right-Hand style shown	GTPS075FR	1.0	0.75	1.5	0.0	5346952	●	5362652	●
	095FR	1.5	0.95	2.0		5346960	●	5362660	●
	100FR		1.00			5346978	●	5362678	●
	120FR	2.5	1.20	3.0		5346986	●	5362686	●
	150FR		1.50			5346994	●	5362694	●
	200FR		2.00			5347000	●	5362702	●

Threading

● TTPS

Shape	Item Number	Type	Pitch	Dimensions (mm) f	r_ε	PVD Coated Carbide ZM3	Stock	VM1	Stock
 ●Right-Hand style shown	TTPS60FR4A	A	0.2～0.75	0.4	0.05MAX Flat	5346648	●	5362710	●
	60FR4B	B				5346663	●	5362728	●
	60FR8A	A	0.5～1.25	0.8	0.05	5346689	●	5362744	●
	60FR8B	B				5346671	●	5362736	●
	60FR-N	N	1.0～1.5	1.25	0.1	5346655	●	5362751	●

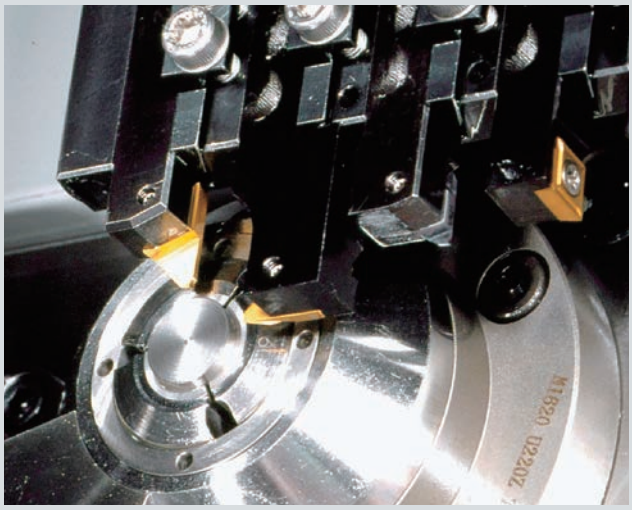
Note: All angles shown are obtained when insert is set in the holder.

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

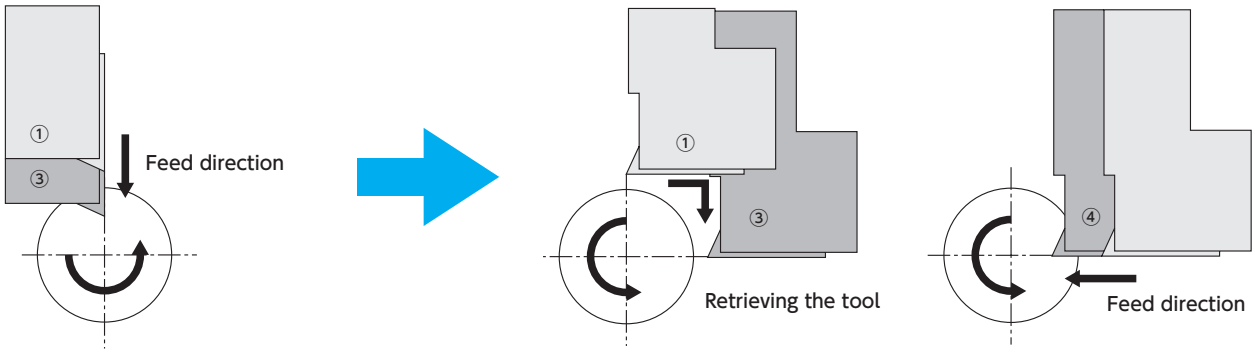
Programming guidance

Regular Toolholder					Y-axis Toolholder				
①T300				Select tool	①T300				
②G0	X11.0	Z0	T3	Position tool	②G0	Y11.0	Z0	T3	
③					③	X0			
④G1	X8.0		F0.08	Move to OD to cut	④G1	Y8.0		F0.08	
⑤		Z5.0	F0.05	Cut 5㎜ length	⑤		Z5.0	F0.05	
⑥	X11.0			Cut face	⑥	Y11.0			
⑦G0	X11.0				⑦G0	X11.0			

Cut by X-axis

Cut by Y-axis

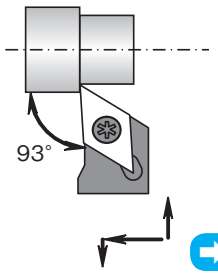
Note: Need Y-offset for holder shank size.



Lineup

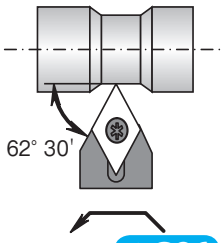
Front Turning

Y-SDJC Y-SDJC-OH



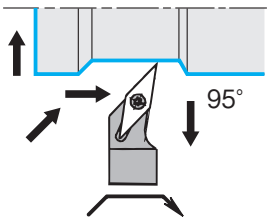
➡G26

Y-SDNC



➡G26

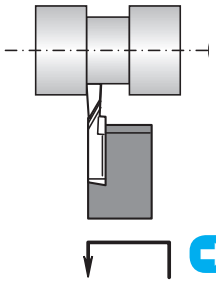
Y-SVXCL12-11S



➡G30

Multi-functional Grooving for non-ferrous material

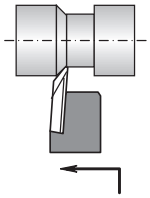
Y-GTPA Y-GTPA-OH



➡H17

Back Turning

Y-TBDP
Y-TBPR Y-TBPR-OH



Y-TBPR
Y-TBPR-OH

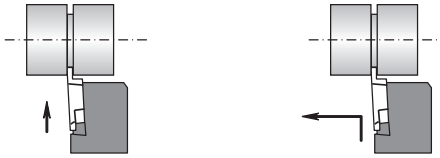
➡G53

Y-TBDP

➡G57

Grooving / Side turning / Back turning

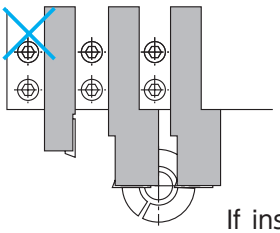
Y-GTTR
Y-GTTR-OH



➡G60•H20

◆Important notes for using Y-axis holders

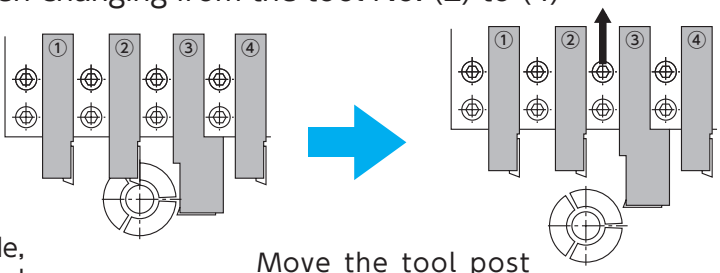
Up to 2 Y-axis holders can be installed on a tool post. Do not install side by side in order to prevent interference.



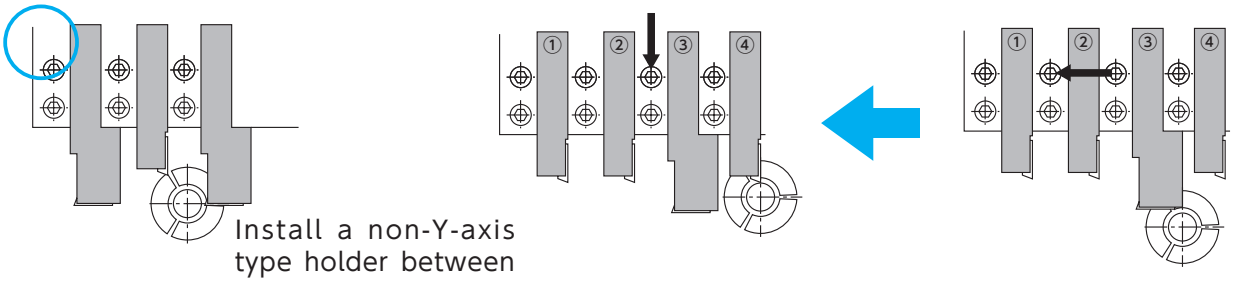
If installed side by side, the work piece and the Y-axis holders may interfere with each other.

When changing tools, set the backward position of the tool post with the overhang of the Y-axis holder(s) as per the reference.

When changing from the tool No. (2) to (4)



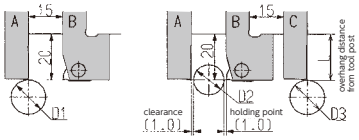
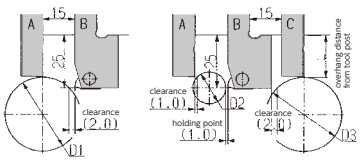
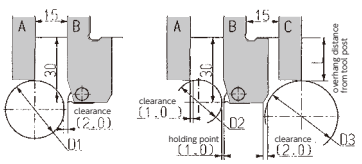
Move the tool post back based on the position of the cutting edge of the Y-axis holder (3).



Install a non-Y-axis type holder between the two Y-axis holders.

OD machining table

The OD that can be machined are indicated by the grooving holder "Y-GTTR type" as an example (The dimensions of other Y-axis holders are the same.)

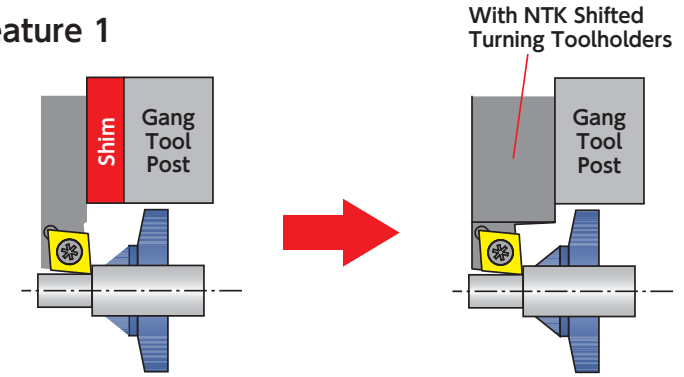
Overhang of the Y-axis holder	Figures	Item \ L	20	22	25
20		D1 Machinable outer dia.for holder A	Not limited	Not limited	Not limited
		D2 Machinable outer dia.for holder B	13	13	13
		D3 Machinable outer dia.for holder C	Not limited	Not limited	Not limited
25		D1 Machinable outer dia.for holder A	38	58	Not limited
		D2 Machinable outer dia.for holder B	14.9	13.6	13
		D3 Machinable outer dia.for holder C	38	58	Not limited
30		D1 Machinable outer dia.for holder A	26.8	29	38.5
		D2 Machinable outer dia.for holder B	20.6	17.9	14.9
		D3 Machinable outer dia.for holder C	33 (26.8 for TBP type)	37 (29 for TBP type)	51.5 (38.5 for TBP type)

Shifted Toolholders Toolholders for extended guide-bushing

Two Major Features

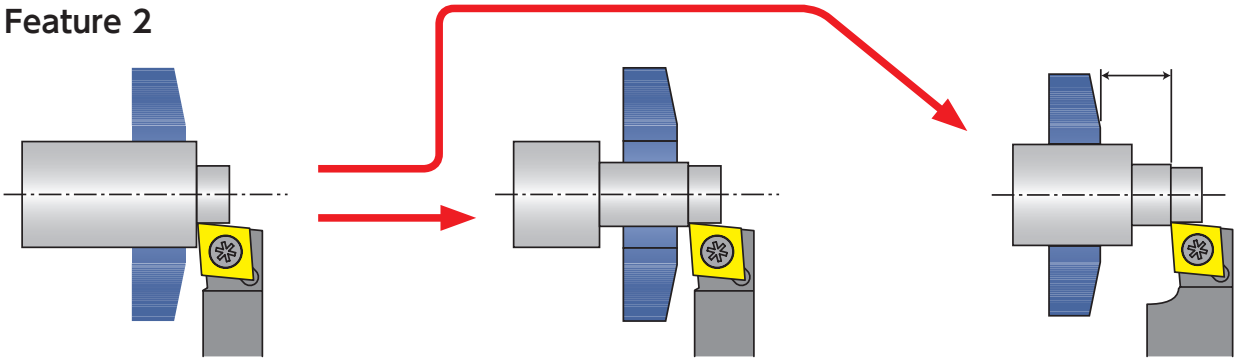
1. Eliminate shims for turning holders when extended guide bushing is used (especially in thread whirling)
2. Performs finish cut without retracting roughed section (bar) from guide bushing

●Feature 1



No shims required during thread whirling operation with an extended guide bushing

●Feature 2



Typical turning

With Conventional Holders:
Roughed bar comes out when retracted for finish turn

With Shifted Holders:
Finish turn can be done without retracting the roughed bar

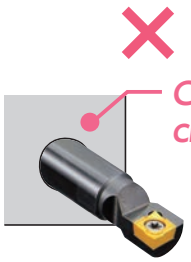
➡G22・G24

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 and 34mm round shank stations
- Compatible with 16mm / 22mm round shank DS Series holders

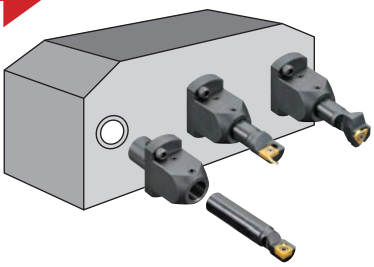
First Recommendation for Turning



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

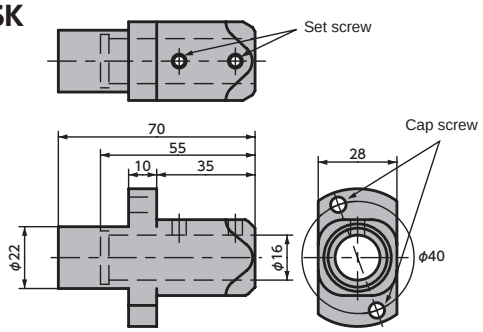


Stop coolant and chips from damaging live tool stations.

By using the DS Sleeve, you can use the DS Series holders without any worry about damaging live stations

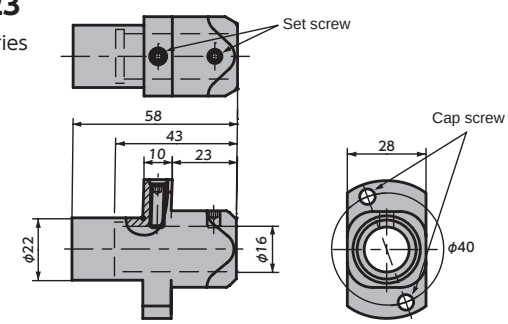
For Back 4-spindle unit

SS-DSU-SK



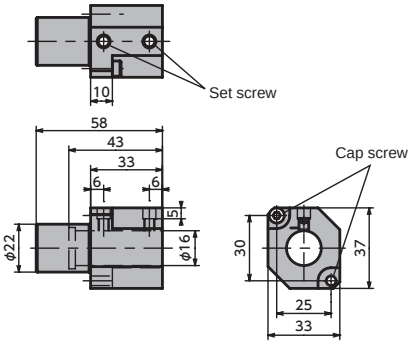
SS-DSU-L23

For DS-ACH series

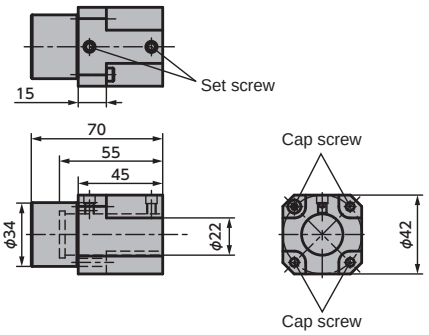


For Back 8-spindle unit

SS-DSU-B8L23



SS-DSU-B8D34



Code No.	Item number	Stock	Spare parts				Coment
			Cap screw	Wrench	Set screw	Wrench	
5788401	SS-DSU-SK	●	CS0520	LW-4	SS0506	LW-2.5	
5814512	SS-DSU-L23	●	CS0520	LW-4	SS0506 SS0515	LW-2.5	For DS-ACH Series
5892070	SS-DSU-B8L23	●	CS0420	LW-3	SS0506	LW-2.5	Can take DS-ACH Series
5948252	SS-DSU-B8D34	●	CS0425	LW-3	SS0506	LW-2.5	

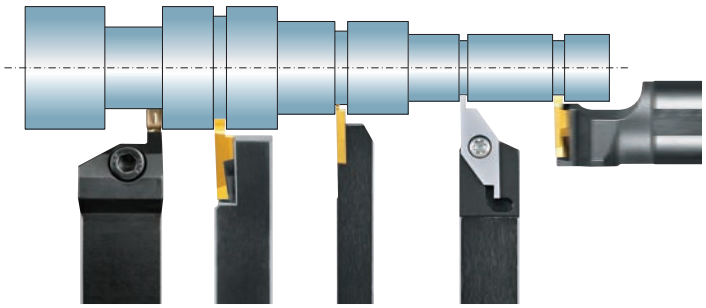
H

Grooving / Side Turning

- Grooving Tools ····· H2
- Recommended Cutting Conditions ···· H4
- General Information ····· H8
- Tool List ····· H14

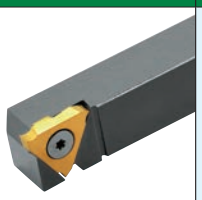
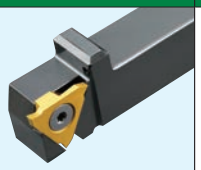
CSV Series ····· H14
CTPS Series ····· H16
GTPA Series ····· H17
GTM.32 Series ····· H18
GTM.43 Series ····· H26
GTW Series (SCRUM DUO) ····· H28
TWG Series ····· H32
SBG Series (ID grooving) ····· H34
BG Series (ID grooving) ····· H35
GKV Series (ID grooving) ····· H36
SFG Series (ID Face grooving) ····· H37
SATURN DUO Series (Face grooving) ····· H38
GWPFM Series (SCRUM DUO BLADE) ····· H40
GFV Series ····· H48

NTK Grooving / Side Turning Tools - Product Lines



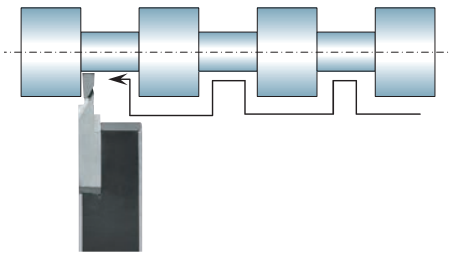
Insert	CSVG ➡H15	GTPS ➡H16
Holder	CSV	CTPS
	➡H14	➡H16
Blade width	0.25 ~ 1.50mm	0.75 ~ 2.0mm
Depth of cut	~ 2.60mm	~ 2.50mm

OD Grooving

Insert	GTMH32 / GTMX32 ➡H22					
Holder	GTT	GTT-OH2/OH	Y-GTT	Y-GTT-OH	DS-GTT	CH-GTT
	 ➡H18	 ➡H18	➡H20	➡H20	➡H18	➡H18
	Coolant through	Y-axis	Y-axis/Coolant through	DS Holder		
Blade width	0.3 ~ 3.0mm					
Depth of cut	~ 2.7mm					

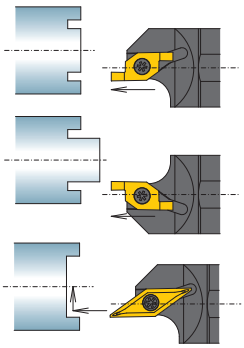
Insert	GWP ➡H29	GTMA43 / GTMT43 ➡H27		TWG ➡H32	GTV/GEV ➡H31	
Holder	GTWP	NGTN(B)	NGTA	TWG	GTV	GKV
	➡H28	➡H26	➡H26	➡H32	➡H30	➡H30
Blade width	3.0 ~ 5.9mm	1.45 ~ 5.5mm		2.0 ~ 3.0mm	3.0 ~ 8.0mm	3.0 ~ 8.0mm
Depth of cut	~ 9.0mm	4.50mm		~ 3.0mm	11.0mm	11.0mm

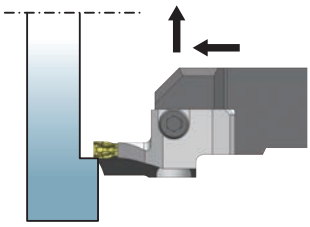
Multifunctional Grooving for non-ferrous material



Insert	GTPA ➡H17			
Holder	GTPA	GTPA-OH	Y-GTPA	Y-GTPA-OH
	➡H17	➡H17	➡H17	➡H17
		Coolant through	Y-axis	Y-axis/Coolant through
Blade width	2.0 ~ 2.50mm			
Depth of cut	~6.0mm			

Face Grooving

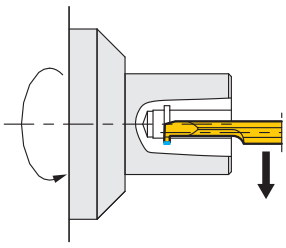


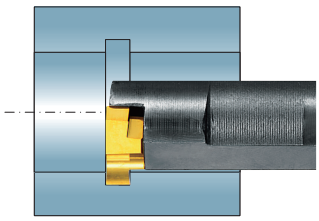


Insert	FGV ➡H39	FBV ➡H39	
Holder	FGV	DS-FGV	CH-FGV
	➡H38	➡H38 DS Holder	➡H38
Blade width	1.0㎜ ~ 2.0㎜		
Depth of cut	~ 3.0㎜	FGV : ~ 3.0㎜	
		FBV : ~ 4.0㎜	

Insert	GWPFM ➡H42	GFV ➡H48	
Holder	GTWP-H/GKWP-H	GFV	GSV
	➡H41	➡H48	➡H48
Blade width	3.0 ~ 6.0㎜	6.0㎜	
Depth of cut	~ 15.0㎜	6.0㎜	

ID Grooving

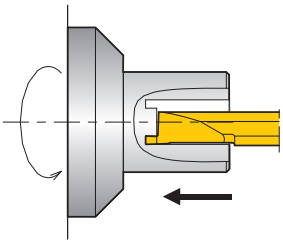




Insert	SBG ➡H34	GTG ➡H35
Holder	NBH	S-BG / BG
	➡K8	➡H35
Blade width	0.5 ~ 2.0㎜	0.5 ~ 2.0㎜
Depth of cut	~ 2.0㎜	~ 3.0㎜

Insert	GEV ➡H36	TWG ➡H32
Holder	GKV	TWG
	➡H36	➡H32
Blade width	3.0 ~ 3.5㎜	2.0 ~ 3.0㎜
Depth of cut	~ 9.5㎜	~ 3.0㎜

ID Face Grooving



Insert	SFG ➡H37
Holder	NBH
	➡K8
Blade width	1.0 ~ 3.0㎜
Depth of cut	~ 2.8㎜

Recommended Cutting Conditions

OD Grooving / Multifunctional Grooving for non-ferrous material

Feed Rate (mm/rev)
① Grooving
② Side turning

Work Material	Low Carbon Steel	Carbon Steel	Alloy Steel	Stainless Steel		
				Ferritic	Austenitic	Martensitic Precipitation hardenic
	S10C ~ 30C	S45C ~ S55C	SCr/SCM	SUS303/SUS430	SUS304/ SUS316L	SUS440C/ SUS630
Cutting Speed (m/min)	50 90 130	50 80 130	50 80 130	50 100 170	50 70 100	30 60 80

	Grade / Blade width (mm)						
CSVG11F ℞ V □□□ Side Turning Max Depth of Cut : 0.2mm.		VM1	VM1	VM1	VM1	VM1	VM1
	0.25 ~ 0.5	① 0.005 ~ 0.02 ② 0.002 ~ 0.01	① 0.005 ~ 0.02 ② 0.002 ~ 0.01	① 0.005 ~ 0.02 ② 0.002 ~ 0.01	① 0.005 ~ 0.03 ② 0.002 ~ 0.01	① 0.005 ~ 0.02 ② 0.002 ~ 0.01	① 0.005 ~ 0.015 ② 0.002 ~ 0.01
	0.5 ~ 1.0	① 0.005 ~ 0.03 ② 0.005 ~ 0.02	① 0.005 ~ 0.03 ② 0.005 ~ 0.02	① 0.005 ~ 0.03 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.03 ② 0.005 ~ 0.02	① 0.005 ~ 0.02 ② 0.005 ~ 0.015
	1.0 ~ 1.5	① 0.01 ~ 0.04 ② 0.01 ~ 0.03	① 0.01 ~ 0.04 ② 0.01 ~ 0.03	① 0.01 ~ 0.04 ② 0.01 ~ 0.03	① 0.01 ~ 0.05 ② 0.01 ~ 0.03	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02
GTMH32 □□□ RGX Side Turning Max Depth of Cut : 0.75 ~ 2.0mm.		DM4/TM4	DM4	DM4	ST4	ST4	ST4
	0.75 ~ 1.0	① 0.02 ~ 0.06 ② 0.01 ~ 0.06	① 0.02 ~ 0.06 ② 0.01 ~ 0.06	① 0.02 ~ 0.06 ② 0.01 ~ 0.06	① 0.02 ~ 0.07 ② 0.01 ~ 0.07	① 0.02 ~ 0.05 ② 0.01 ~ 0.05	① 0.02 ~ 0.04 ② 0.01 ~ 0.04
	1.0 ~ 1.5	① 0.03 ~ 0.07 ② 0.02 ~ 0.07	① 0.03 ~ 0.07 ② 0.02 ~ 0.07	① 0.03 ~ 0.07 ② 0.02 ~ 0.07	① 0.03 ~ 0.08 ② 0.02 ~ 0.08	① 0.02 ~ 0.06 ② 0.02 ~ 0.06	① 0.02 ~ 0.05 ② 0.01 ~ 0.05
	2.0 ~ 3.0	① 0.03 ~ 0.10 ② 0.03 ~ 0.09	① 0.03 ~ 0.10 ② 0.03 ~ 0.09	① 0.03 ~ 0.10 ② 0.03 ~ 0.09	① 0.03 ~ 0.12 ② 0.03 ~ 0.10	① 0.03 ~ 0.08 ② 0.02 ~ 0.07	① 0.02 ~ 0.07 ② 0.02 ~ 0.06
GTMX32 □□□℞ T □□ **GTMH32 □□□ RVT** Side Turning Max Depth of Cut : 0.25 ~ 2.0mm.		DT4	QM3	QM3	DT4/VM1	DT4/QM3	DT4/QM3
	0.30 ~ 0.75	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.05 ② 0.005 ~ 0.03	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.03 ② 0.005 ~ 0.02
	0.75 ~ 1.2	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.07 ② 0.01 ~ 0.05	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.05 ② 0.01 ~ 0.04
	1.2 ~ 2.0	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.06 ② 0.02 ~ 0.05
	2.0 ~ 3.0	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.09 ② 0.03 ~ 0.06	① 0.03 ~ 0.08 ② 0.03 ~ 0.06
GTMH32 □□□℞ E □□□ **GTMH32 □□□ RSSH** **GTMX32 □□□ RSS** **GTMX32 □□□ RLS** Side Turning Max Depth of Cut : 0.2mm.		ZM3	ZM3	ZM3	ZM3	ZM3	ZM3
	0.30 ~ 0.75	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.05 ② 0.005 ~ 0.03	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.03 ② 0.005 ~ 0.02
	0.75 ~ 1.2	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.07 ② 0.01 ~ 0.05	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.05 ② 0.01 ~ 0.04
	1.0 ~ 2.0	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.06 ② 0.02 ~ 0.05
	2.0 ~ 3.0	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.09 ② 0.03 ~ 0.06	① 0.03 ~ 0.08 ② 0.03 ~ 0.06
GTMT43 □□□℞ **GTMA43 □□□ R □□ R** Side Turning Max Depth of Cut : 0.2mm.		QM3/DM4	QM3/DM4	QM3/DM4	DM4	DM4/QM3	DM4
	1.00 ~ 2.00	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.06 ② 0.02 ~ 0.05
	2.00 ~ 3.00	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.09 ② 0.03 ~ 0.06	① 0.03 ~ 0.08 ② 0.03 ~ 0.06
	3.00 ~ 5.50	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.12 ② 0.04 ~ 0.10	① 0.05 ~ 0.12 ② 0.04 ~ 0.10
GWPG □□□ N0 □□ -GW **GWPG □□□ N0 □□ -GV** **GWPM □□□ N0 □□ -GW** Side Turning Max Depth of Cut : 3.5mm.		DM4	DM4	DM4	DM4	DM4	DM4
	3.00 ~ 4.00	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.10 ② 0.03 ~ 0.08	① 0.05 ~ 0.08 ② 0.03 ~ 0.07
	4.00 ~ 5.00	① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.13 ② 0.03 ~ 0.10	① 0.05 ~ 0.11 ② 0.03 ~ 0.09
	5.00 ~ 6.00	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.13 ② 0.04 ~ 0.10
GEV □□□ N **GTV □□□ N** **GVMB20 □□□ N** Side Turning Max Depth of Cut : Blade width × 0.5mm.		QM3	QM3	QM3	QM3	QM3	QM3
	3.00 ~ 4.50	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.10 ② 0.03 ~ 0.08	① 0.05 ~ 0.08 ② 0.03 ~ 0.07
	4.50 ~ 6.00	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.13 ② 0.04 ~ 0.10
	6.00 ~ 8.00	① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.12	① 0.05 ~ 0.15 ② 0.03 ~ 0.12
GTPA2 □ FRN01 **GTPA2 □ FRN01-08 □** Side Turning Max Depth of Cut : Blade width × 0.8mm.		—	—	—	—	—	—
	2.00 ~ 2.50	—	—	—	—	—	—

Sulfur free cutting steel Sulfur complex free cutting steel	High-carbon chromium bearing steel	Electromagnetic soft iron	Electromagnetic stainless	Titanium alloy	Aluminum alloy	Work Material	Feed Rate (mm/rev) ① Grooving ② Side turning
SUM	SUJ	SUY		6AL-4V	A5052		
50 100 150	50 90 160	50 100 150	50 90 160	50 70 100	80 150 200	Cutting Speed (m/min)	
VM1	**VM1**	**VM1**	**VM1**	**VM1**	**VM1**	Grade / Blade width (mm)	**CSVG11F ℀ V□□□** Side Turning Max Depth of Cut : 0.2mm.
① 0.005 ~ 0.03 ② 0.002 ~ 0.01	① 0.005 ~ 0.02 ② 0.002 ~ 0.01	① 0.005 ~ 0.03 ② 0.002 ~ 0.01	① 0.005 ~ 0.02 ② 0.002 ~ 0.01	① 0.005 ~ 0.02 ② 0.002 ~ 0.01	① 0.005 ~ 0.03 ② 0.002 ~ 0.02	0.25 ~ 0.5	
① 0.005 ~ 0.05 ② 0.005 ~ 0.02	① 0.005 ~ 0.03 ② 0.005 ~ 0.02	① 0.005 ~ 0.05 ② 0.005 ~ 0.02	① 0.005 ~ 0.03 ② 0.005 ~ 0.02	① 0.005 ~ 0.02 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.03	0.5 ~ 1.0	
① 0.01 ~ 0.05 ② 0.01 ~ 0.03	① 0.01 ~ 0.04 ② 0.01 ~ 0.03	① 0.01 ~ 0.05 ② 0.01 ~ 0.03	① 0.01 ~ 0.04 ② 0.01 ~ 0.03	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.04	1.0 ~ 1.5	
TM4	**DM4**	**DM4**	**DM4**	**TM4**	**TM4**	Grade / Blade width (mm)	**GTMH32 □□□ RGX** Side Turning Max Depth of Cut : 0.75 ~ 2.0mm.
① 0.02 ~ 0.07 ② 0.01 ~ 0.07	① 0.02 ~ 0.06 ② 0.01 ~ 0.06	① 0.02 ~ 0.07 ② 0.01 ~ 0.07	① 0.02 ~ 0.06 ② 0.01 ~ 0.06	① 0.02 ~ 0.06 ② 0.01 ~ 0.05	① 0.02 ~ 0.08 ② 0.01 ~ 0.08	0.75 ~ 1.0	
① 0.03 ~ 0.08 ② 0.02 ~ 0.08	① 0.03 ~ 0.07 ② 0.02 ~ 0.07	① 0.03 ~ 0.08 ② 0.02 ~ 0.08	① 0.03 ~ 0.07 ② 0.02 ~ 0.07	① 0.02 ~ 0.07 ② 0.02 ~ 0.06	① 0.03 ~ 0.10 ② 0.03 ~ 0.10	1.0 ~ 1.5	
① 0.03 ~ 0.12 ② 0.03 ~ 0.10	① 0.03 ~ 0.10 ② 0.03 ~ 0.09	① 0.03 ~ 0.12 ② 0.03 ~ 0.10	① 0.03 ~ 0.10 ② 0.03 ~ 0.09	① 0.03 ~ 0.10 ② 0.02 ~ 0.08	① 0.03 ~ 0.15 ② 0.03 ~ 0.10	2.0 ~ 3.0	
VM1/DT4	**QM3/DT4**	**VM1/DT4**	**QM3/DT4**	**DT4**	**VM1**	Grade / Blade width (mm)	**GTMX32 □□□℀ T□□** **GTMH32 □□□ RVT** Side Turning Max Depth of Cut : 0.25 ~ 2.0mm.
① 0.005 ~ 0.05 ② 0.005 ~ 0.03	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.05 ② 0.005 ~ 0.03	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.06 ② 0.005 ~ 0.03	0.30 ~ 0.75	
① 0.02 ~ 0.07 ② 0.01 ~ 0.05	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.07 ② 0.01 ~ 0.05	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.09 ② 0.01 ~ 0.05	0.75 ~ 1.2	
① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.03 ~ 0.12 ② 0.03 ~ 0.10	1.2 ~ 2.0	
① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.09 ② 0.03 ~ 0.06	① 0.03 ~ 0.15 ② 0.03 ~ 0.10	2.0 ~ 3.0	
ZM3	**ZM3**	**ZM3**	**ZM3**	**ZM3**	**KM1/ZM3**	Grade / Blade width (mm)	**GTMH32 □□□℀ E□□□** **GTMH32 □□□ RSSH** **GTMX32 □□□ RSS** **GTMX32 □□□ RLS** Side Turning Max Depth of Cut : 0.2mm.
① 0.005 ~ 0.05 ② 0.005 ~ 0.03	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.05 ② 0.005 ~ 0.03	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.04 ② 0.005 ~ 0.02	① 0.005 ~ 0.06 ② 0.005 ~ 0.03	0.30 ~ 0.75	
① 0.02 ~ 0.07 ② 0.01 ~ 0.05	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.07 ② 0.01 ~ 0.05	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.06 ② 0.01 ~ 0.04	① 0.02 ~ 0.09 ② 0.01 ~ 0.05	0.75 ~ 1.2	
① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.03 ~ 0.12 ② 0.03 ~ 0.10	1.0 ~ 2.0	
① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.09 ② 0.03 ~ 0.06	① 0.03 ~ 0.15 ② 0.03 ~ 0.10	2.0 ~ 3.0	
DM4	**QM3/DM4**	**DM4**	**QM3/DM4**	**DM4**	**—**	Grade / Blade width (mm)	**GTMT43 □□□℀** **GTMA43 □□□ R□□R** Side Turning Max Depth of Cut : 0.2mm.
① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.09 ② 0.02 ~ 0.06	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.02 ~ 0.08 ② 0.02 ~ 0.05	① 0.03 ~ 0.12 ② 0.03 ~ 0.10	1.00 ~ 2.00	
① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.10 ② 0.03 ~ 0.08	① 0.03 ~ 0.10 ② 0.03 ~ 0.07	① 0.03 ~ 0.09 ② 0.03 ~ 0.06	① 0.03 ~ 0.15 ② 0.03 ~ 0.10	2.00 ~ 3.00	
① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	① 0.05 ~ 0.12 ② 0.04 ~ 0.10	① 0.05 ~ 0.15 ② 0.04 ~ 0.10	3.00 ~ 5.50	
DM4	**DM4**	**DM4**	**DM4**	**DM4**	**—**	Grade / Blade width (mm)	**GWPG □□□ N0 □□ -GW** **GWPG □□□ N0 □□ -GV** **GWPM □□□ N0 □□ -GW** Side Turning Max Depth of Cut : 3.5mm.
① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.09	—	3.00 ~ 4.00	
① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.10	—	4.00 ~ 5.00	
① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.12	—	5.00 ~ 6.00	
QM3	**QM3**	**QM3**	**QM3**	**QM3**	**—**	Grade / Blade width (mm)	**GEV □□□ N** **GTV □□□ N** **GVMB20 □□□ N** Side Turning Max Depth of Cut : Blade width × 0.5mm.
① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.10	① 0.05 ~ 0.12 ② 0.03 ~ 0.09	—	3.00 ~ 4.50	
① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.13	① 0.05 ~ 0.15 ② 0.04 ~ 0.12	—	4.50 ~ 6.00	
① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.20 ② 0.03 ~ 0.13	① 0.05 ~ 0.15 ② 0.03 ~ 0.12	—	6.00 ~ 8.00	
—	—	—	—	—	**PD1/KM1**	Grade / Blade width (mm)	**GTPA2 □ FRN01** **GTPA2 □ FRN01-08 □** Side Turning Max Depth of Cut : Blade width × 0.8mm.
—	—	—	—	—	① 0.05 ~ 0.15 ② 0.03 ~ 0.10	2.00 ~ 2.50	

Recommended Cutting Conditions

ID Grooving

Feed Rate (mm/rev) ① Grooving ② Side turning	Work Material	Low Carbon Steel	Carbon Steel	Alloy Steel	Stainless Steel		
					Ferritic	Austenitic	Martensitic Precipitation hardenic
		S10C ~ 30C	S45C ~ S55C	SCr/SCM	SUS303/SUS430	SUS304/ SUS316L	SUS440C/ SUS630
	Cutting Speed (m/min)	50 **90** 130	50 **80** 130	50 **80** 130	50 **100** 170	50 **70** 100	30 **60** 80
SBG0 □ 0 □□□ RB-S **SBG0 □ 0 □□□ RB** Side Turning Max Depth of Cut : 0.1mm.	Grade / Round shank dia. (mm)	**ZM3**	**ZM3**	**ZM3**	**ZM3**	**ZM3**	**ZM3**
	ϕ 3.0 ~ ϕ 4.0	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015
	ϕ 4.0 ~ ϕ 6.0	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02
	ϕ 6.0 ~ ϕ 8.0	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02
GTG □□□□□ FL □□□ Side Turning Max Depth of Cut : 0.1mm.	Grade / Round shank dia. (mm)	**TM4/ZM3**	**TM4/ZM3**	**TM4/ZM3**	**TM4/ZM3**	**TM4/ZM3**	**TM4/ZM3**
	ϕ 8.0 ~ ϕ 12	① 0.01 ~ 0.04 ② 0.005 ~ 0.015	① 0.01 ~ 0.04 ② 0.005 ~ 0.015	① 0.01 ~ 0.04 ② 0.005 ~ 0.015	① 0.01 ~ 0.04 ② 0.005 ~ 0.02	① 0.01 ~ 0.03 ② 0.005 ~ 0.015	① 0.01 ~ 0.03 ② 0.005 ~ 0.015
	ϕ 12 ~ ϕ 16	① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.04 ② 0.01 ~ 0.02	① 0.02 ~ 0.04 ② 0.01 ~ 0.02
	ϕ 16 ~ ϕ 20	① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.08 ② 0.01 ~ 0.02	① 0.03 ~ 0.08 ② 0.01 ~ 0.02
GEV □□□ N □□ Side Turning Max Depth of Cut : Blade width × 0.5mm.	Grade / Blade width (mm)	**QM3**	**QM3**	**QM3**	**QM3**	**QM3**	**QM3**
	3.0	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1
	3.5	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15

Face Grooving

Feed Rate (mm/rev) ① Grooving ② Side turning	Work Material	Low Carbon Steel	Carbon Steel	Alloy Steel	Stainless Steel		
					Ferritic	Austenitic	Martensitic Precipitation hardenic
		S10C ~ 30C	S45C ~ S55C	SCr/SCM	SUS303/SUS430	SUS304/ SUS316L	SUS440C/ SUS630
	Cutting Speed (m/min)	50 **90** 130	50 **80** 130	50 **80** 130	50 **100** 170	50 **70** 100	30 **60** 80
SFG0 □□ R □□□ B Side Turning Max Depth of Cut : 0.1mm.	Grade / Round shank dia. (mm)	**TM4**	**TM4**	**TM4**	**TM4**	**TM4**	**TM4**
	ϕ 6.0	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02
	ϕ 8.0	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.07 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02
FGV □□□⅛ B0 □ D6 Side Turning Max Depth of Cut : 0.1mm.	Grade / Blade width (mm)	**TM4**	**TM4**	**TM4**	**TM4**	**TM4**	**TM4**
	1.0	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02
	1.5	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02
	2.0	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02
GFV600N □□ Side Turning Max Depth of Cut : 3.0mm.	Grade / Blade width (mm)	**QM3**	**QM3**	**QM3**	**QM3**	**QM3**	**QM3**
	5.00 ~ 6.00	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15
GWPFM □□□ N □□ -GT Side Turning Max Depth of Cut : 3.0mm.	Grade / Blade width (mm)	**DM4**	**DM4**	**DM4**	**DM4**	**DM4**	**DM4**
	3.00 ~ 6.00	① 0.05 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20

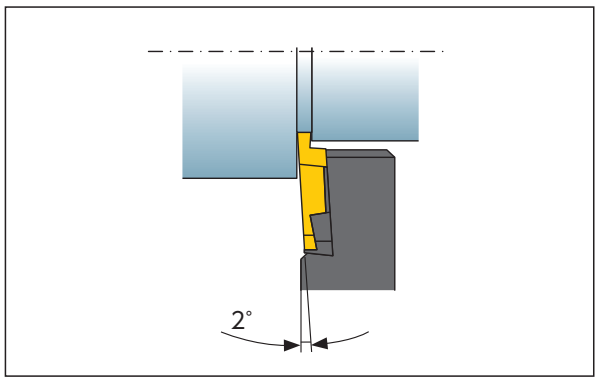
Sulfur free cutting steel Sulfur complex free cutting steel	High-carbon chromium bearing steel	Electromagnetic soft iron	Electromagnetic stainless	Titanium alloy	Aluminum alloy	Work Material	Feed Rate (mm/rev) ① Grooving ② Side turning
SUM	SUJ	SUY		6AL-4V	A5052		
50 100 150	50 90 160	50 100 150	50 90 160	50 70 100	80 150 200	Cutting Speed (m/min)	
ZM3	**ZM3**	**ZM3**	**ZM3**	**ZM3**	**ZM3**	Grade / Round shank dia. (mm)	**SBG0 □ 0 □□□ RB-S** **SBG0 □ 0 □□□ RB** Side Turning Max Depth of Cut : 0.1mm.
① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.02 ② 0.005 ~ 0.015	① 0.01 ~ 0.03 ② 0.01 ~ 0.015	ϕ 3.0 ~ ϕ 4.0	
① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	ϕ 4.0 ~ ϕ 6.0	
① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	ϕ 6.0 ~ ϕ 8.0	
TM4/ZM3	**TM4/ZM3**	**TM4/ZM3**	**TM4/ZM3**	**TM4/ZM3**	**TM4/ZM3**	Grade / Round shank dia. (mm)	**GTG □□□□□ FL □□□** Side Turning Max Depth of Cut : 0.1mm.
① 0.01 ~ 0.04 ② 0.005 ~ 0.02	① 0.01 ~ 0.04 ② 0.005 ~ 0.015	① 0.01 ~ 0.04 ② 0.005 ~ 0.02	① 0.01 ~ 0.04 ② 0.005 ~ 0.015	① 0.01 ~ 0.03 ② 0.005 ~ 0.015	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	ϕ 8.0 ~ ϕ 12	
① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.06 ② 0.01 ~ 0.02	① 0.02 ~ 0.04 ② 0.01 ~ 0.02	① 0.02 ~ 0.07 ② 0.01 ~ 0.02	ϕ 12 ~ ϕ 16	
① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.10 ② 0.01 ~ 0.02	① 0.03 ~ 0.08 ② 0.01 ~ 0.02	① 0.03 ~ 0.15 ② 0.01 ~ 0.02	ϕ 16 ~ ϕ 20	
QM3	**QM3**	**QM3**	**QM3**	**QM3**	—	Grade / Blade width (mm)	**GEV □□□ N □□** Side Turning Max Depth of Cut : Blade width × 0.5mm.
① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	① 0.05 ~ 0.15 ② 0.05 ~ 0.1	—	3.0	
① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	—	3.5	

Sulfur free cutting steel Sulfur complex free cutting steel	High-carbon chromium bearing steel	Electromagnetic soft iron	Electromagnetic stainless	Titanium alloy	Aluminum alloy	Work Material	Feed Rate (mm/rev) ① Grooving ② Side turning
SUM	SUJ	SUY		6AL-4V	A5052		
50 100 150	50 90 160	50 100 150	50 100 150	50 70 100	80 150 200	Cutting Speed (m/min)	
TM4	**TM4**	**TM4**	**TM4**	**TM4**	**TM4**	Grade / Round shank dia. (mm)	**SFG0 □□ R □□□ B** Side Turning Max Depth of Cut : 0.1mm.
① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.06 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	ϕ 6.0	
① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.08 ② 0.01 ~ 0.02	① 0.01 ~ 0.07 ② 0.01 ~ 0.02	① 0.01 ~ 0.10 ② 0.01 ~ 0.02	ϕ 8.0	
TM4	**TM4**	**TM4**	**TM4**	**TM4**	**TM4**	Grade / Blade width (mm)	**FGV □□□⅛ B0 □ D6** Side Turning Max Depth of Cut : 0.1mm.
① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	① 0.01 ~ 0.03 ② 0.01 ~ 0.02	1.0	
① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	1.5	
① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.05 ② 0.01 ~ 0.02	① 0.01 ~ 0.04 ② 0.01 ~ 0.02	① 0.01 ~ 0.07 ② 0.01 ~ 0.02	2.0	
QM3	**QM3**	**QM3**	**QM3**	**QM3**	—	Grade / Blade width (mm)	**GFV600N □□** Side Turning Max Depth of Cut : 3.0mm.
① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	① 0.05 ~ 0.20 ② 0.05 ~ 0.15	—	5.00 ~ 6.00	
DM4	**DM4**	**DM4**	**DM4**	**DM4**	—	Grade / Blade width (mm)	**GWPFM □□□ N □□ -GT** Side Turning Max Depth of Cut : 3.0mm.
① 0.05 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20	① 0.05 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20	① 0.08 ~ 0.20 ② 0.05 ~ 0.20	—	3.00 ~ 6.00	

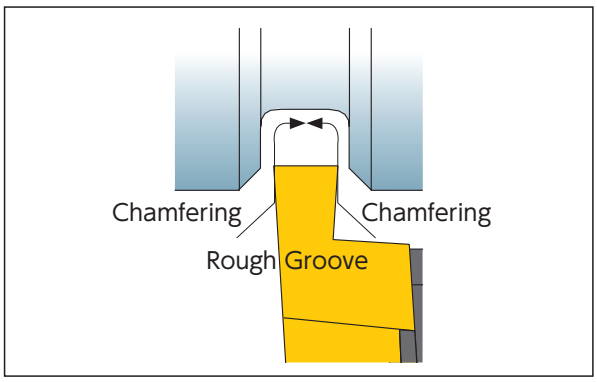
General Information

OD Grooving

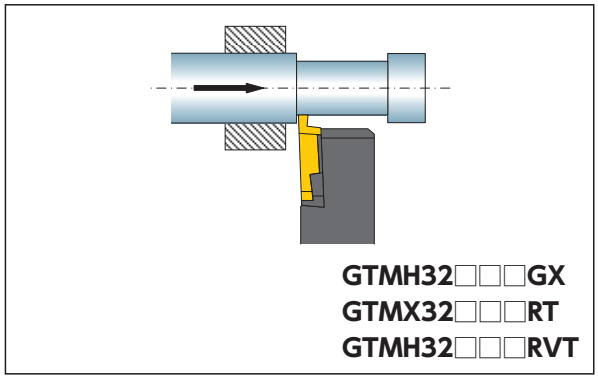
NTK GTMT / GTMH series can be used for uneven diameter grooving thanks to the 2 degree slanted insert mounting on the toolholder



Chamfering and radius machining can be done after the rough grooving process at the center of the groove

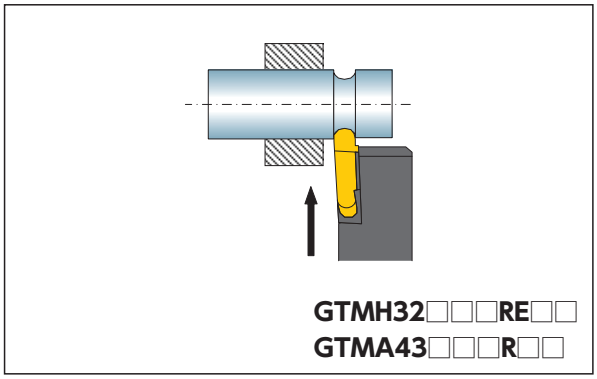


Side Turning



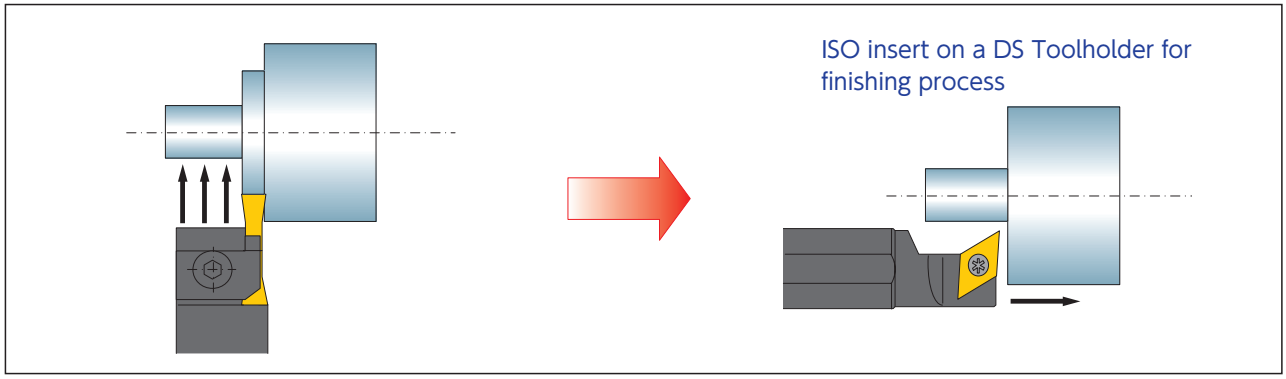
GTMH32□□□GX
GTMX32□□□RT
GTMH32□□□RVT

Full Radius

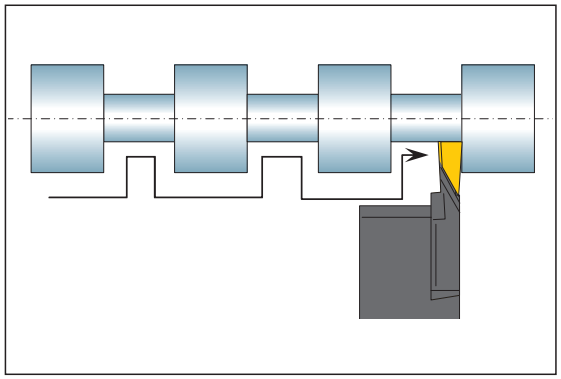


GTMH32□□□RE□□
GTMA43□□□R□□

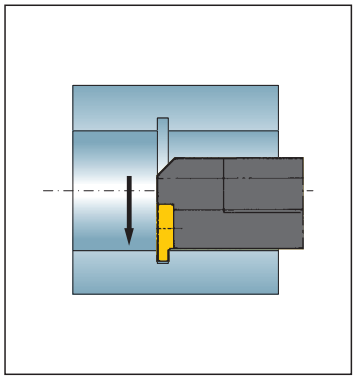
Rough Plunging for OD Turning



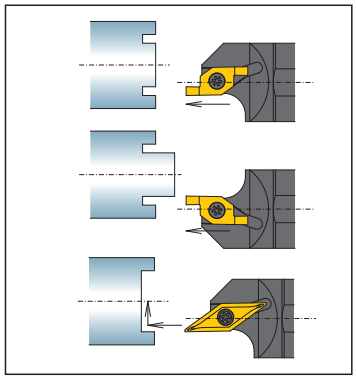
Spool Grooving



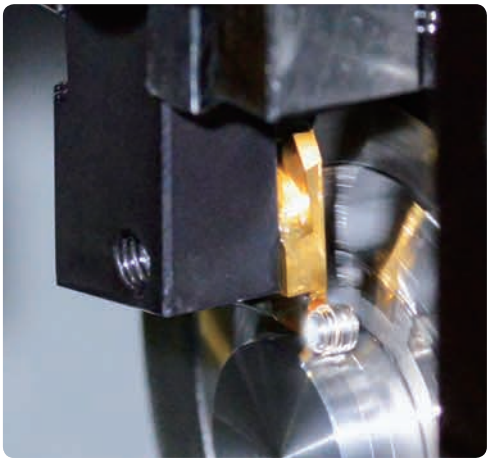
ID Grooving



Face Grooving



GTMH-GX for Grooving / Side Turning

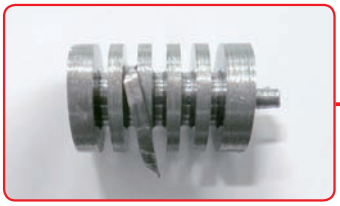


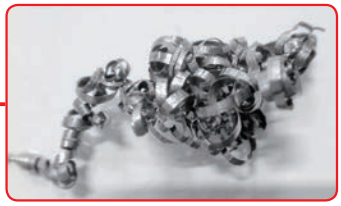
Features

- 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 2.0mm DOC side turning capability

Typical Grooving Problems

- Chips remain at the bottom of groove
- Bird's nest of chips

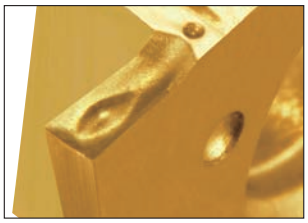




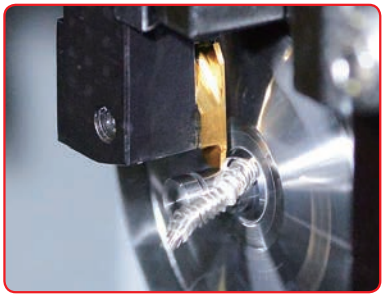
Excellent Chip Control

- Chipbreakers

Groove width 1.5mm～

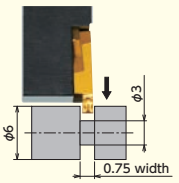


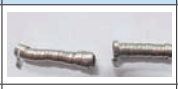
Groove width ～ 1.0mm



GX chipbreaker can solve these problems

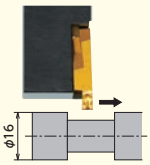
- Grooving

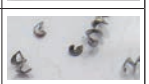
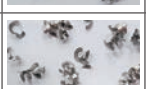
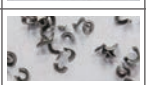
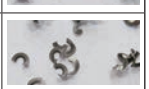


Feed rate (mm/rev)	0.01	0.03	0.05
GX chipbreaker			
Competiton's chipbreaker			

Material : SUS304 (Φ 6 →Φ 3) v_c =80m/min a_r =1.5mm

- Side Turning



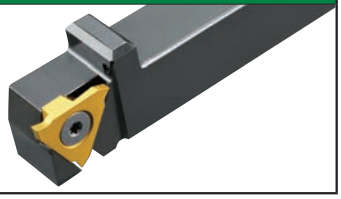
DOC \ Feed rate (mm/rev)	0.01	0.03	0.05	0.08
0.25				
0.5				
0.75				

Material : SUS304 v_c =80m/min 0.75mm width insert

Best Solution for Chip Control

Coolant through toolholders now available

GTT-OH2 / OH



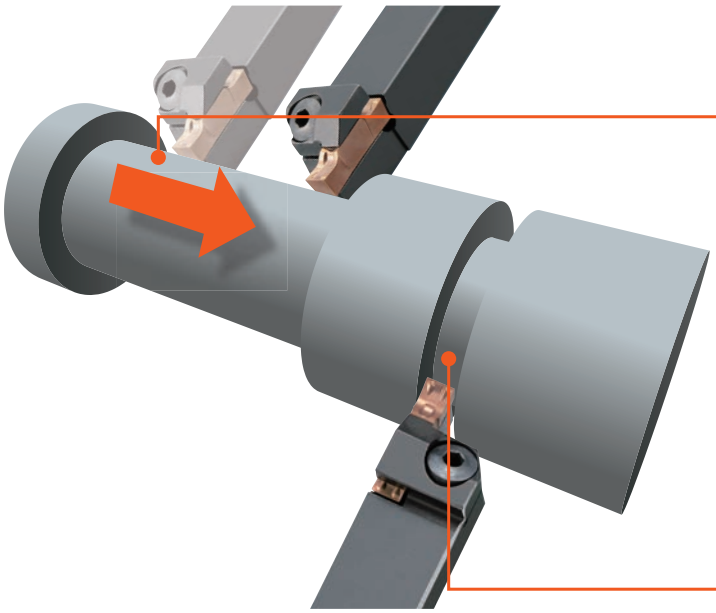
Y-GTT-OH

➡H22

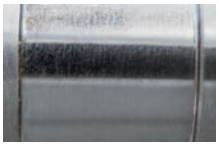
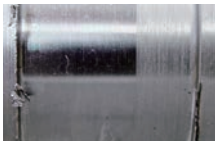
SCRUM DUO

Features

- Grooving and side turning tools with highly rigid design
- 3D design chipbreakers result in less tool pressure and excellent chip control

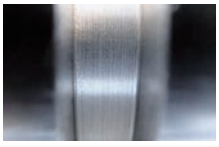
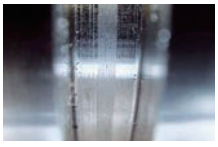


Side-turning

	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : SCM415 V_c=150m/min f =0.1mm/rev a_p=1.0mm

Grooving

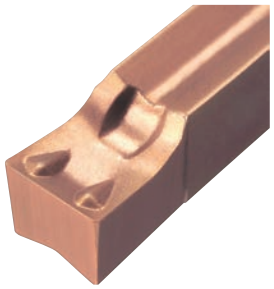
	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : SCM415 V_c=150m/min f =0.1mm/rev a_p=7.0mm

Chipbreaker

For Grooving / Side-turning

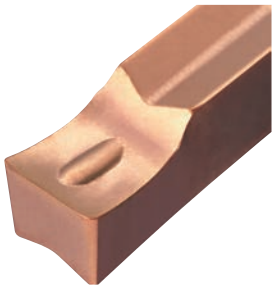
GW



- *Excellent chip control*
- *Good sharpness*
- *Side turning capability*

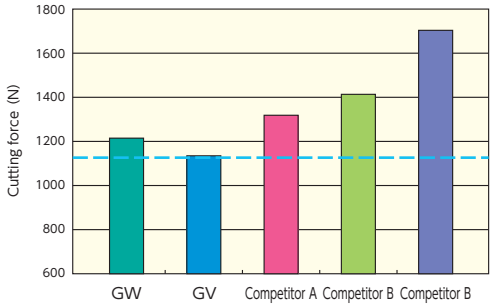
Less tool pressure

GV



- *Superior sharp edge*

Tool pressure comparison when grooving



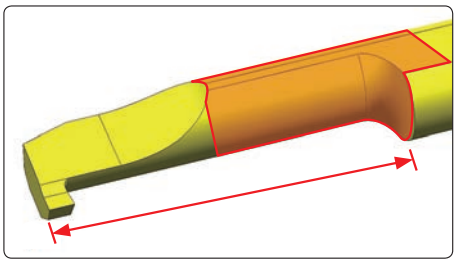
➡H28 • H29

STICK DUO Short type for ID Grooving

Features

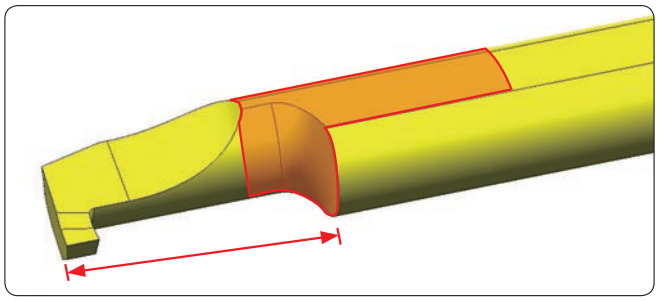
- *Added "short type" STICK DUO series for grooving*
- *Offers high precision!*
- *Best for internal grooving in work material's mouth.*
- *2 corners=Economical!*

Former



For multiple work shape

Short type



Focused on rigidity

➡H34

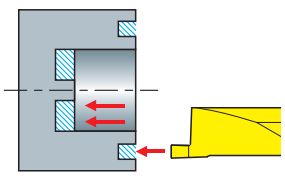
STICK DUO ID Face Grooving type

Features

- *Added "face grooving type"STICK DUO series for grooving*
- *Best for back end surface grooving for small shank.*
- *2 corners=Economical!*

Application Example

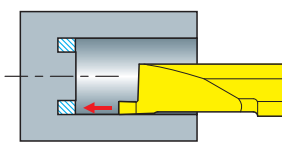
Body machining	
Work material	: SUS303
Cutting speed (m/min)	: 110
Feed (mm/min)	: 0.04
Inserts width (mm)	: 2.0
Coolant	: WET



TM4	1000pcs/corner
Competitor	500pcs/corner

Able to machine twice as long as competitors due to TM4 coating which has wear resistance ability. Also, due to the excellence in sharpness, surface is good as well.

Machine parts machining	
Work material	: SUS304
Cutting speed (m/min)	: 70
Feed (mm/min)	: 0.04
Inserts width (mm)	: 1.5
Coolant	: WET



TM4	500pcs/corner
Competitor	300pcs/corner

Excellent chip control by best breaker design. Also, about two times longer tool life due to the coating of TM4 which is superior to wear resistance.

➡H37

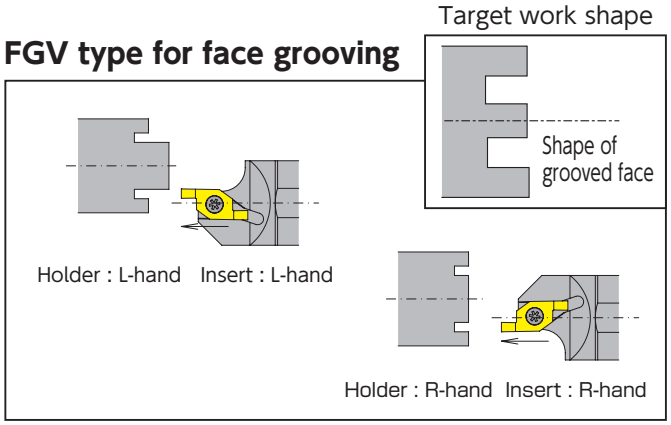
SATURN DUO

Face grooving tool

Features

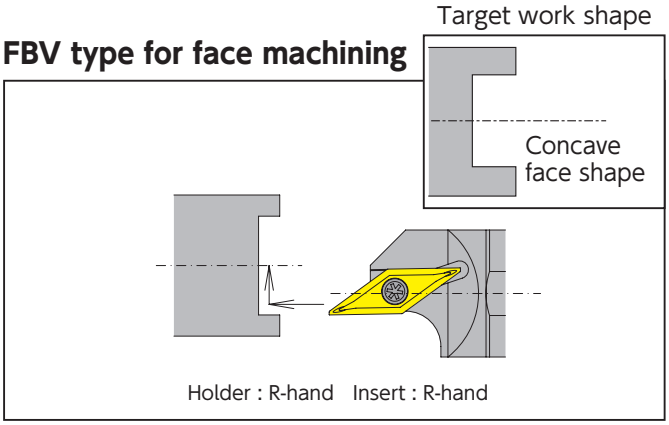
- FGV type for face grooving and FBV type for face machining
- Economical double-corner specification
- Improved tool rigidity by optimizing the overhang and holder shape
- Gang-type, front-gang-type and sleeve holder types available

FGV type for face grooving



- Grooving is possible under a wide range of cutting conditions due to strengthened rigidity of both insert and holder
- Minimum machining diameter of ϕ6.0, and groove width of 1.0mm
- Left-hand types available for machining work with a boss

FBV type for face machining



- Further improved face machining efficiency
- Minimum machining diameter of ϕ8.0

■Recommended Cutting Condition for FGV Style Tooling (for Face Grooving)

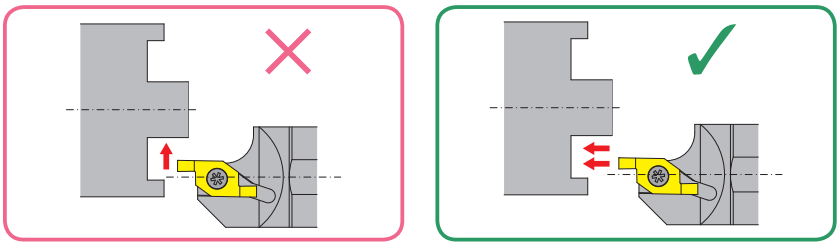
			Steel (Carbon Steel, Alloy Steel)	Stainless Steel (Excluding SUS303)	Free Cutting Steel (Including SUS303)	Non-ferrous Metals (Brass, Aluminum, Copper)
Speed (m/min)			50 (30 ~ 100)	40 (30 ~ 100)	60 (30 ~ 100)	80 (50 ~ 120)
Feed Rate (mm/rev)	Groove Depth (mm)	1.0	0.03 (0.01 ~ 0.05)	0.02 (0.01 ~ 0.04)	0.04 (0.01 ~ 0.06)	0.04 (0.01 ~ 0.06)
		1.5	0.02 (0.01 ~ 0.04)	0.01 (0.005 ~ 0.03)	0.03 (0.01 ~ 0.05)	0.03 (0.01 ~ 0.05)
		2.0	0.01 (0.005 ~ 0.03)	0.01 (0.005 ~ 0.03)	0.02 (0.01 ~ 0.04)	0.02 (0.01 ~ 0.04)

☆Tips for Successful Face Grooving

①Run multiple passes if turning wider grooves.
Make sure to groove from outer diameter to inner diameter to avoid any interference.
②If lines appear on the boss section, slow down feed rate when retracting the tool.
③If scratch appears at the end of the boss, slow down the feed rate.
④If groove surface looks torn, either slow down feed rate or increase speed.
⑤If 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)

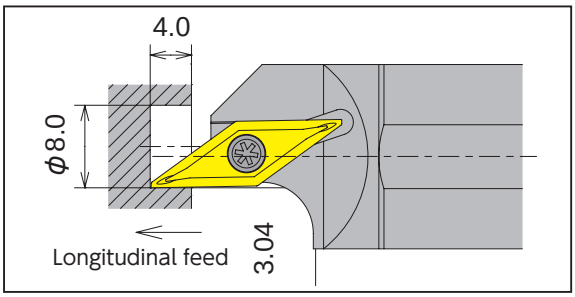
Minimum machining diameter: ϕ8.0　WET

			Steel (Carbon Steel, Alloy Steel)	Stainless Steel (Excluding SUS303)	Free Cutting Steel (Including SUS303)	Non-ferrous Metals (Brass, Aluminum, Copper)
Speed (m/min)			50 (30 ~ 70)	40 (30 ~ 60)	60 (30 ~ 80)	80 (50 ~ 100)
Feed Rate (mm/rev)	Groove Depth (mm)	1.0	0.025 (0.01 ~ 0.05)	0.02 (0.01 ~ 0.05)	0.05 (0.01 ~ 0.06)	0.05 (0.01 ~ 0.06)
		1.5	0.02 (0.01 ~ 0.05)	0.01 (0.005 ~ 0.025)	0.025 (0.01 ~ 0.05)	0.025 (0.01 ~ 0.05)
		2.0	0.01 (0.005 ~ 0.025)	0.01 (0.005 ~ 0.025)	0.02 (0.01 ~ 0.05)	0.02 (0.01 ~ 0.05)

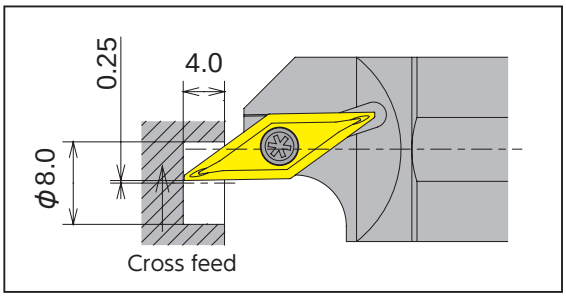
* When machining difficult materials where chip control is problematic (such as SUS303), it is recommended that the machining be carried out in several stages.

☆Machining process

- For materials with good machinability, it is possible to machine up to 4.0mm deep at a low feed rate in a single pass for both longitudinal feed and cross feed.



Cutting in Z direction : Longitudinal feed



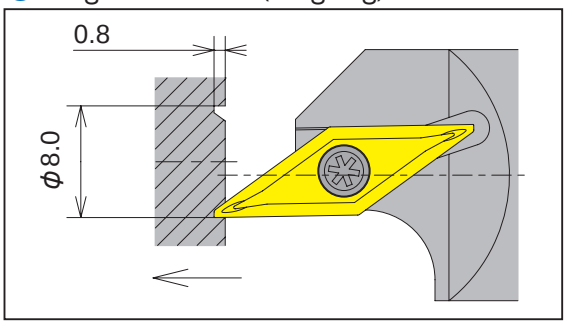
Cutting in X direction : Cross feed

☆Useful tips for machining

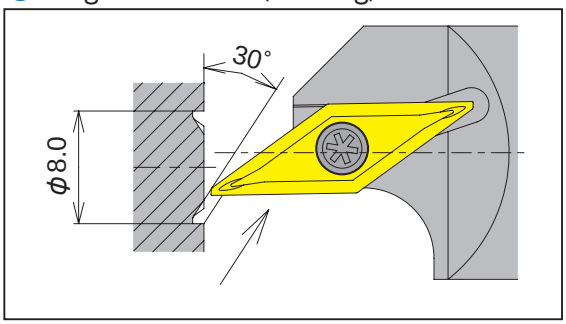
When burrs occur on ID surface, it is recommended to perform the cut in 2 passes, one for roughing and one for finishing as shown in the following procedure:

☆Example of 2-pass machining: Leave 0.2mm on roughing then run a finish cut

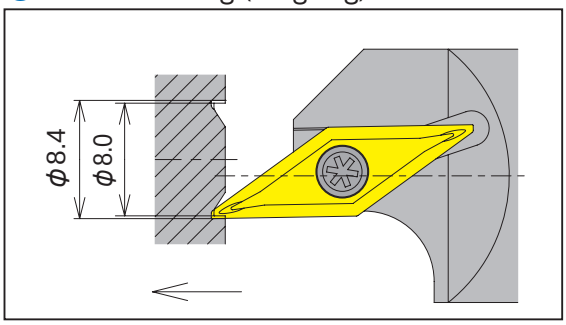
❶ Longitudinal feed (roughing)



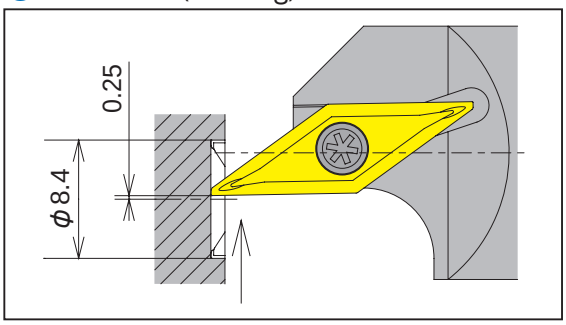
❷ Longitudinal feed (finishing)



❸ Slant machining (roughing)



❹ Cross feed (finishing)



➡H38 • H39

CSV Series Best for up to 5㎜ diameter material

CSV

For Cam-style machine

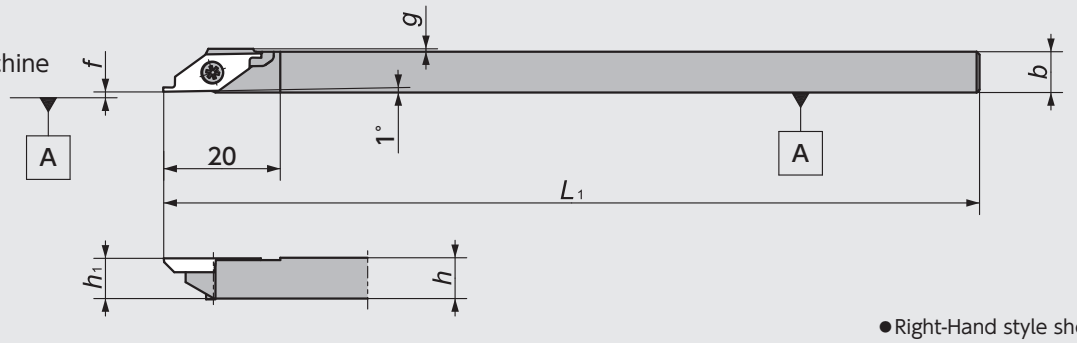


Figure-1

●Right-Hand style shown

CSV-NC

For Gang-style machine

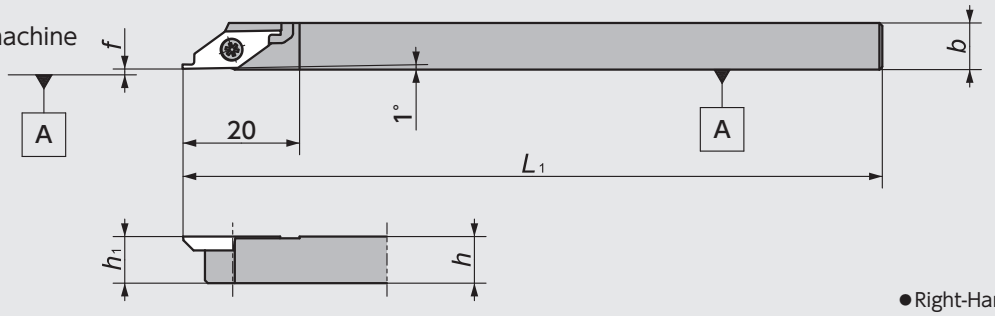


Figure-2

●Right-Hand style shown

CSV-NC-F

For Gang-style machine

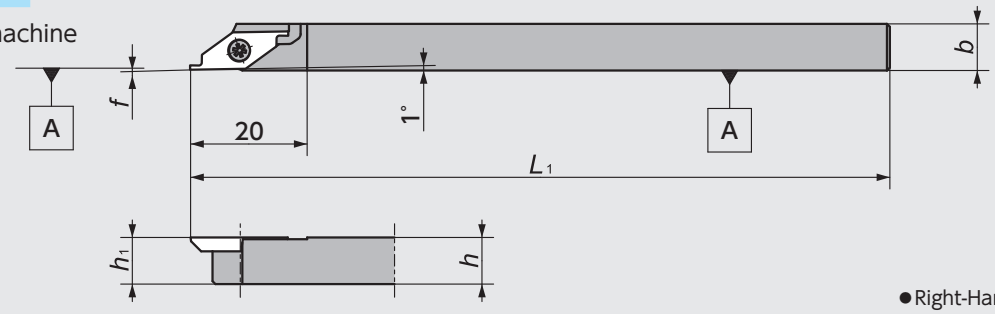


Figure-3

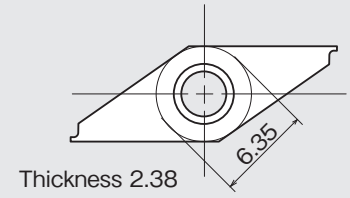
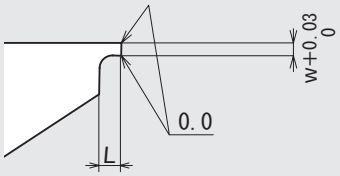
●Right-Hand style shown

CSV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	g	Groove Width Range (㎜) w	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5492962		CSV[R/L]07GX	●		7	7	85	7	0.1	0.5	0.25 ∫ 1.50	CSVG	LRIS-2.5＊7	CLR-15S
	5303169	5303193	07	●	●			140							
	5492954		08GX	●		8	8	85	8		0.0				
	5303151	5303201	08	●	●			140							
	5303136		095	●		9.5	9.5		9.5						
	5303144	5303177	10	●	●	10	10		10						
	5474770		12GX	●		12	12	85	12						
	5327929		12	●				140							
2	5514062	5514070	CSV[R/L]08NC	●	●	8	8	120	8	0.1	—	0.25 ∫ 1.50	CSVG	LRIS-2.5＊7	CLR-15S
	5563010		10GXNC	●		10	10	85	10						
	5477492	5477542	10NC	●	●			120							
	5477534	5477500	12NC	●	●	12	12		12						
3	5789615		CSV[R/L]08NC-F	●		8	8	120	8	0.0 ∫ 0.1	—	0.25 ∫ 1.50	CSVG	LRIS-2.5＊7	CLR-15S

☆All the inserts can use the same toolholder CSV series ⇒G94

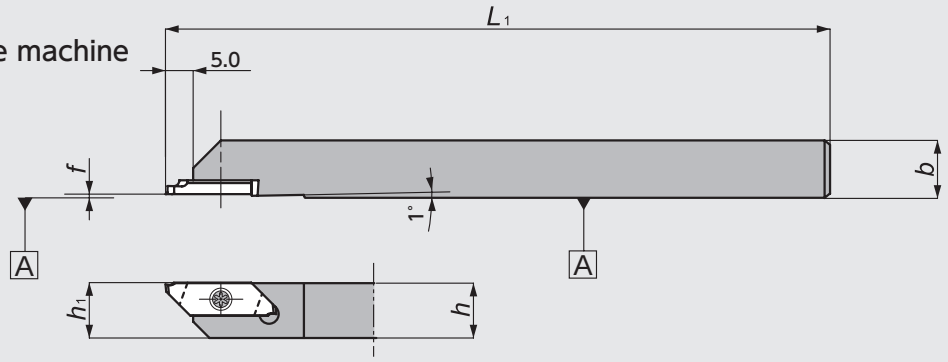
CSV Series - Inserts Mirror finish

Shape	Item Number	Chip-breaker	Dimensions (mm)				PVD Coated Carbide VM1			
			w	*L*	r_ε	Max Depth of cut	R	Stock	L	Stock
 Thickness 2.38	CSVG11FR/L V025 M	No	0.25	0.50	0.0	0.15	5354634	●		
	11FR/L V030 M		0.30				5344940	●		
	11FR/L V035 M		0.35				5354402	●		
	11FR/L V040 M		0.40				5344932	●		
	11FR/L V045 M		0.45	1.00		0.45	5354394	●		
	11FR/L V050 M		0.50				5354642	●		
	11FR/L V055 M		0.55				5344924	●		
	11FR/L V060 M		0.60				5344916	●		
	11FR/L V065 M		0.65				5354410	●		
	11FR/L V070 M		0.70				5354428	●		
	11FR/L V075 M		0.75	2.00		1.40	5332812	●	5332820	●
	11FR/L V080 M		0.80				5358650	●		
	11FR/L V085 M		0.85				5354436	●		
	11FR/L V090 M		0.90				5354444	●		
	11FR/L V095 M		0.95				5332846	●	5332838	●
	11FR/L V100 M		1.00				5352562	●		
	11FR/L V110 M		1.10	3.00		2.60	5358643	●		
	11FR/L V120 M		1.20				5352570	●	5357561	●
	11FR/L V130 M		1.30				5358627	●		
	11FR/L V140 M		1.40				5358619	●		
●Right-Hand style shown	11FR/L V150 M		1.50				5358601	●		

CTPS Series

CTPS

For Cam-style machine



●Right-Hand style shown

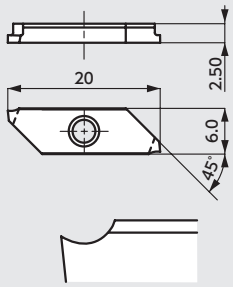
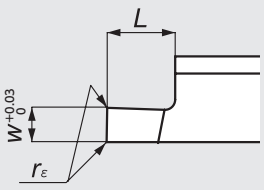
CTPS Series - Toolholders

Code No.	Item Number	Stock	Dimensions (mm)					Groove Width Range (mm) w	Gage insert	Spare Parts	
			h	b	L1	h1	f			Clamp Screw	Wrench
5346572	**CTPSR10**	●	10	10	120	10	0.0	0.75 ⟆ 2.00	GTPS	LRIS-2.5*7	CLR-15S
5397187	**R12**	●	12	12		12					

☆All the inserts can use the same toolholder　CTPS series ⇒G98

CTPS Series - Inserts

● GTPS - Grooving

Shape	Item Number	Dimensions (mm)				PVD Coated Carbide			
		w	rε	L	Max Depth of cut	ZM3	Stock	VM1	Stock
  ●Right-Hand style shown	**GTPS075FR**	0.75	0.0	1.5	**1.0**	5346952	●	5362652	●
	095FR	0.95		2.0	**1.5**	5346960	●	5362660	●
	100FR	1.00				5346978	●	5362678	●
	120FR	1.20		3.0	**2.5**	5346986	●	5362686	●
	150FR	1.50				5346994	●	5362694	●
	200FR	2.00				5347000	●	5362702	●

All angles shown are obtained when insert is set in the holder

GTPA Series Best tool for Aluminum Spool Machining

GTPA

Screw accessible from both sides

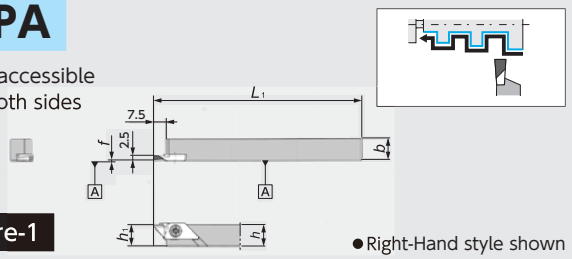


Figure-1

●Right-Hand style shown

Y-GTPA

Screw accessible from both sides (Y-axis)

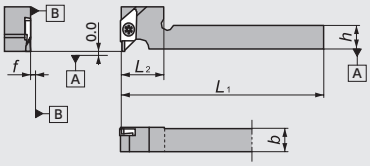


Figure-2

●Right-Hand style shown

GTPA-OH

(Coolant through) Screw accessible from both sides

Th(Screw parts A)
1214 size : SPR1/8(Rc1/8)

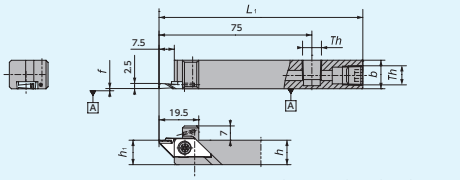


Figure-3

●Right-Hand style shown

Y-GTPA-OH

(Y-axis/Coolant through) Screw accessible from both sides

Th(Screw parts A)
1014 size : SS0605SC(M6×1.0)
1216/1616 size : SPR1/8(Rc1/8)

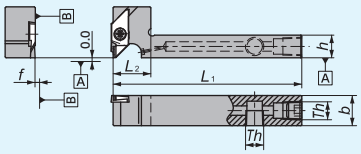


Figure-4

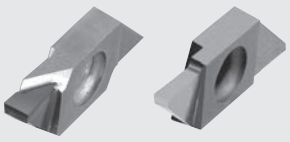
●Right-Hand style shown

GTPA Series - Toolholders

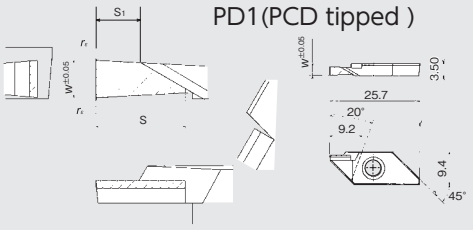
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	Groove Width Range (mm) w	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5552401		GTPA□1010	●		10	10	120	10	0.1	—	2.0 ≀ 2.5	GTPA	LRIS-4＊10PW	CLR-15S
	5552419		1212	●		12	12		12					LRIS-4＊12PW	
	5577291		1616	●		16	16		16						
2	5563820		Y-GTPA□1216	●		12	16	120	—	0.1	20				
3	5912845		GTPA□1214H-OH	●		12	14	100	12	0.1	—				
4	5930185		Y-GTPA□1014FSS-OH	●		10	14	80	—	0.1	15				
	5911482		1216HS-OH	●		12	16	100			20				
	5911490		1616H-OH	●		16	16				25				

GTPA Series - Inserts

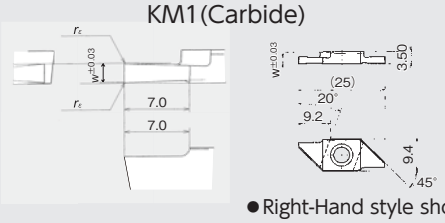
Shape



PD1(PCD tipped)



KM1(Carbide)



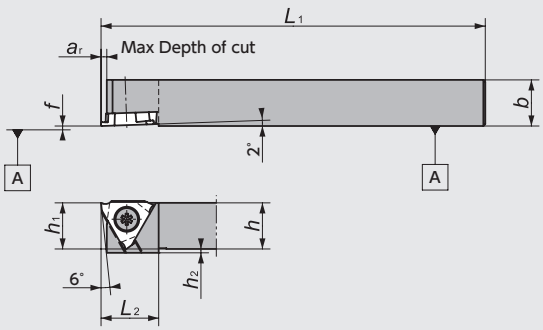
●Right-Hand style shown

Item Number	Dimensions (mm) w	s	s_1	r_ε	Max Depth of cut	PCD PD1	PCD Stock	Carbide KM1	Carbide Stock
GTPA20FRN01	2.0	6.0	4.0	R0.1 MAX	5.0	5552385	●		
20FRN01		—	—		6.0			5576525	●
20FRN01-SH		4.0	2.0		3.0	5966114	●		
GTPA25FRN01	2.5	6.0	3.0		5.0	5552393	●		
25FRN01		—	—		6.0			5576533	●
25FRN01-081		4.0	1.0		3.0	5561808	●		

GTT Series

GTT

Screw accessible from both sides



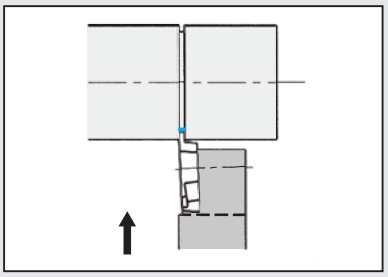
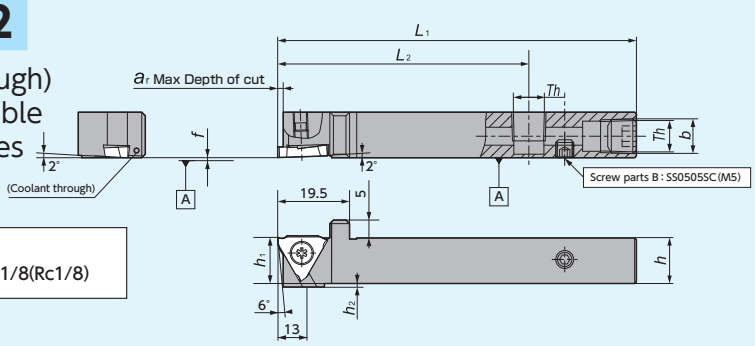


Figure-1

●Right-Hand style shown

GTT-OH2

(Coolant through) Screw accessible from both sides



Th(Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

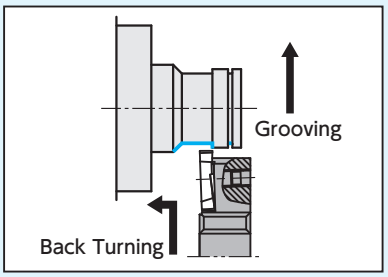
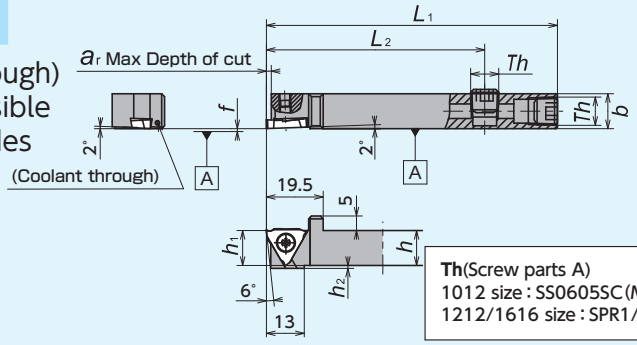


Figure-2

●Right-Hand style shown

GTT-OH

(Coolant through) Screw accessible from both sides



Th(Screw parts A)
1012 size : SS0605SC (M6×1.0)
1212/1616 size : SPR1/8(Rc1/8)

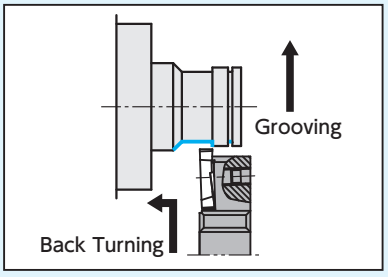
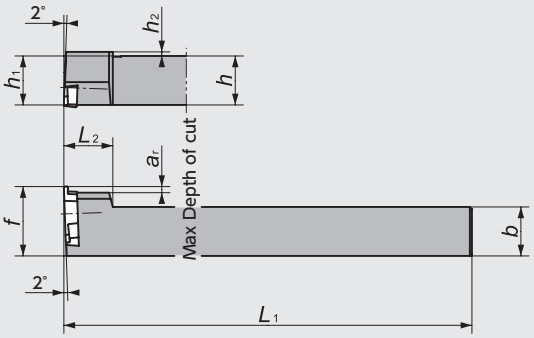


Figure-3

●Right-Hand style shown

CH-GTT



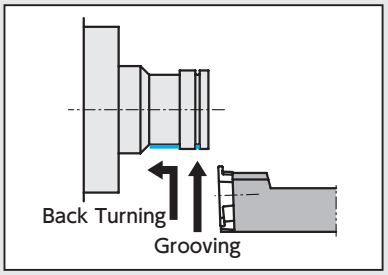
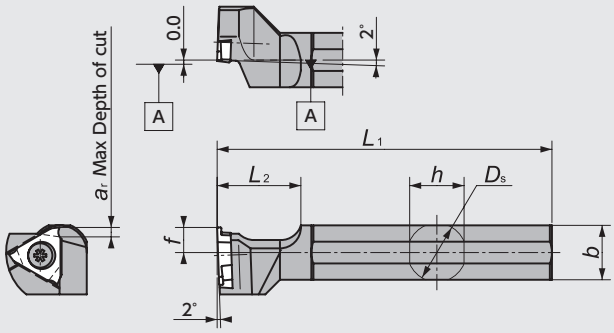


Figure-4

●Left-Hand style shown
☆Takes Right-hand insert

DS-GTT

(DS Holder)



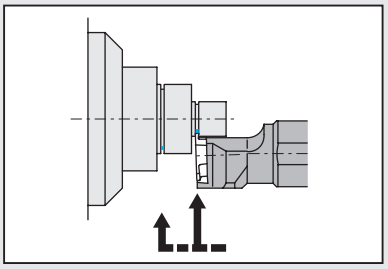
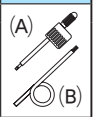


Figure-5

●Left-Hand style shown
☆Takes Right-hand insert

GTT Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	a_r	h_2	D_s	Groove Width Range (mm) w	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
																	(A) (B)	 (A) (B)
1	5107305	5107313	GTTR/L08F00	●	●	8	8	80	8	0	15	1.6	5	–	0.30 ~ 3.00 ※1	GTMH32 GTMX32 **H22~25** TBMH32 **G61**	Right : LR-S-4＊10PW (A) Left : LR-S-4＊5.8 (B)	CLR-15S (A)
	5608682		0810F00	●			10										LR-S-4＊10PW (A)	
	5107206	5107214	08K00	●	●		8	120									Right : LR-S-4＊10PW (A) Left : LR-S-4＊5.8 (B)	
	5608690		0810K00	●			10										LR-S-4＊10PW (A)	
	5107321	5107339	10F00	●	●	10	10	80	10				3					
	5107222	5107230	10K00	●	●			120										
	5107347	5107354	12F00	●	●	12	12	80	12				1					
	5107248	5107255	12K00	●	●			120										
	5459896	5551387	16H00	●	●	16	16	100	16				0					
	5173687	5173679	16K00	●	●			120										
	5530852	5780317	20K00	●	●	20	20	125	20				0					
	5780309	5780291	25M00	●	●	25	25	150	25									
	5107362	5107370	10F15	●	●	10	10	80	10			2.7	3		1.45 ~ 3.00		LR-S-4＊10PW (A)	
	5107263	5107271	10K15	●	●			120										
	5537220	5537147	12F15	●	●	12	12	80	12				1					
	5537246	5537162	12K15	●	●			120										
	5537261	5537188	16H15	●	●	16	16	100	16				0					
	5537287	5537204	16K15	●	●			120										
	5107388	5107396	10F25	●	●	10	10	80	10				3		2.50 ~ 3.00			
	5107289	5107297	10K25	●	●			120										
	5537238	5537154	12F25	●	●	12	12	80	12				1					
	5537253	5537170	12K25	●	●			120										
	5537279	5537196	16H25	●	●	16	16	100	16				0					
	5537295	5537212	16K25	●	●			120										
2	5035381		GTTR/L12H00-OH2	●		12	12	100	12	0	70	1.6	1	–	0.30 ~ 3.00		LR-S-4＊10PW (A)	CLR-15S (A)
	5043997		16X00-OH2	●		16	16	120	16				0					
3	5921705		GTTR/L1012H00-OH	●		10	12	100	10	0	70	1.6	1	–	0.30 ~ 3.00		LR-S-4＊10PW (A)	CLR-15S (A)
	5890157		GTTR12H00-OH	●		12			12									
	5921713		GTTR/L16H00-OH	●		16	16		16				0					
4		5659248	CH-GTTR/L10H00		●	10	10	100	10	15	12	1.5	3	–	0.30 ~ 3.00		LR-S-4＊9 (B)	RLR-20S (B)
		5659255	12H00		●	12	12	100	12	17			1					
		5960836	16H00		●	16	16	100	16	21			0					
5		5348560	DS-GTTR/L14F		●	13	13	80	—	6	20	1.6	—	14.000	0.30 ~ 3.00		LR-S-4＊9 (B)	RLR-20S (B)
		5348081	15H		●	15	15	100						15.875				
		5341532	16X ※2		●			95						16.000				
		5278288	19		●	18	18	120						19.050				
		5278304	20		●	19	19							20.000				
		5324041	22 ※2		●	21	21							22.000				
		5483433	25MET		●	24	24	150		10				25.000				
		5317144	25		●	24	24	120		10				25.400				
		5937693	32		●	30	30	150		10				32.000				

※1 Would be changed by insert

※2 Compatible with 16mm / 22mm round shank DS Series holders DS-Sleeve ➔ G104

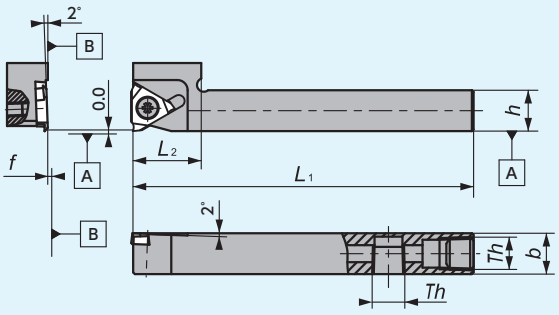
GTT Series

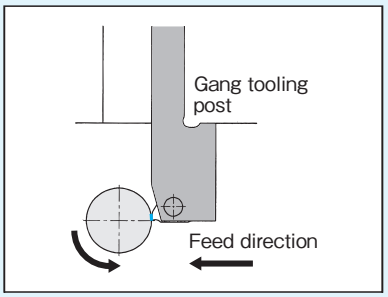
Y-GTT-OH

(Y-axis/Coolant through)
Screw accessible
from both sides

Th(Screw parts A)
1212/1616 size : SPR1/8(Rc1/8)

Figure-1



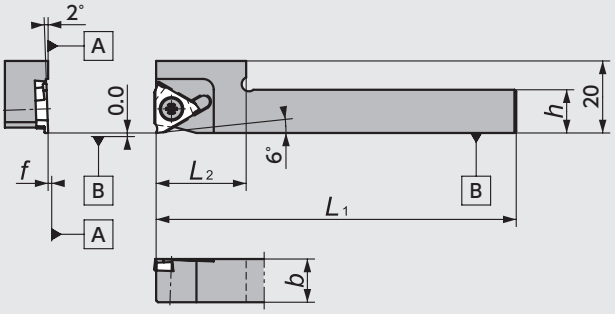


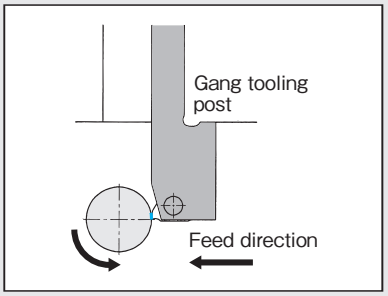
●Right-Hand style shown
☆Takes Right-hand insert

Y-GTT

(Y-axis)
Screw accessible
from both sides

Figure-2





●Right-Hand style shown
☆Takes Right-hand insert

GTT Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	a_r	h_2	Groove Width Range (mm) w	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5911466		Y-GTT R/L 12H00S-OH	●		12	12	100	—	0	20	1.6	—	0.30 ≀ 3.00 ※1	GTMH32 GTMX32 **H22~25** TBMH32 **G61**	LR-S-4＊ 10PW	CLR-15S
	5911474		Y-GTT R/L 16H00-OH	●		16	16				25						
2	5371604		Y-GTT R/L 10S	●		10	10	120	—	0	20	1.6	—	0.30 ≀ 3.00 ※1		LR-S-4＊ 10PW	CLR-15S
	5950415		10MS	●							22						
	5371620		12S	●		12	12				20						
	5950472		12MS	●							22						

NGT Series

NGTN

Clamp-on
No-Offset

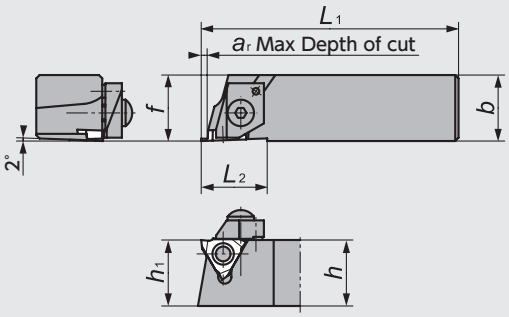
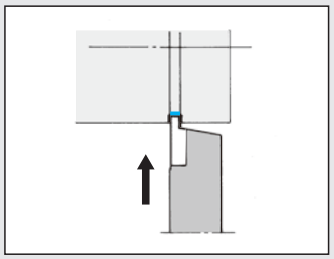


Figure-1



●Right-Hand style shown

NGTB

Clamp-on
With Offset

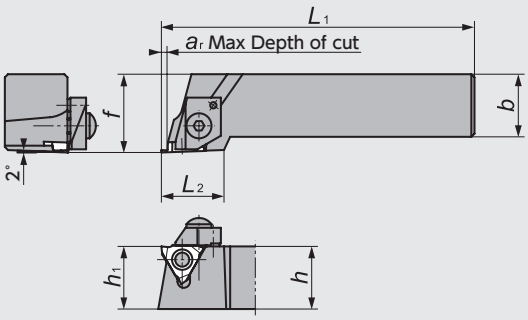
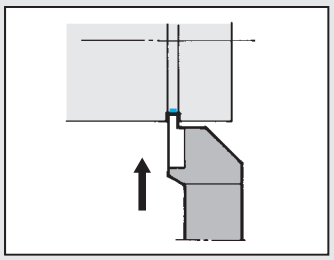


Figure-2



●Right-Hand style shown

NGTA

Clamp-on

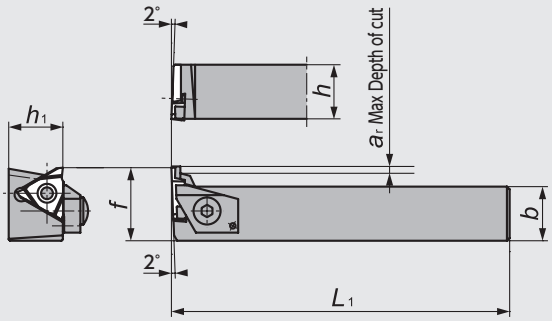
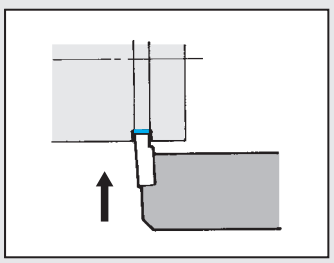


Figure-3



●Left-Hand style shown
☆Takes Right-hand insert

NGT Series - Toolholders

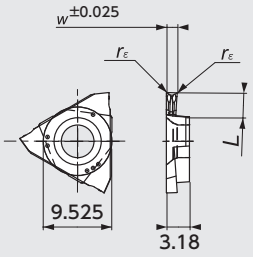
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	a_r	h_2	Groove Width Range (mm) w	Gage insert	Spare Parts: Clamp	Spare Parts: Clamp Bolt	Spare Parts: Spring	Spare Parts: Wrench
1	5525928	5525738	NGTN R/L 161632-00	●	●	16	16	78	16	16	20	1.6	—	0.30～3.00 ※1	GTMH32 GTMX32 **H22～25**	CPR/L5S	AOS-5*20	ASG-5	LW-2.5
	5534110		161632-15	●								2.7		1.45～3.00					
	5534128		161632-25	●										2.50～3.00					
2	5542295		NGTB R/L 202032-00S	●		20	20	125	20	25	25	1.6	—	0.30～3.00 ※1	GTMH32 GTMX32 **H22～25**	CPR/L5	AOS-5*25	ASG-5	LW-2.5
	5537717		202032-15S	●								2.7		1.45～3.00					
	5553243		202032-25S	●										2.50～3.00					
	5549563		252532-00S	●		25	25	150	25	30		1.6		0.30～3.00 ※1					
	5545801		252532-15S	●								2.7		1.45～3.00					
	5553417		252532-25S	●										2.50～3.00					
3		5536370	NGTA R/L 202032-00S		●	20	20	125	20	25	—	1.6	—	0.30～3.00 ※1	GTMH32 GTMX32 **H22～25**	CPR/L5※	AOS-5*25	ASG-5	LW-2.5
		5536388	202032-15S		●							2.7		1.45～3.00					

※1 Would be changed by insert
※Left-Hand clamp with should be used with right-hand holder
Right-Hand clamp with should be used with left-hand holder

GTT/NGT Series - Inserts

● GTMH32-GX

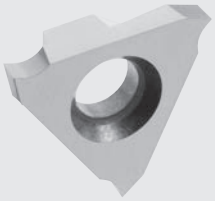
Shape	Item Number	Dimensions (mm)			Max Depth of cut		PVD Coated Carbide ST4		PVD Coated Carbide TM4		PVD Coated Carbide DM4	
		w	*L*	r_ε	Grooving	Side Turning	R	Stock	R	Stock	R	Stock
Side Turning Capable	GTMH32033RGX	0.33	0.6	0.05	0.25	—	5039136	●	5019468	●	5019450	●
	043RGX	0.43	1.2		0.9		5039144	●	5019443	●	5019435	●
	050RGX	0.50					5039151	●	5019419	●	5019401	●
	053RGX	0.53					5039169	●	5019393	●	5019336	●
	075RGX	0.75	2.0		1.6	0.75	5039177	●	5910765	●	5910898	●
	095RGX	0.95				1.50	5039185	●	5922224	●	5922216	●
	100RGX	1.00					5039193	●	5910815	●	5910906	●
	100RGX01			0.1			5039201	●	5910823	●	5910963	●
	150RGX	1.50	3.0	0.05	2.7	2.00	5039219	●	5910740	●	5910914	●
	150RGX01			0.1			5039227	●	5910849	●	5910971	●
	150RGX02			0.2			5039235	●	5910864	●	5910997	●
	200RGX	2.00		0.05			5039243	●	5910732	●	5910930	●
	200RGX01			0.1			5039250	●	5910856	●	5910989	●
	200RGX02			0.2			5039268	●	5910872	●	5911003	●
	300RGX	3.00		0.05			5039276	●	5910724	●	5910948	●
	300RGX02			0.2			5039284	●	5910880	●	5911011	●

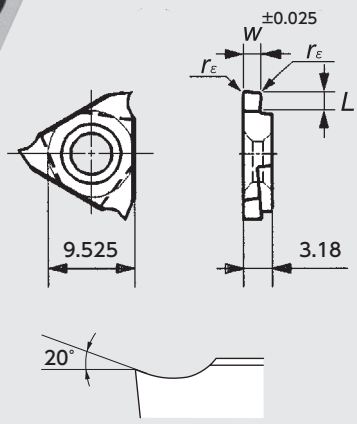


● Right-Hand style shown

● GTMH32-E

Shape	Item Number	Dimensions (mm)				PVD Coated Carbide ZM3 R	Stock	PVD Coated Carbide ZM3 L	Stock
		w	*L*	r_ε	Max Depth of cut				
	GTMH32033$^{R}_{L}$E	0.33	0.6	0.03	0.3	5108766	●	5109046	●
	043$^{R}_{L}$E	0.43	1.2		0.9	5108758	●	5109038	●
	053$^{R}_{L}$E	0.53		0.05		5108774	●	5109020	●
	075$^{R}_{L}$E	0.75	2.0		1.6	5108790	●	5109012	●
	077$^{R}_{L}$E	0.77				5920574	●	5965264	●
	095$^{R}_{L}$E	0.95				5108808	●	5109004	●
	097$^{R}_{L}$E	0.97				5919980	●	5965272	●
	100$^{R}_{L}$E	1.00				5108816	●	5108998	●
	103$^{R}_{L}$E	1.03				5965298	●	5965306	●
	120$^{R}_{L}$E	1.20				5108824	●	5108980	●
	125$^{R}_{L}$E	1.25				5373360	●		
	140$^{R}_{L}$E	1.40				5108782	●	5108907	●
	145RE	1.45	3.0		2.7	5231667	●		
	150$^{R}_{L}$E	1.50				5108899	●	5108972	●
	175RE	1.75				5919998	●		
	180$^{R}_{L}$E	1.80				5108881	●	5108964	●
	200$^{R}_{L}$E	2.00				5108873	●	5108956	●
	225$^{R}_{L}$E	2.25				5108865	●	5108949	●
	250$^{R}_{L}$E	2.50				5108857	●	5108931	●
	275$^{R}_{L}$E	2.75				5108840	●	5108923	●
	300$^{R}_{L}$E	3.00				5108832	●	5108915	●
	100$^{R}_{L}$E01	1.00	2.0	0.1	1.6	5109079	●	5109087	●
	120$^{R}_{L}$E01	1.20				5109277	●	5109251	●
	150$^{R}_{L}$E01	1.50	3.0		2.7	5109061	●	5109269	●
	200$^{R}_{L}$E01	2.00				5109053	●	5109244	●

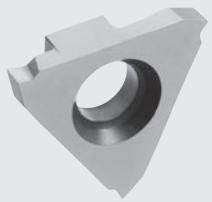


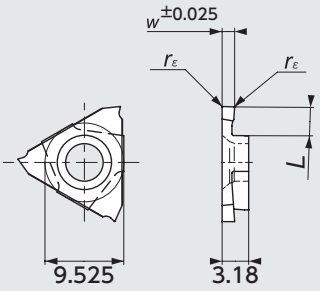


● Right-Hand style shown

● GTMX32-T

Shape	Item Number	Dimensions (mm)				PVD Coated Carbide							
						QM3				DT4			
		w	*L*	r_ε	Max Depth of cut	R	Stock	L	Stock	R	Stock	L	Stock
Side Turning Capable	**GTMX32030$^{R}_{L}$T**	0.30	0.6		0.25	5510110	●			5847967	●		
	033$^{R}_{L}$T	0.33				5510102	●						
	043$^{R}_{L}$T	0.43	1.2		0.9	5510094	●			5847983	●		
	050$^{R}_{L}$T	0.50				5493895	●			5847991	●		
	053$^{R}_{L}$T	0.53				5510086	●						
	065$^{R}_{L}$T	0.65				5510078	●			5849013	●		
	075$^{R}_{L}$T	0.75	2.0	0.05	1.6	5493903	●	5510540	●	5848999	●	5848981	●
	080$^{R}_{L}$T	0.80				5510060	●			5848965	●		
	095$^{R}_{L}$T	0.95				5493911	●	5510581	●	5848882	●	5848874	●
	100$^{R}_{L}$T	1.00				5493929	●			5848866	●		
	110$^{R}_{L}$T	1.10				5510052	●						
	120$^{R}_{L}$T	1.20				5493937	●			5848841	●		
	125$^{R}_{L}$T	1.25				5510045	●			5848833	●		
	130$^{R}_{L}$T	1.30				5510037	●			5848825	●		
	140$^{R}_{L}$T	1.40				5510029	●			5848817	●		
	145$^{R}_{L}$T	1.45	3.0		2.7	5510011	●						
	150$^{R}_{L}$T	1.50				5493945	●	5510672	●	5848791	●	5848783	●
	160$^{R}_{L}$T	1.60				5510003	●			5848775	●		
	175$^{R}_{L}$T	1.75				5510243	●			5848767	●		
	180$^{R}_{L}$T	1.80				5510250	●			5848759	●		
	200$^{R}_{L}$T	2.00				5510227	●	5510425	●	5848742	●	5848734	●
	250$^{R}_{L}$T	2.50				5510219	●	5510417	●	5848726	●	5848718	●
	300$^{R}_{L}$T	3.00				5510235	●			5848700	●		
	100$^{R}_{L}$T01	1.00	2.0	0.1	1.6	5510136	●			5848692	●		
	120$^{R}_{L}$T01	1.20				5510128	●			5848684	●		
	150$^{R}_{L}$T01	1.50	3.0		2.7	5510482	●			5848676	●		
	200$^{R}_{L}$T01	2.00				5510433	●	5510441	●	5848668	●	5848650	●
	250$^{R}_{L}$T01	2.50				5523204	●			5848627	●		
	150$^{R}_{L}$T02	1.50		0.2		5523196	●			5848643	●		
	200$^{R}_{L}$T02	2.00				5523188	●			5848635	●		
	250$^{R}_{L}$T02	2.50				5523170	●			5848619	●		
	300$^{R}_{L}$T02	3.00				5523162	●			5848601	●		

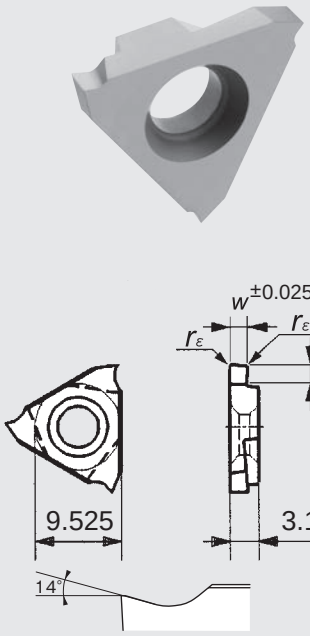




● Right-Hand style shown

● GTMH32-VT Mirror finish

Shape	Item Number	Dimensions (mm)				PVD Coated Carbide VM1			
		w	*L*	r_ε	Max Depth of cut	R	Stock	L	Stock
Side Turning Capable	**GTMH32033R/LVT** Ⓜ	0.33	0.6	0.0	0.25	5359484	●		
	043R/LVT Ⓜ	0.43	1.2		0.9	5359500	●		
	053R/LVT Ⓜ	0.53	2.0		1.6	5359526	●		
	065R/LVT Ⓜ	0.65				5359542	●		
	075R/LVT Ⓜ	0.75				5359567	●		
	080R/LVT Ⓜ	0.80				5359609	●		
	085R/LVT Ⓜ	0.85				5359633	●		
	095R/LVT Ⓜ	0.95				5359658	●		
	100R/LVT Ⓜ	1.00				5359674	●		
	110R/LVT Ⓜ	1.10				5359690	●		
	120R/LVT Ⓜ	1.20				5359716	●		
	130R/LVT Ⓜ	1.30				5359732	●		
	140R/LVT Ⓜ	1.40				5359757	●		
	150R/LVT Ⓜ	1.50	3.0		2.7	5359773	●		
	200R/LVT Ⓜ	2.00				5360532	●		



● Right-Hand style shown

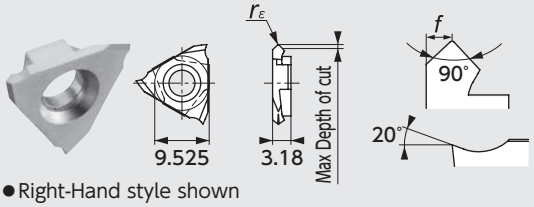
■Side turning instruction for GTMH-GX / GTMX-T / GTMH-VT

①To perform side turning with an insert whose groove width is greater than 0.43 set side turning feed rate to 0.03mm/rev or smaller.

②When performing side turning with an insert whose groove width is greater than 0.43 and the feed rate is over 0.03mm/rev (0.1mm/rev 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.

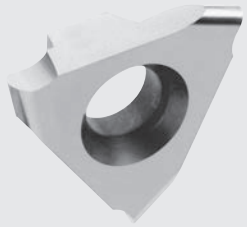
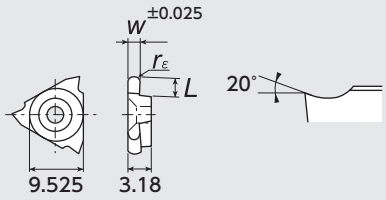
● GTMX32-V90 (90 Degree V-style)

Shape	Item Number	Edge Geometry	Dimensions (mm)			PVD Coated Carbide TM4			
			r_ε	*f*	Max Depth of cut	R	Stock	L	Stock
	GTMX32V90R005	90°	0.05	0.5	0.35	5773940	●		
	V90R010	90°	0.1	1.0	0.7	5773957	●		

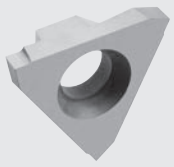
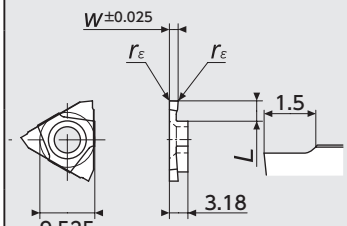
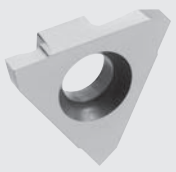
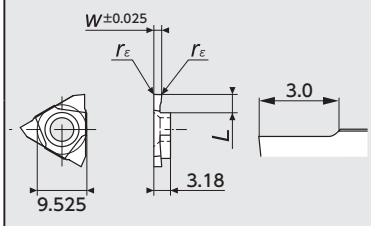


● Right-Hand style shown

● GTMH32 (Full radius style)

Shape	Item Number	Dimensions (mm)				PVD Coated Carbide ZM3			
		w	L	r_ε	Max Depth of cut	R	Stock	L	Stock
  ●Right-Hand style shown	GTMH32050R/LE025	0.50	1.2	0.25	0.9	5446125	●		
	070R/LE035	0.70	2.0	0.35	1.6	5446141	●		
	100R/LE05	1.00		0.50		5160759	●		
	150R/LE075	1.50	3.0	0.75	2.7	5501200	●		
	200R/LE10	2.00		1.00		5160775	●		
	250R/LE125	2.50		1.25		5921671	●		
	300R/LE15	3.00		1.50		5436720	●		

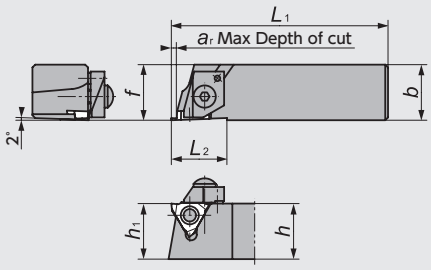
● GTMH • X32 (Flat top chipbreaker)

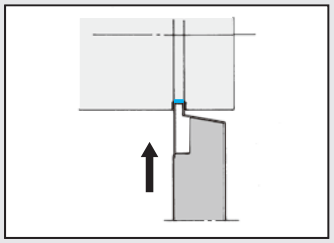
Shape	Item Number	Dimensions (mm)				PVD Coated Carbide ZM3				Carbide KM1			
		w	L	r_ε	Max Depth of cut	R	Stock	L	Stock	R	Stock	L	Stock
Short   ●Right-Hand style shown	GTMX32100R/LSS	1.00	2.0	0.05	1.6	5523345	●						
	150R/LSS	1.50	3.0		2.7	5523337	●						
	200R/LSS	2.00				5523329	●						
	Mirror finish GTMH32100R/LSSH Ⓜ	1.00	2.0	0.05	1.6					5599394	●		
	150R/LSSH Ⓜ	1.50	3.0		2.7					5599386	●		
	200R/LSSH Ⓜ	2.00								5599378	●		
Long   ●Right-Hand style shown	GTMX32100R/LLS	1.00	2.0	0.05	1.6	5523295	●						
	150R/LLS	1.50	3.0		2.7	5523303	●						
	200R/LLS	2.00				5523311	●						

NGT Series

NGTN
Clamp-on
No-Offset

Figure-1

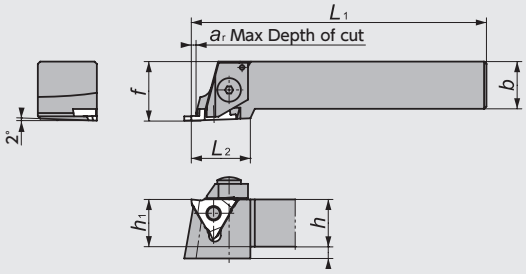


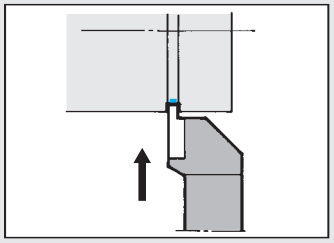


●Right-Hand style shown

NGTB
Clamp-on
With Offset

Figure-2

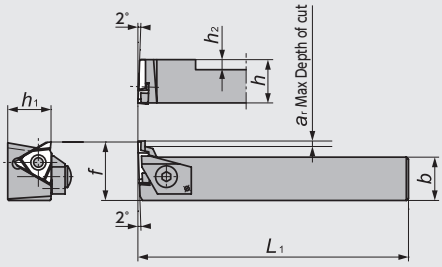


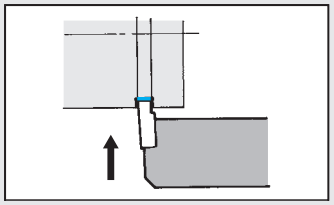


●Right-Hand style shown

NGTA
Clamp-on

Figure-3





●Left-Hand style shown
☆Takes Right-hand insert

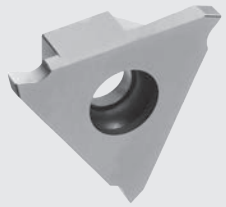
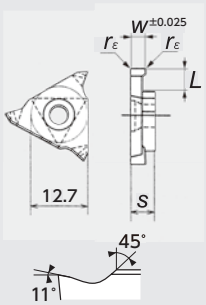
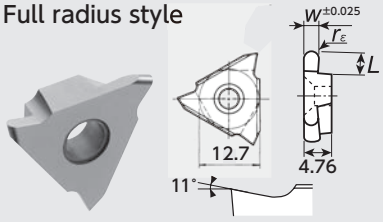
NGT Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	a_r	h_2	Groove Width Range (mm) w	Gage insert	Spare Parts: Clamp	Clamp Bolt	Spring	Wrench
1	5501994	5554241	NGTN$^{R}_{L}$161643-20	●	●	16	16	78	16	16	20	4.5	9	2.00~3.49	GTMA43 GTMT43 **H27**	CPR/L5S	AOS-5*25	ASG-5	LW-2.5
	5534136	5222112	161643-35	●	●									3.50~5.50					
2	5239900	5239843	NGTB$^{R}_{L}$161643-00S	●	●	16	16	100	16	20	25	3.0	9	1.00~2.49	GTMA43 GTMT43 **H27**	CPR/L5	AOS-5*25	ASG-5	LW-2.5
	5949615	5210901	161643-20S	●	●							4.5		2.00~3.49					
	5806096	5222021	161643-35S	●	●									3.50~5.50					
	5239850	5239868	202043-00S	●	●	20	20	125	20	25		3.0	5	1.00~2.49	GTMA43 GTMT43 **H27**	CPR/L6	AOS-6*30	ASG-6	LW-3
	5550041	5553367	202043-20S	●	●							4.5		2.00~3.49					
	5553375	5222039	202043-35S	●	●									3.50~5.50					
	5239876	5239892	252543-00S	●	●	25	25	150	25	30		3.5	0	1.00~2.49					
	5550058	5550066	252543-20S	●	●							5.5		2.00~3.49					
	5550074	5550082	252543-35S	●	●									3.50~5.50					
	5553433	5553441	322543-20S	●	●	32		170	32					2.00~3.49					
	5222013	5222047	322543-35S	●	●									3.50~5.50					
3		5004155	NGTA$^{R}_{L}$161643-00S		●	16	16	100	16	23	—	3.0	4	1.00~2.49 ※1	GTMA43 GTMT43 **H27**	CPR/L5S※	AOS-5*20	ASG-5	LW-2.5
		5884903	202043-00S		●	20	20	125	20	27	—	3.0	—			CPR/L6※	AOS-6*30	ASG-6	LW-3

※1 Would be changed by insert
※Left-Hand clamp with should be used with right-hand holder
Right-Hand clamp with should be used with left-hand holder

GTT/NGT Series - Inserts

● GTMT43/GTMA43

Shape	Item Number	Dimensions (mm)					PVD Coated Carbide							
							QM3				DM4			
		w	L	r_ε	s	Max Depth of cut	R	Stock	L	Stock	R	Stock	L	Stock
  ●Right-Hand style shown	GTMT43145R/L	1.45	3.5	0.2	4.76	3.0	5238076	●	5237912	●	5846852	●	5846860	●
	150R/L	1.50					5238084	●	5237920	●	5846837	●	5846845	●
	175R/L	1.75					5238092	●	5237938	●	5846811	●	5846829	●
	185R/L	1.85					5238100	●	5237946	●	5846795	●	5846803	●
	200R/L	2.00					5238118	●	5237953	●	5846779	●	5846787	●
	230R/L	2.30					5238126	●	5237961	●	5846753	●	5846761	●
	250R/L	2.50	5.5	0.3		4.3	5238134	●			5846746	●		
	265R/L	2.65					5238142	●			5846910	●		
	280R/L	2.80					5238159	●	5237904	●	5846902	●	5846738	●
	300R/L	3.00					5238167	●	5237987	●	5846894	●	5846720	●
	330R/L	3.30					5238175	●	5237995	●				
	350R/L	3.50					5238183	●	5238001	●	5846704	●	5846712	●
	400R/L	4.00		0.4			5238191	●	5238019	●	5846688	●	5846696	●
	430R/L	4.30												
	450R/L	4.50					5238233	●	5238035	●	5846639	●	5846670	●
	500R/L	5.00			5.76		5238241	●	5238043	●	5846613	●	5846621	●
	550R/L	5.50					5238258	●	5238050	●	5846597	●	5846605	●
Full radius style  ●Right-Hand style shown	GTMA43200R/L10R	2.00	3.5	1.0	—	3.0	5437918	●						
	300R/L15R	3.00	5.5	1.5		4.5	5437926	●						
	400R/L20R	4.00		2.0			5437934	●						

GTW (SCRUM DUO) Series

GTWP

Side Turning Capable
For Swiss Machine

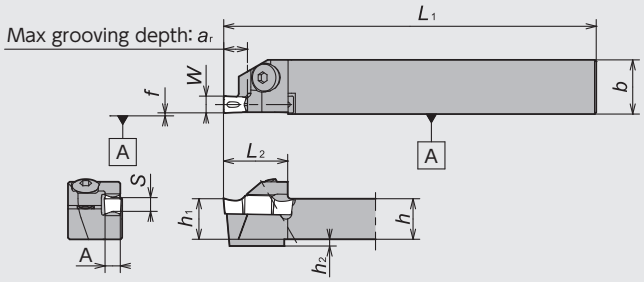
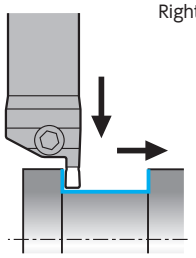


Figure-1



●Right-Hand style shown

GTWP

Side Turning Capable
For Mono-shank style

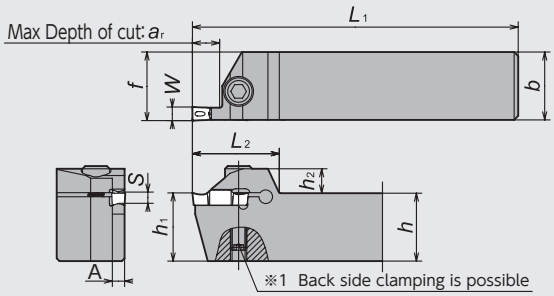
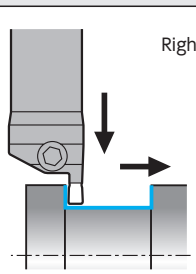


Figure-2



Recommended tightening torque 7.0[N・m]
●Right-Hand style shown

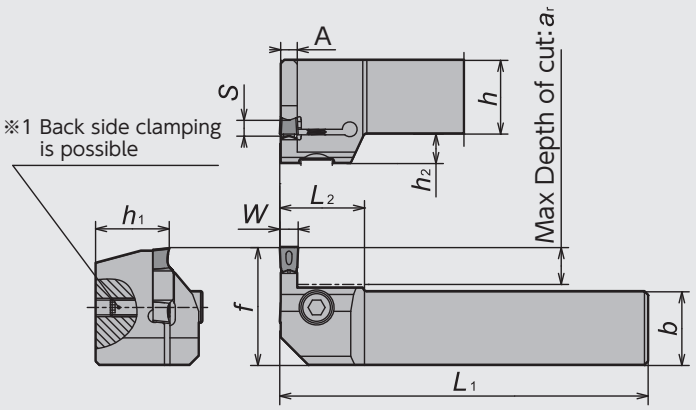
GTW Series - Toolholders

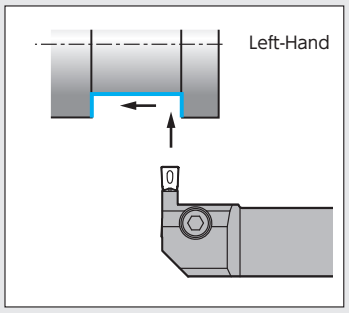
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Groove Width (mm) w	Max Depth of cut a_r	Dimensions (mm) h	b	h_1	h_2	f	L_1	L_2	A	Seat Size S	Gage insert	Spare Parts Clamp Bolt	Spare Parts Wrench	Spare Parts Wrench ※1
1	5875125		GTWP□1016-3D07	●		3	7	10	16	12	2	0.3	120	19	2.6	D	GWP○300	A0B-5*14	LW-3S	—
	5849054	5852280	1216-3D07	●	●			12			0			19.5				A0B-5*16		
	5849070	5852306	1616-3D09	●	●		9	16		16				22						
	5875133		1016-4E07	●		4	7	10		12	2			19	3.5	E	GWP○400	A0B-5*14		
	5849088	5852314	1216-4E07	●	●			12			0			19.5				A0B-5*16		
	5849096	5852322	1616-4E09	●	●		9	16		16				22						
	5875141		1016-5F07	●		5	7	10		12	2			19	4.5	F	GWP○500	A0B-5*14		
	5849104	5852355	1216-5F07	●	●			12			0			19.5				A0B-5*16		
	5849112	5852371	1616-5F09	●	●		9	16		16				22						
	5893565		1020-6G07	●		6	7	10	20	10	2			22	5.3	G	GWP○600	A0B-5*14		
	5893573		1220-6G07	●			7	12	20	12	0			22.5				A0B-5*16		
	5893581	5893599	1620-6G09	●	●		9	16	20	16				25						
2	5849120	5852397	GTWP□2020K-3D10	●	●	3	10	20	20	20	8	20.2	125	29	2.6	D	GWP○300	CS0520W	LW-4	LW-2.5
	5849138	5852405	2525M-3D10	●	●			25	25	25	9	25.2	150	32				CS0625W	LW-5	LW-3
	5849146	5852421	2020K-3D20	●	●		20	20	20	20	8	20.2	125	41				CS0520W	LW-4	LW-2.5
	5849153	5852439	2525M-3D20	●	●			25	25	25	9	25.2	150	44				CS0625W	LW-5	LW-3
	5849161	5852447	2020K-4E10	●	●	4	10	20	20	20	8	20.3	125	29	3.5	E	GWP○400	CS0520W	LW-4	LW-2.5
	5849179	5852454	2525M-4E10	●	●			25	25	25	9	25.3	150	32				CS0625W	LW-5	LW-3
	5849187	5852470	2020K-4E20	●	●		20	20	20	20	8	20.3	125	41				CS0520W	LW-4	LW-2.5
	5849195	5852488	2525M-4E20	●	●			25	25	25	9	25.3	150	44				CS0625W	LW-5	LW-3
	5849203	5852496	2020K-5F10	●	●	5	10	20	20	20	8	20.3	125	29	4.5	F	GWP○500	CS0520W	LW-4	LW-2.5
	5849211	5852512	2525M-5F10	●	●			25	25	25	9	25.3	150	32				CS0625W	LW-5	LW-3
	5849229	5852520	2020K-5F20	●	●		20	20	20	20	8	20.3	125	41				CS0520W	LW-4	LW-2.5
	5849237	5852538	2525M-5F20	●	●			25	25	25	9	25.3	150	44				CS0625W	LW-5	LW-3
	5849245	5852546	2020K-6G12	●	●	6	12	20	20	20	8	20.35	125	34	5.3	G	GWP○600	CS0520W	LW-4	LW-2.5
	5849252	5852553	2525M-6G12	●	●			25	25	25	9	25.35	150	37				CS0625W	LW-5	LW-3
	5849260	5852561	2020K-6G25	●	●		25	20	20	20	8	20.35	125	49				CS0520W	LW-4	LW-2.5
	5849278	5852587	2525M-6G25	●	●			25	25	25	9	25.35	150	52				CS0625W	LW-5	LW-3

※1 Back side clamping wrench is not included
※Do not tighten clamp screw without installing insert as it may damage the insert pocket.

GKW (SCRUM DUO) Series

GKWP





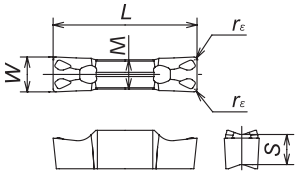
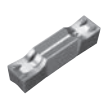
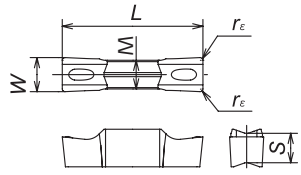
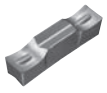
Recommended tightening torque 7.0[N・m]
●Left-Hand style shown

GKW Series - Toolholders

Code No. R	Code No. L	Item Number	Stock R	Stock L	Groove Width (mm) w	Max Depth of cut ar	Dimensions (mm) h	b	h1	h2	f	L1	L2	A	Seat Size S	Gage insert	Spare Parts Clamp Bolt	Spare Parts Wrench	Spare Parts Wrench ※1
	5893607	GKWP□2020K-3D10		●	3	10	20	20	20	8	32	125	23	2.6	D	GWP○300	CS0520W	LW-4	LW-2.5
	5893615	2020K-4E10		●	4									3.5	E	GWP○400			
	5893623	2020K-5F10		●	5									4.5	F	GWP○500			
	5893631	2020K-6G12		●	6	12					34			5.3	G	GWP○600			

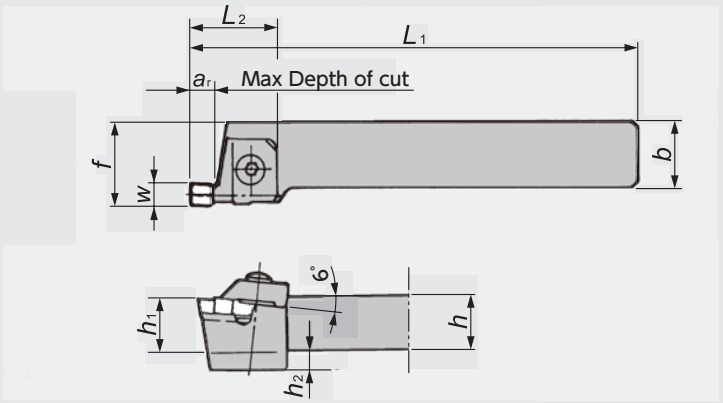
※1 Back side clamping wrench is not included
※Do not tighten clamp screw without installing insert as it may damage the insert pocket.

GTW/GKW Series - Inserts

Shape		Item Number	Dimensions (mm) W Groove Width	W Tolerance	rε	M	L	Seat Size S	PVD Coated Carbide DM4	Stock
	GW	GWPG300N02D-GW	3.0	±0.025	0.2	2.5	20.6	D	5848023	●
		300N04D-GW			0.4				5848031	●
		GWPG400N02E-GW	4.0		0.2	3.4		E	5848064	●
		400N04E-GW			0.4				5848072	●
		400N08E-GW			0.8				5852868	●
		GWPG500N02F-GW	5.0		0.2	4.3		F	5848106	●
		500N04F-GW			0.4				5848114	●
		500N08F-GW			0.8				5852876	●
		GWPG600N02G-GW	6.0		0.2	5.2	25.6	G	5848148	●
		600N04G-GW			0.4				5848155	●
		600N08G-GW			0.8				5852900	●
GWPG: Outside ground GWPM: Full-molded ●Excellent chip control ●Best for side turning	GW 	GWPM300N04D-GW	3.0	±0.05	0.4	2.5	20.6	D	5848171	●
		400N04E-GW	4.0			3.4		E	5848197	●
		500N04F-GW	5.0			4.3		F	5848213	●
		600N04G-GW	6.0			5.2	25.6	G	5848239	●
	GV 	GWPG300N02D-GV	3.0	±0.025	0.2	2.5	20.6	D	5848262	●
		300N04D-GV			0.4				5848270	●
		GWPG400N02E-GV	4.0		0.2	3.4		E	5848353	●
		400N04E-GV			0.4				5848361	●
		GWPG500N02F-GV	5.0		0.2	4.3		F	5848395	●
		500N04F-GV			0.4				5848403	●
●Less tool pressure design		GWPG600N02G-GV	6.0		0.2	5.2	25.6	G	5848437	●
		600N04G-GV			0.4				5848445	●

GTV/GKV Series

GTV



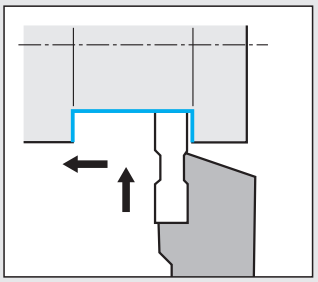
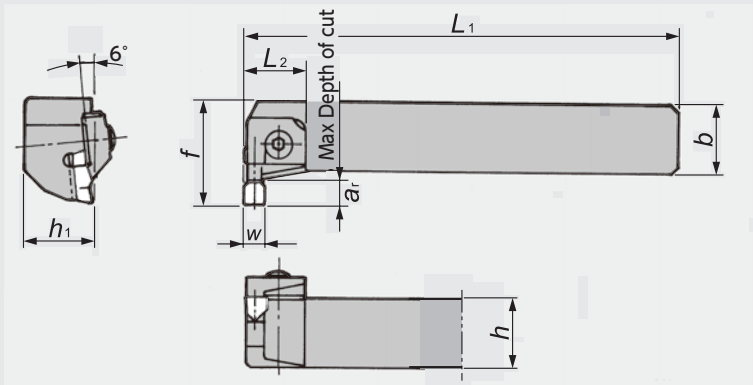


Figure-1

●Right-Hand style shown

GKV



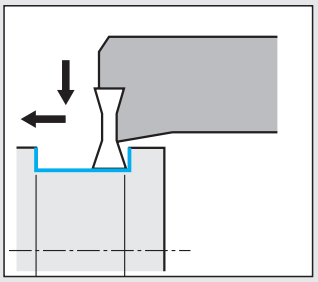


Figure-2

●Right-Hand style shown

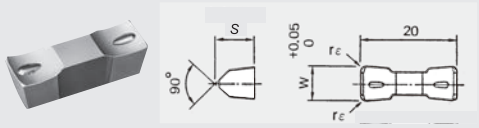
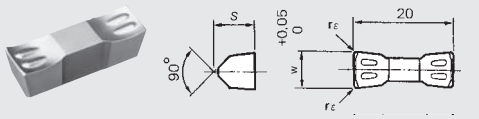
GTV/GKV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L1	h1	f	L2	ar	h2	Groove Width Range (mm) w	Gage insert	Clamp	Clamp Bolt	Spring	Wrench
1	5765920		GTV R/L16-3N	●		16	16	100	16	20	25	11	9	3.00 ~ 3.50	GEV300N(04) GEV350N(04) **H31**	CVR/L3SN	AOB-5C	ASG-5	LW-3
	5778980		**20-3N**	●		20	20	125	20	25	32		0			CVR/L3N	AOB-6C	ASG-6	LW-4
	5801667	5801675	**25-3N**	●	●	25	25	150	25	30	32								
	5657739	5657747	**16-4N**	●	●	16	16	100	16	20	25		9	4.00 ~ 5.90	GEV **H31** GTV GVGN **H31**	CVR/L4SN	AOB-5C	ASG-5	LW-3
	5657754	5657762	**20-4N**	●	●	20	20	125	20	25	32					CVR/L4N	AOB-6C	ASG-6	LW-4
	5657770	5657788	**25-4N**	●	●	25	25	150	25	30	32								
	5657796	5657804	**20-6**	●	●	20	20	125	20	25	32		0	6.00 ~ 7.90		CVR/L6			
	5609193	5611397	**25-6**	●	●	25	25	150	25	30	32								
	5657812		**20-8**	●		20	20	125	20	25	32			8.00 ~ 9.00		CVR/L8			
	5657697	5657705	**25-8**	●	●	25	25	150	25	30	32								
2	5657820	5657838	GKV R/L20-4N	●	●	20	20	125	20	33	32	11	—	4.00 ~ 5.90		CVR/L4N ※	AOB-6C	ASG-6	LW-4
	5657846	5657853	**25-4N**	●	●	25	25	150	25	38	32								
	5657861		**20-6**	●		20	20	125	20	33	32			6.00 ~ 7.90		CVR/L6 ※			
	5657713	5657721	**25-6**	●	●	25	25	150	25	38	32								
			20-8			20	20	125	20	33	32			8.00 ~ 9.00		CVR/L8 ※			
			25-8			25	25	150	25	38	32								

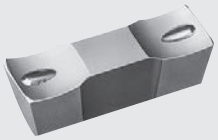
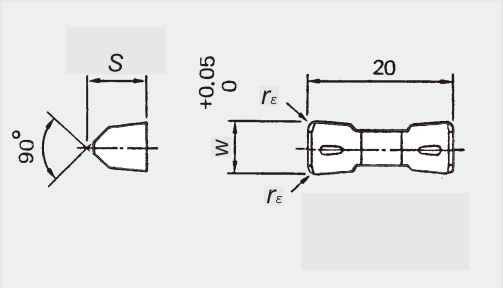
※Left-Hand clamp with should be used with right-hand holder
Right-Hand clamp with should be used with left-hand holder

GTV/GKV Series - Inserts

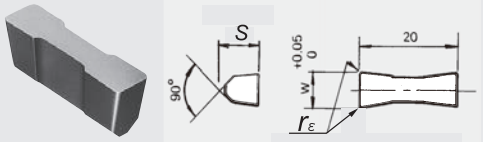
GTV

Shape	Item Number	Dimensions (mm)			PVD Coated Carbide	
		w	S	r_ε	QM3	Stock
	GTV400N	4.0	8.5	0.15	5027610	●
	400N04			0.4	5046727	●
	GTV600N	6.0	8.5	0.15	5027602	●
	600N04			0.4	5046735	●

GEV

Shape	Item Number	Dimensions (mm)			PVD Coated Carbide	
		w	S	r_ε	QM3	Stock
 	GEV300N	3.0	5.2	0.2	5027586	●
	300N04			0.4	5048392	●
	GEV350N04	3.5		0.4	5053616	●
	GEV400N	4.0	8.5	0.2	5046818	●
	400N04			0.4	5035233	●
	GEV450N04	4.5		0.4	5227517	●
	GEV500N	5.0		0.2	5046800	●
	500N04			0.4	5035225	●
	GEV550N04	5.5		0.4	5255385	●
	GEV600N	6.0		0.2	5082961	●
	600N04			0.4	5042189	●
	GEV650N04	6.5		0.4	5064191	●
	GEV700N04	7.0		0.4	5037080	●
	GEV750N04	7.5		0.4	5255393	●
	GEV800N04	8.0		0.4	5255401	●

GVGN

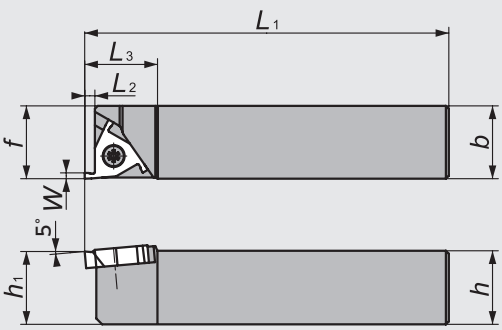
Shape	Item Number	Dimensions (mm)			Ceramics	
		w	S	r_ε	HC2	Stock
 without chipbreaker	GVGN20400N	4.0	8.5	0.2		
	20500N	5.0				
	20600N	6.0				
	20700N	7.0				
	20800N	8.0				
	20900N	9.0				

※The ceramics grade inserts are manufactured on a production-to-order basis

TWG Series

TWG

Side Turning Capable
Up to 1.5mm doc.



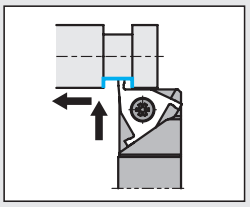
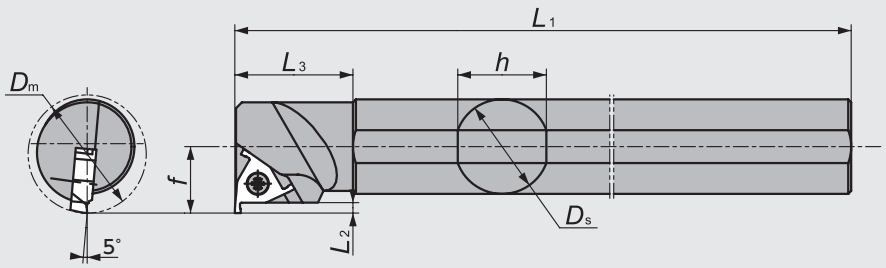


Figure-1

●Right-Hand style shown

TWG



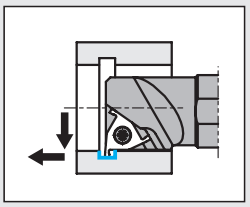


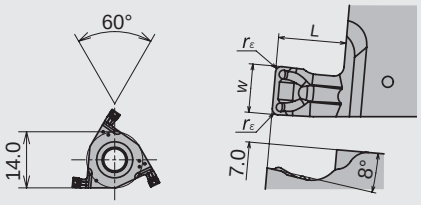
Figure-2

●Right-Hand style shown
☆Takes Left-hand insert

TWG Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	D_s	D_m	b	L_1	h_1	f	L_2	L_3	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5794649		TWGR/L2012X	★		12	–	–	20	120	12	20	3.5	25	TWG	FSS25-5.0*10	RLR-20S
	5859350		2016X	★		16					16					FSS10-5.0*14	LLR-20S
	5714332	5720511	2020K	●	●	20				125	20					FSS10-5.0*14	RLR-20S
	5714233	5720503	2525K	●	●	25			25		25	25					
2	5722541		S32S-TWGR38	●		30	32	38	–	250	40	20.5	3.5	40	TWG	FSS10-5.0*14	RLR-20S
	5722533		S40T-TWGR46	●		38	40	46		300		24.5					

TWG Series - Inserts

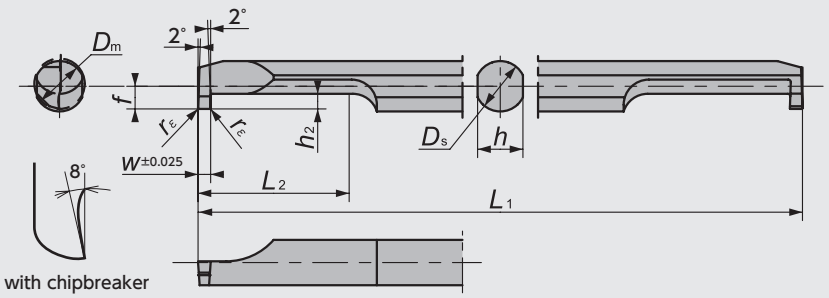
Shape	Item Number	w	L	r_ε	Max Depth of cut	PVD Coated Carbide TM1 R	Stock	L	Stock
 ●Right-Hand style shown	TWG20R/L005	2.0	(3.5)	0.05	3.0	5714340	●	5720040	●
	020			0.2		5714357	●	5720057	●
	TWG25R/L010	2.5		0.1		5714365	●	5720065	●
	030			0.3		5714373	●	5720073	●
	TWG30R/L010	3.0		0.1		5714381	●	5720081	●
	030			0.3		5714399	●	5720099	●

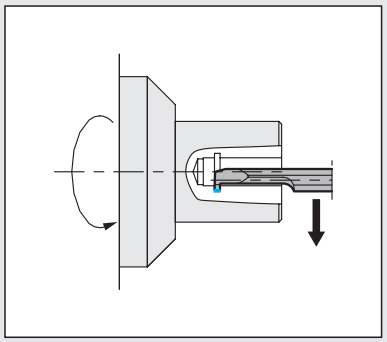
MEMO

SBG Series (ID Grooving)

SBG

Minimum Bore Diameter 3.0mm





Type	Item Number	Min Bore Dia. (mm) D_m	Dimensions (mm)								PVD Coated Carbide	
			w	D_s	L_1	L_2	f	h	h_2	r_ε	ZM3	Stock
Short type	SBG030050RB-S	3.0	0.50	3.0	50	4.5	1.3	2.7	0.8	0.05	5815782	●
	030075RB-S		0.75								5815808	●
	030100RB-S		1.00								5815816	●
	030150RB-S		1.50								5815824	●
	SBG040050RB-S	4.0	0.50	4.0	60	6	1.8	3.6	1.0	0.05	5815832	●
	040075RB-S		0.75								5815840	●
	040100RB-S		1.00								5815857	●
	040150RB-S		1.50								5815865	●
	SBG050050RB-S	5.0	0.50	5.0	70	7.5	2.3	4.5	1.2	0.05	5815881	●
	050100RB-S		1.00								5815899	●
	050150RB-S		1.50								5815907	●
	050200RB-S		2.00								5815915	●
	SBG060100RB-S	6.0	1.00	6.0	80	7.5	2.8	5.4	1.8	0.05	5815931	●
	060150RB-S		1.50								5815949	●
	060200RB-S		2.00								5815956	●
	SBG080100RB-S	8.0	1.00	8.0		8.5	3.8	7.3	2.2	0.05	5815964	●
	080150RB-S		1.50								5815980	●
	080200RB-S		2.00								5815998	●
Regular type	SBG030050RB	3.0	0.50	3.0	50	9	1.3	2.7	0.8	0.05	5652821	●
	030075RB		0.75								5652839	●
	030100RB		1.00								5652847	●
	SBG040050RB	4.0	0.50	4.0	60	12	1.8	3.6	1.0	0.05	5652797	●
	040075RB		0.75								5652805	●
	040100RB		1.00								5652813	●
	SBG050050RB	5.0	0.50	5.0	70	20	2.3	4.5	1.2	0.05	5652854	●
	050100RB		1.00								5652862	●
	050150RB		1.50								5652870	●
	SBG060100RB	6.0	1.00	6.0	80	20	2.8	5.4	1.8	0.05	5704846	●
	060150RB		1.50								5704838	●
	060200RB		2.00								5704820	●
	SBG080100RB	8.0	1.00	8.0		20	3.8	7.3	2.2	0.05	5704895	●
	080150RB		1.50								5704903	●
	080200RB		2.00								5704911	●

Sleeves ⇒K8

※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

BG Series (ID Grooving)

S-BG (Mogul Bar)

Minimum Bore Diameter 10.0mm

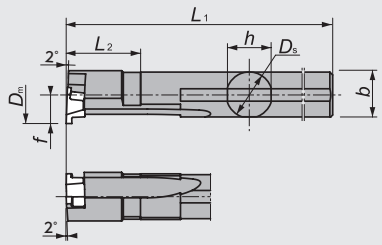
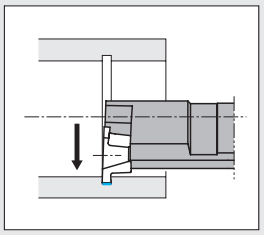


Figure-1



●Right-Hand style shown
☆Takes Left-hand insert

BG

Minimum Bore Diameter 10.0mm

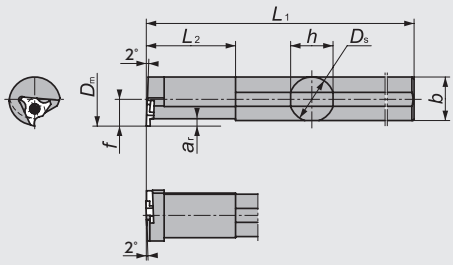
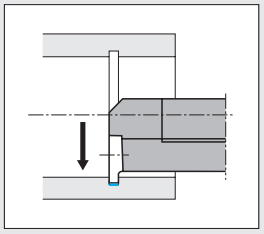


Figure-2

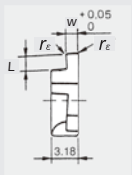
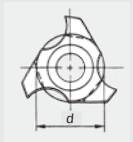


●Right-Hand style shown
☆Takes Left-hand insert

BG Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (mm) D_m	Max Depth of cut a_r	Dimensions (mm) D_s	h	b	L_1	f	L_2	Groove Width Range (mm) w	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5854500		S08H-BG[R/L]10D10	●		10.0	1.0	8	7.7	7.85	120	5.0	20	0.50 ~ 2.00	GTG10	LR-S-2.5*6.8	CLR-15S (A)
	5854518		S10K-BG[R/L]10D12	●		12.0		10	9.6	9.8	120	6.0	25				
2	5711585		BG[R/L]08-00S	●		10.0	1.0	8	7.0	7.5	125	5.0	20	0.50 ~ 2.00	GTG10	LR-S-2.5*6.8	CLR-15S (A)
	5711593		08-10S	●										1.50 ~ 2.00			
	5711601		10-00S	●		12.0	1.0	10	9.0	9.5	150	6.0	25	0.50 ~ 2.00			
	5711619		10-10S	●										1.50 ~ 2.00			
	5711627		12-00S	●		14.0	2.0	12	11.0	11.5	180	7.0	30	1.00 ~ 2.00	GTG14	LR-S-3*7.8	RLR-20S (B)
	5711635		12-12S	●										1.75 ~ 2.00			
	5711643		14-00S	●		16.0	2.0	14	13.0	13.5	180	8.0	35	1.00 ~ 2.00			
	5711650		14-12S	●										1.75 ~ 2.00			
	5536362		16	●		20.0	3.0	16	15.0	15.5	200	10.0	40	1.50 ~ 2.00	GTG20	LR-S-3*7.8	RLR-20S (B)
	5435433		20	●		25.0		20	19.0	19.5	200	12.0	40				

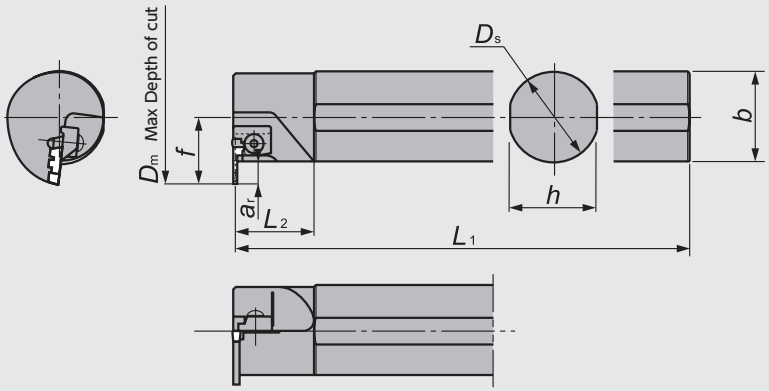
BG Series - Inserts

Shape	Item Number	Dimensions (mm) w	Max Depth of cut	L	r_ε	d_1	PVD Coated Carbide TM4	Stock	ZM3	Stock	QM3	Stock
  ●Left-Hand style shown	GTG10050FL005	0.50	1.0	1.2	0.05	5.56	5853130	●				
	10075FL005	0.75					5853114	●				
	10100FL005	1.00					5853098	●				
	10150FL005	1.50					5853080	●				
	10200FL005	2.00					5853072	●				
	GTG10050FL00	0.50	1.0	1.2	0.05	5.56			5514088	●		
	10065FL00	0.65							5514104	●		
	10075FL00	0.75							5376835	●		
	10100FL00	1.00							5376843	●		
	10150FL00	1.50			0.05				5376850	●		
	10200FL01	2.00			0.1				5357884	●		
	GTG14100FL00	1.00	2.0	2.2	0.05	7.94			5376868	●		
	14150FL00	1.50			0.05				5376876	●		
	14200FL01	2.00			0.1				5376884	●		
	GTG20150FL	1.50	3.0	3.2	0.2	9.525					5396239	●
	20200FL	2.00									5376991	●

GKV Series (ID Grooving)

GKV

Minimum Bore Diameter 30.0mm



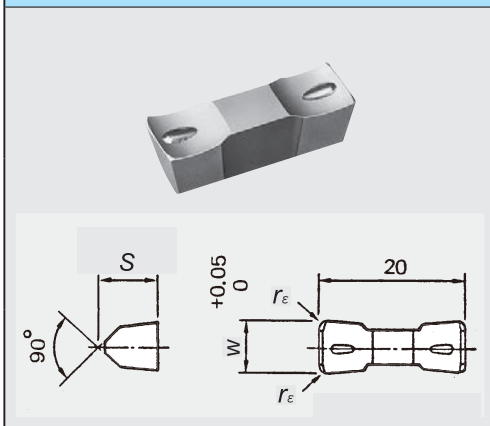
●Right-Hand style shown

GKV Series - Toolholders

Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (mm) D_m	Dimensions (mm) D_s	h	b	L_1	f	L_2	a_r	Groove Width Range (mm) w	Gage insert	Spare Parts: Clamp	Clamp Bolt	Spring	Wrench
5255567		GKV[R/L]3230-3	●		30	32	30	31	200	21	50	5.5	3.00 ~ 3.50	GEV	CVL/R3SN ※	AOB-5C	ASG-5	LW-3
5255559		3240-3	●		40	32	30	31	250	23	50	7.5						
5255542		4055-3	●		55	40	38	39	300	29	35	9.5						

※Left-Hand clamp with should be used with right-hand holder
Right-Hand clamp with should be used with left-hand holder

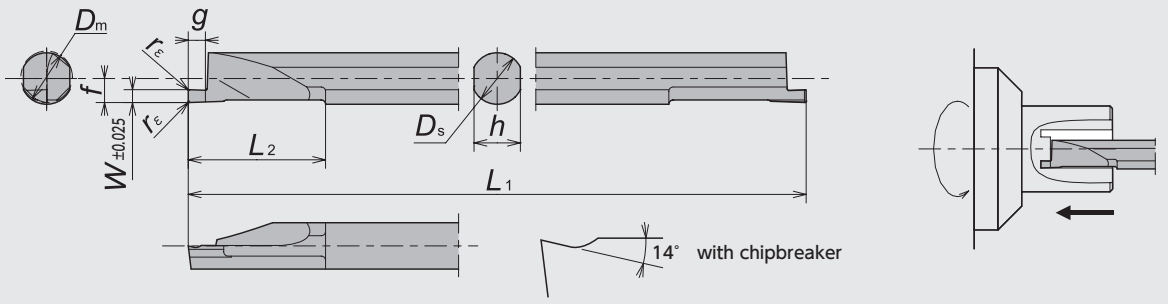
GKV Series - Inserts

Shape	Item Number	Dimensions (mm) w	S	r_ε	PVD Coated Carbide QM3	Stock
	**GEV300N**	3.0	5.2	0.2	5027586	●
	300N04			0.4	5048392	●
	GEV350N04	3.5		0.4	5053616	●

SFG Series (ID Face Grooving)

SFG

Minimum Bore Diameter 6.0mm



Item Number	Min Bore Dia. (mm) Dm	Dimensions (mm)								PVD Coated Carbide	
		W	Ds	L1	L2	g	f	h	rε	TM4	Stock
SFG060R100B	6.0	1.00	6.0	80	16.0	1.5	2.8	5.4	0.05	5813837	●
060R150B		1.50				2.0				5813845	●
060R200B		2.00				3.0				5813852	●
SFG080R100B	8.0	1.00	8.0		16.0	1.5	3.8	7.3		5813878	●
080R150B		1.50				2.0				5813886	●
080R200B		2.00				3.0				5813894	●
080R300B		3.00				3.0				5813902	●

Sleeves ⇒K8

※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

FGV Series

CH-FGV

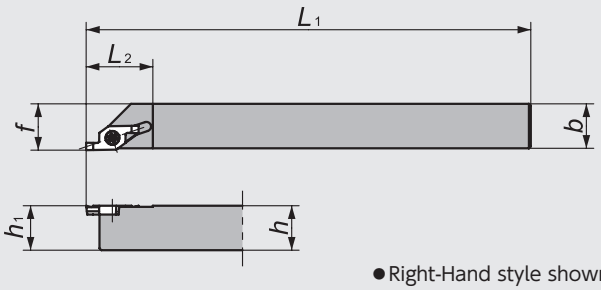
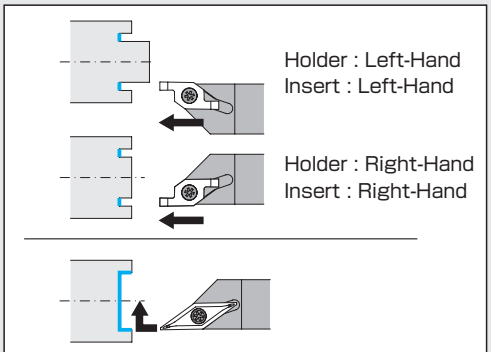


Figure-1

●Right-Hand style shown



Only right hand holder is available when using FBV Insert

FGV

For Gang-style machine

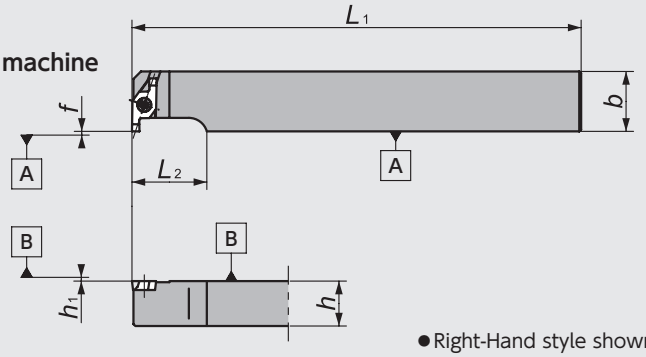
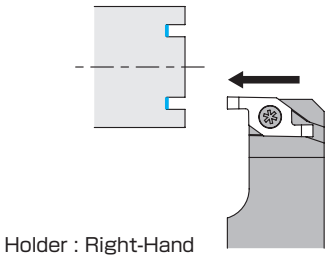


Figure-2

●Right-Hand style shown
☆Takes Left-hand insert



DS-FGV

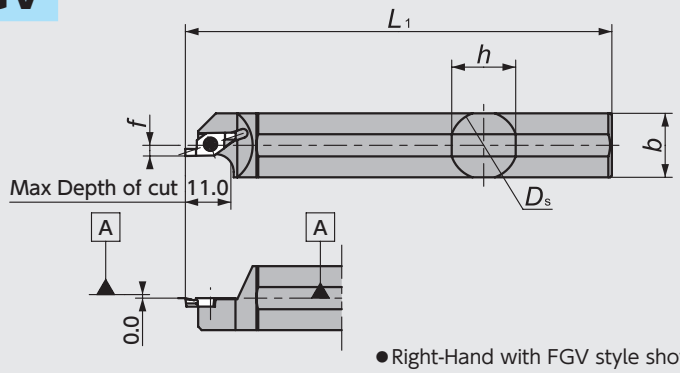
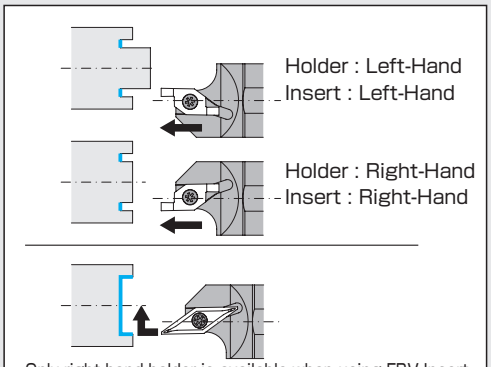


Figure-3

●Right-Hand with FGV style shown



Only right hand holder is available when using FBV Insert

FGV Series - Toolholders

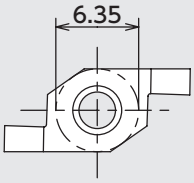
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Ds	h	b	L1	h1	f	L2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5691068	5691076	**CH-FGVR/L1010**	●	●	—	10	10	120	10	10.5	18	FGV FBV **H39**	LRIS-2.5×7	CLR-15S
	5691084	5691100	**1212**	●	●	—	12	12		12	12.5				
	5691118	5691134	**1616**	●	●	—	16	16		16	16.5				
2	5691035	-	**FGVR/L1016**	●	—	—	10	16	120	0.0	0.0	20	FGV□□□L **H39**	LRIS-2.5×7	CLR-15S
	5691043	-	**1216**	●	—	—	12								
	5691050	-	**1616**	●	—	—	16								
3	5841861	5772439	**DS-FGVR/L16-012**※	●	●	16	15	15	80	—	3.0	—	FGV FBV **H39**	LRIS-2.5×7	CLR-15S
	5690938	5690946	**19**	●	●	19.05	18	18	120						
	5690953	5690961	**20**	●	●	20	19	19							
	5690979	5690987	**22**※	●	●	22	21	21							
	5950381	5950373	**22M**※	●	●	22	21	21	150						
	5690995	5691001	**25**	●	●	25.4	24.5	24.5	120						
	5918958	5952593	**25-MET**	●	●	25	24	24	150						

※Compatible with 16mm / 22mm round shank DS Series holders

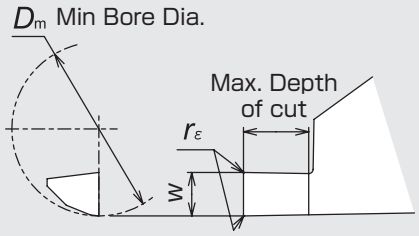
DS-Sleeve ⇒G103

FGV Series - Inserts

FGV



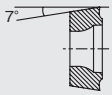
Thickness : 2.38

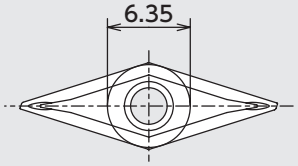


●Right-Hand style shown

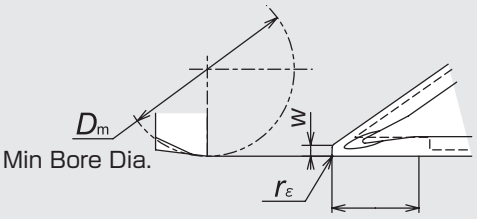
Shape	Item Number	Min Bore Dia. (mm) Dm	Dimensions (mm) w	Dimensions (mm) rε	Dimensions (mm) Max Depth of cut	PVD Coated Carbide TM4	PVD Coated Carbide Stock
Right-Hand style shown	FGV100RB00D6	6.0	1.0	0.00	1.5	5704580	●
	100RB05D6			0.05		5704606	●
	FGV150RB00D6		1.5	0.00	2.0	5704614	●
	150RB05D6			0.05		5704622	●
	FGV200RB00D6		2.0	0.00	3.0	5704630	●
	200RB05D6			0.05		5704648	●
Left-Hand style shown	FGV100LB00D6	6.0	1.0	0.00	1.5	5704572	●
	100LB05D6			0.05		5704564	●
	FGV150LB00D6		1.5	0.00	2.0	5704556	●
	150LB05D6			0.05		5704549	●
	FGV200LB00D6		2.0	0.00	3.0	5704531	●
	200LB05D6			0.05		5704523	●

FBV





Thickness : 2.38

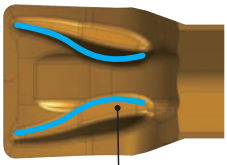


●Right-Hand style shown

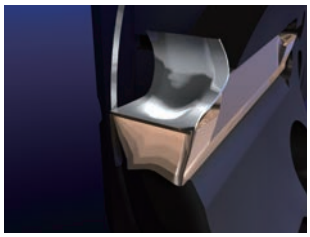
Shape	Item Number	Min Bore Dia. (mm) Dm	Dimensions (mm) w	Dimensions (mm) rε	Dimensions (mm) Max Depth of cut	PVD Coated Carbide TM4	PVD Coated Carbide Stock
Right-Hand style shown	FBV40R05D8AM3	8.0	0.5	0.05	4.0	5697453	●
	40R15D8AM3			0.15		5697461	●

Note : Only CH-FGVR and DS-FGVR can take FBV Right hand Insert.

SCRUM DUO BLADE - Carbide Face Grooving Tool



Unique S-shape design

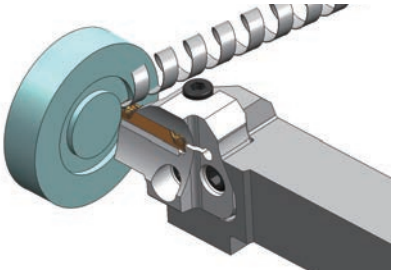


Features

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

Excellent Chip Control

● Grooving

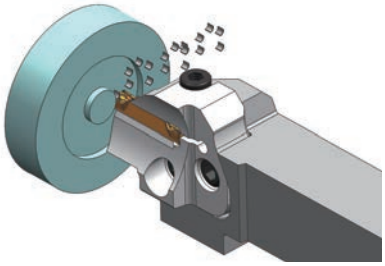


- **Excellent chip control and superior surface finish**
- **Good chip control without a peck cycle**

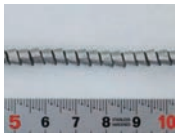
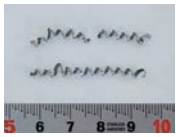
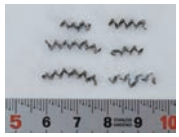
	NTK:GT chipbreaker	Competitor	
Chip			Tangled chips during deep grooving
Surface finish			Scratches inside bottom

Material : SCM415, V_c=150m/min, f =0.1mm/rev ,Φ50diameter ,1.0mm depth,No step feed,WET
Insert : GWPFM500N04-GT DM4 Holder : GBWPFR-5T15-050120

● Side-turning



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

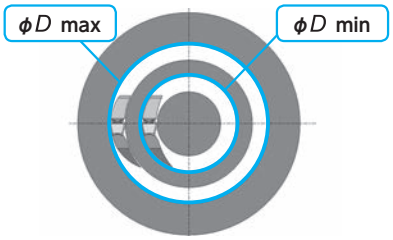
Depth of cut (mm)	feed (mm/rev) 0.05	0.1	0.2
3.0			
1.0			
0.2			

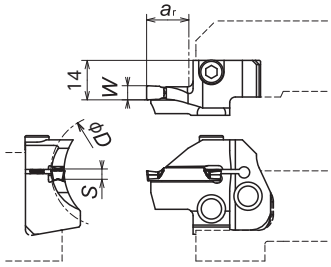
Material : SCM415, V_c=150m/min,WET
Insert : GWPFM500N04-GT DM4 Holder : GBWPFR-5T15-050120

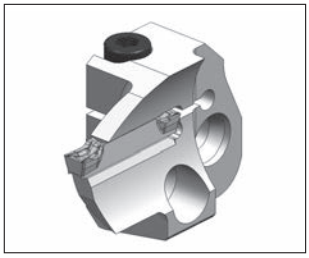
SCRUM DUO BLADE Series

● Blade

GBWPF







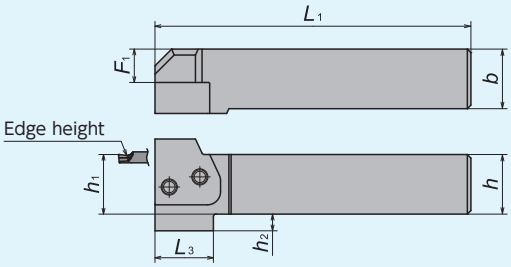
● Right-Hand style shown

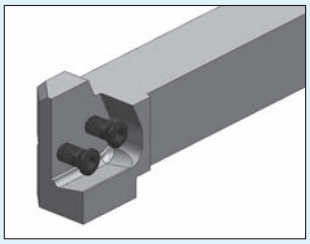
Code No.		Blade Number	Stock		Groove Width W (mm)	Face grooving OD		Max. Grooving depth a_r	Seat Size S	Gage insert	Clamp Bolt
R	L		R	L		ϕD min	ϕD max				
5963335	5963491	**GBWPF□-3T13-029035**	●	●	3	29	35	13	C	GWPFM300	CS0515
5963343	5963509	**-3T13-035045**	●	●		35	45				
5963350	5963517	**-3T15-045060**	●	●		45	60	15			
5963368	5963525	**-3T15-060100**	●	●		60	100				
5963376	5963533	**-3T15-100250**	●	●		100	250				
5963392	5963558	**-4T15-030040**	●	●	4	30	40	15		GWPFM400	
5963426	5963566	**-4T15-040060**	●	●		40	60				
5963434	5963574	**-4T15-060120**	●	●		60	120				
5963442	5963582	**-4T15-120300**	●	●		120	300				
5963707	5963715	**-5T15-030050**	●	●	5	30	50	15		GWPFM500	
5963459	5963608	**-5T15-050120**	●	●		50	120				
5963467	5963616	**-5T15-120999**	●	●		120	∞				
5963475	5963632	**-6T15-035080**	●	●	6	35	80	15		GWPFM600	
5963483	5963640	**-6T15-080999**	●	●		80	∞				

※Do not tighten clamp screw without installing insert as it may damage the insert pocket.

● Toolholders Body (0° Straight style)

GTWP-H



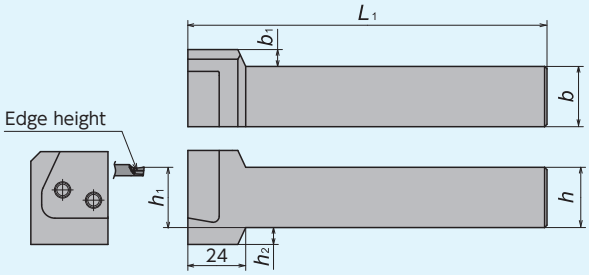


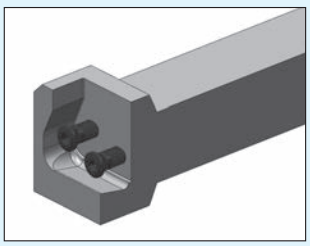
● Right-Hand style shown

Code No.		Holder Number	Stock		Dimensions (mm)							Gage insert	Spare Parts	
R	L		R	L	h	b	h_1	L_1	F_1	h_2	L_3		Clamp Screw	Wrench
5923784	5923792	**GTWP□2020-H**	●	●	20	20	20	107.5	9	8	28.5	GBWPF□	FSI28-6.0＊18	LW-4
5923800	5923818	**□2525-H**	●	●	25	25	25	132.5	14	7	24.5			
5963657	5963673	**□3232-H**	●	●	32	32	32	152.5	21	–	-			

● Toolholders Body (90° L- style)

GKWP-H

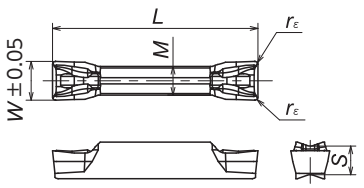




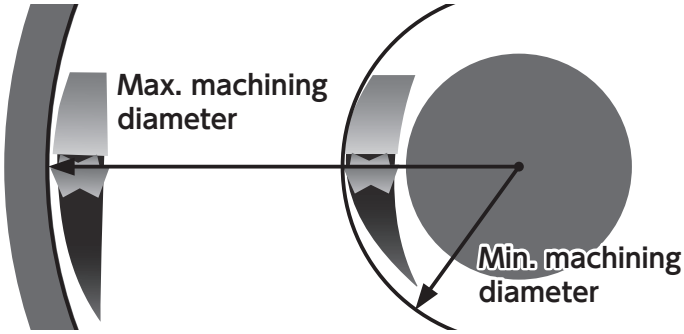
● Right-Hand style shown

Code No.		Holder Number	Stock		Dimensions (mm)						Gage insert	Spare Parts	
R	L		R	L	h	b	h_1	L_1	b_1	h_2		Clamp Screw	Wrench
5923826	5923834	**GKWP□2020-H**	●	●	20	20	20	124	12	12	GBWPF□	FSI28-6.0＊18	LW-4
5923842	5923859	**□2525-H**	●	●	25	25	25	149	7	7			
5963681	5963699	**□3232-H**	●	●	32	32	32	169	–	–			

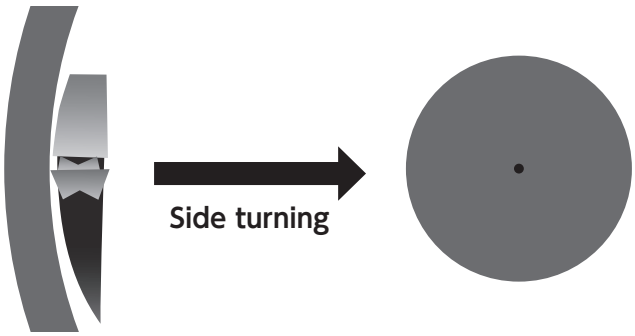
SCRUM DUO BLADE Series - Inserts

Shape	Item Number	Dimensions (mm)				Seat Size S	PVD Coated Carbide	
		W	r_ε (mm)	M (mm)	L (mm)		DM4	Stock
	GWPFM300N02-GT	3.0	0.2	2.2	24.5	C	5963251	●
	GWPFM300N04-GT		0.4				5963269	●
	GWPFM400N04-GT	4.0	0.4	3.2	26.5		5963277	●
	GWPFM400N08-GT		0.8				5963285	●
	GWPFM500N04-GT	5.0	0.4	3.7			5963293	●
	GWPFM500N08-GT		0.8				5963301	●
	GWPFM600N04-GT	6.0	0.4	4.7			5963319	●
	GWPFM600N08-GT		0.8				5963327	●

Guidelines



- Choose a blade so that your first target grooving max. OD is between the max. OD and min. OD of the blade.

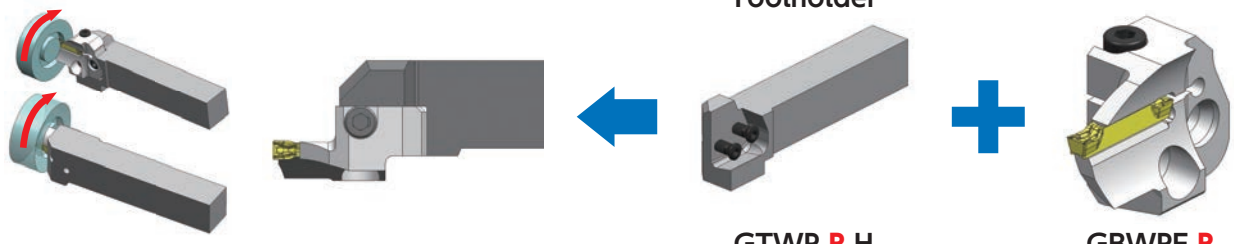


- To make the groove wide, side turn from outside to inside (direction to the center of the work piece)

Combination of toolholder and blade for Face Grooving

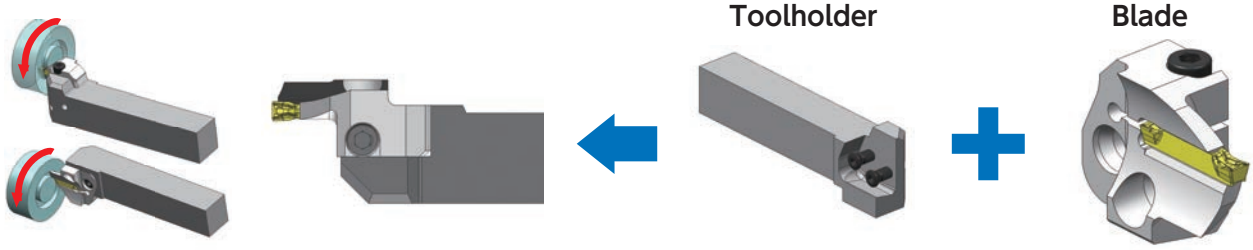
GTWP-H Straight style toolholder

Right-hand system



* Right-hand toolholder takes Right-hand blade.

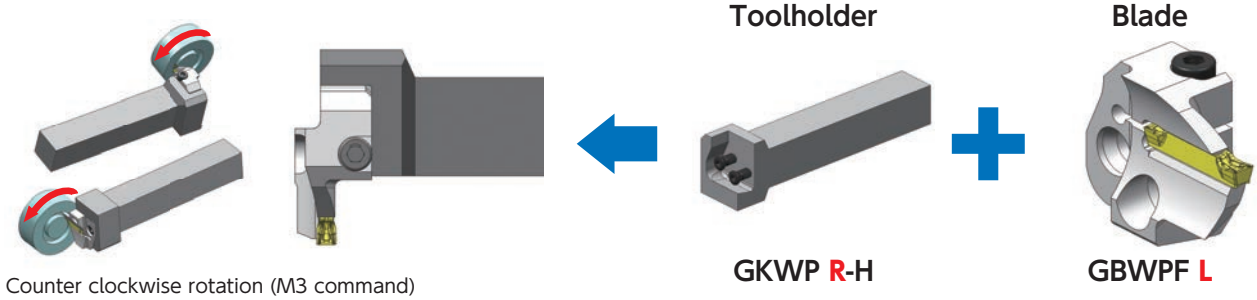
Left-hand system



* Left-hand toolholder takes Left-hand blade.

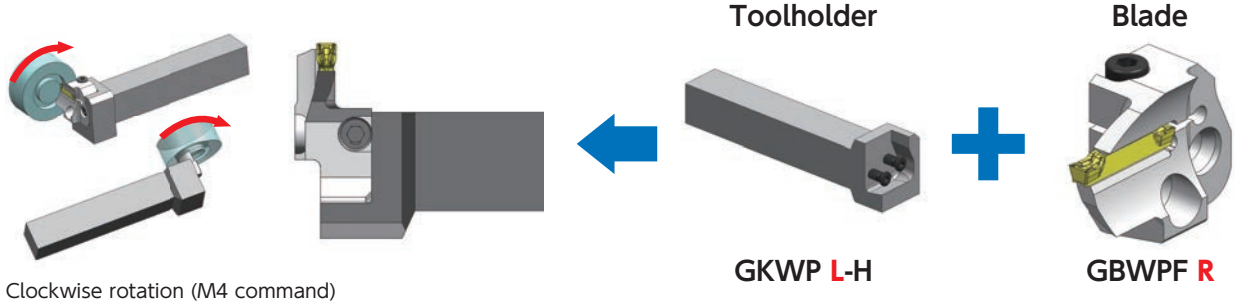
GKWP-H L-style toolholder

Right-hand system



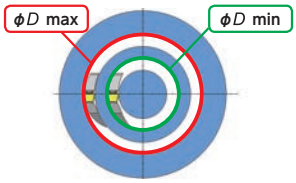
* Right-hand toolholder takes Left-hand blade.

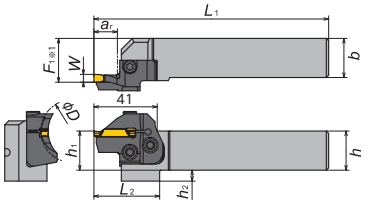
Left-hand system

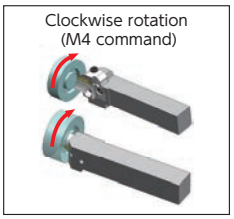


* Left-hand toolholder takes Right-hand blade.

Combination (0° Straight style holder and GBWPFR Blade)





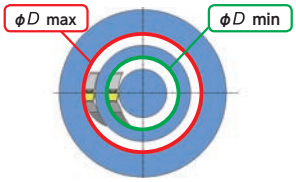


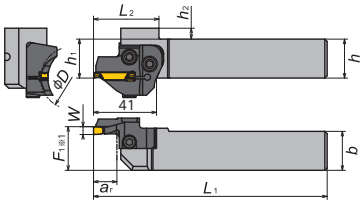
● Right-Hand style shown

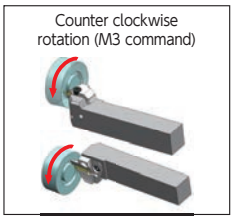
Right-hand toolholder takes Right-hand blade.

Hand	Groove Width W (mm)	Face grooving OD ϕD min (mm)	Face grooving OD ϕD max (mm)	Max.grooving depth a_r (mm)	Holder Number	Blade Number	Dimensions (mm) h	b	L_1	h_1	F_1	L_2	h_2	Gage insert
R	3	29	35	13	GTWPR2020-H	GBWPFR-3T13-029035	20	20	125	20	23	42.5	8	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GTWPR2525-H	-3T13-029035	25	25	150	25	28	38.5	7	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GTWPR3232-H	-3T13-029035	32	32	170	32	35	-	-	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								

Combination (0° Straight style holder and GBWPFL Blade)





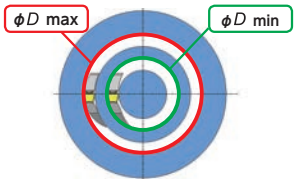


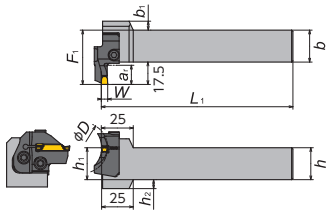
●Left-Hand style shown

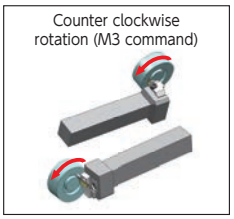
Left-hand toolholder takes Left-hand blade.

Hand	Groove Width W (mm)	Face grooving OD ϕD min (mm)	Face grooving OD ϕD max (mm)	Max.grooving depth a_r (mm)	Holder Number	Blade Number	Dimensions (mm) h	b	L_1	h_1	F_1	L_2	h_2	Gage insert
L	3	29	35	13	GTWPL2020-H	GBWPFL-3T13-029035	20	20	125	20	23	42.5	8	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GTWPL2525-H	-3T13-029035	25	25	150	25	28	38.5	7	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GTWPL3232-H	-3T13-029035	32	32	170	32	35	-	-	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								

Combination (90° L style holder and GBWPFL Blade)





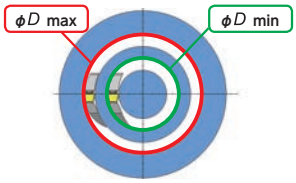


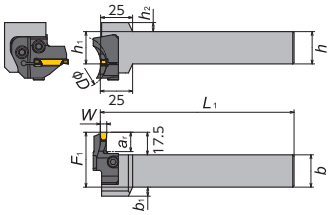
● Right-Hand style shown

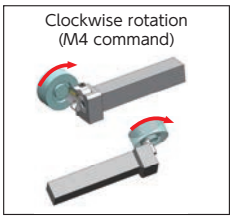
Right-hand toolholder takes Left-hand blade.

Hand	Groove Width *W* (mm)	Face grooving OD		Max.grooving depth a_r (mm)	Holder Number	Blade Number	Dimensions (mm)							Gage insert
		ϕD min (mm)	*ϕD* max (mm)				*h*	*b*	L_1	h_1	F_1	L_2	h_2	
R	3	29	35	13	GKWPR2020-H	GBWPFL-3T13-029035	20	20	125	20	37.5	12	8	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GKWPR2525-H	-3T13-029035	25	25	150	25	42.5	7	7	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GKWPR3232-H	-3T13-029035	32	32	170	32	49.5	-	-	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								

Combination (90° L style holder and GBWPFR Blade)







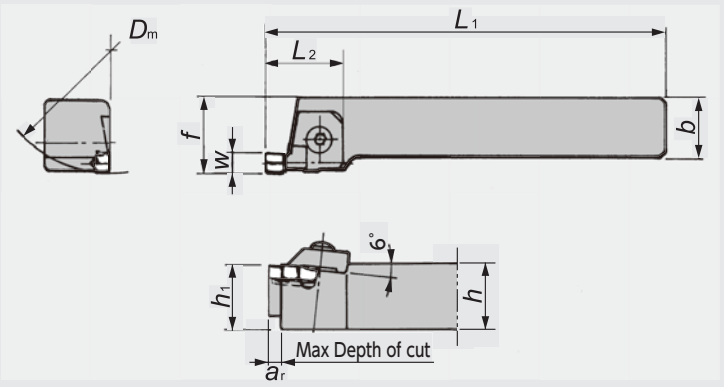
●Left-Hand style shown

Left-hand toolholder takes Right-hand blade.

Hand	Groove Width W (mm)	Face grooving OD ϕD min (mm)	Face grooving OD ϕD max (mm)	Max.grooving depth a_r (mm)	Holder Number	Blade Number	Dimensions (mm) h	b	L_1	h_1	F_1	L_2	h_2	Gage insert
L	3	29	35	13	GKWPL2020-H	GBWPFR-3T13-029035	20	20	125	20	37.5	12	8	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GKWPL2525-H	-3T13-029035	25	25	150	25	42.5	7	7	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								
	3	29	35	13	GKWPL3232-H	-3T13-029035	32	32	170	32	49.5	-	-	GWPFM300
		35	45			-3T13-035045								
		45	60	15		-3T15-045060								
		60	100			-3T15-060100								
		100	250			-3T15-100250								
	4	30	40	15		-4T15-030040								GWPFM400
		40	60			-4T15-040060								
		60	120			-4T15-060120								
		120	300			-4T15-120300								
	5	30	50	15		-5T15-030050								GWPFM500
		50	120			-5T15-050120								
		120	∞			-5T15-120999								
	6	35	80	15		-6T15-035080								GWPFM600
		80	∞			-6T15-080999								

GFV/GSV Series (Face Grooving)

GFV



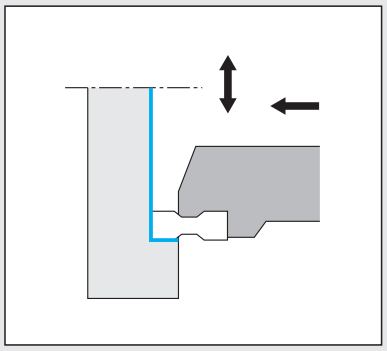
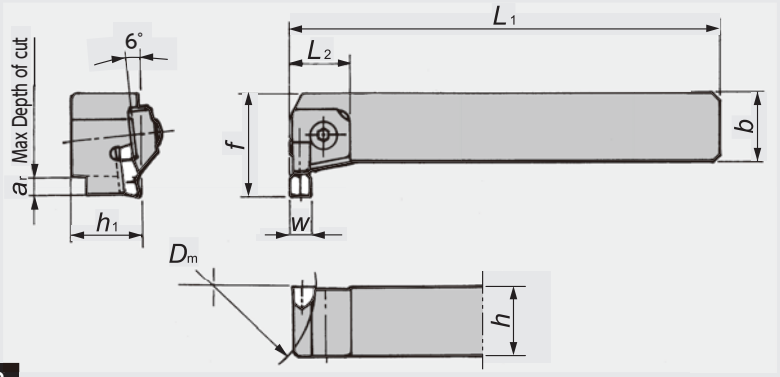


Figure-1

●Right-Hand style shown

GSV



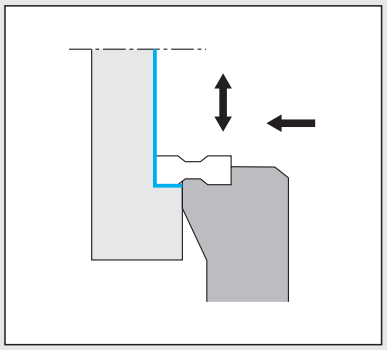


Figure-2

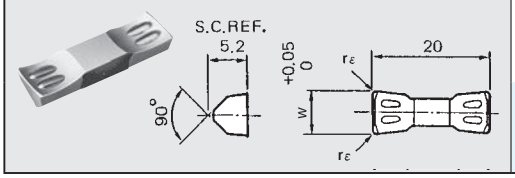
●Right-Hand style shown

GFV/GSV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	L_2	a_r	D_m	Groove Width (mm) w	Gage insert	Spare Parts: Clamp	Clamp Bolt	Spring	Wrench
1	5657887	5657895	GFV R/L 20-6	●	●	20	20	125	20	25	32	6	38	6.0	GFV	CVR/L6	AOB-6C	ASG-6	LW-4
	5655220	5657903	25-6	●	●	25	25	150	25	30									
2	5657911	5657929	GSV R/L 20-6	●	●	20	20	125	20	33	23.5	6	38	6.0	GFV	CVR/L6 ※	AOB-6C	ASG-6	LW-4
	5645965	5657937	25-6	●	●	25	25	150	25	38									

※Left-Hand clamp with should be used with right-hand holder
Right-Hand clamp with should be used with left-hand holder

GFV/GSV Series - Inserts

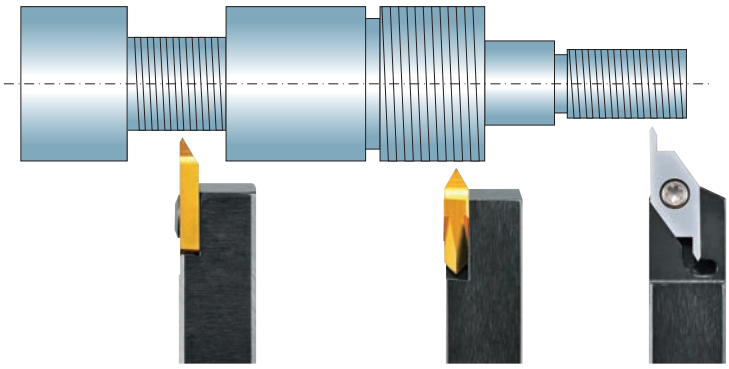
Shape	Item Number	Dimensions (mm) w	Dimensions (mm) r_ε	PVD Coated Carbide QM3	PVD Coated Carbide Stock
	GFV600N	6.0	0.15	5027594	●
	600N04		0.4	5068218	●

I

Threading

- Threading Tools ····· I 2
- Recommended Cutting Conditions ···· I 3
- Tools and Thread Standards ····· I 4
- Tool List ····· I 10
  - CSV series ····· I 10
  - TTPS series ····· I 11
  - TTP series ····· I 12
  - TTMH series ····· I 14
  - SBT series ····· I 16
  - TMN series ····· I 17
  - Thread Whirling ····· I 18

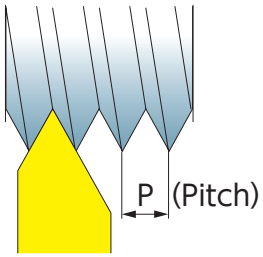
NTK Threading Tools - Product Lines

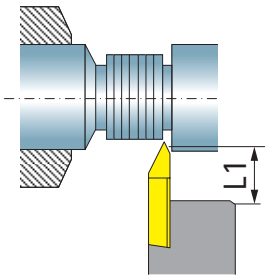


Thread Whirling System

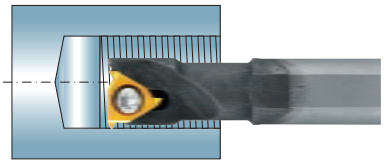
➡ I 18

Insert	CSVT ➡ I 10	TTPS ➡ I 11
Holder	CSV	CTPS
	➡ I 10	➡ I 11
Profile	60°	60°
Pitch	0.2 ~ 0.5mm	0.2 ~ 1.5mm
L1	3.0mm	5.0mm





Insert	TTP ➡ I 13			
Holder	TTP	TTP-OH2	DS-TTP	CH-TTP
	➡ I 12	➡ I 12	➡ I 12	➡ I 12
Profile	60° / 55°			
Pitch	0.2 ~ 2.0mm			
L1	5.5mm			



Insert	TTMH32 ➡ I 15		
Holder	STTN	DS-STT	NTTB
	➡ I 14	➡ I 14	➡ I 14
Profile	60°		
Pitch	0.8 ~ 3.0mm		
L1	4.0mm	3.0mm	4.0mm

Insert	SBT ➡ I 16	TMN ➡ I 17
Holder	NBH	TGC / HN
	➡K8	➡ I 17
Profile	60°	60°
Pitch	0.5 ~ 1.75mm	0.4 ~ 0.75mm
L1	0.6 ~ 1.8mm	0.7 ~ 1.0mm

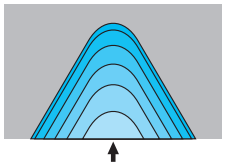
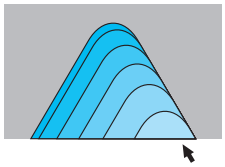
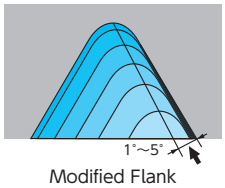
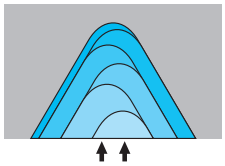
Recommended Cutting Conditions

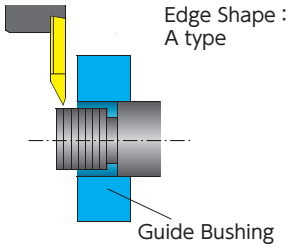
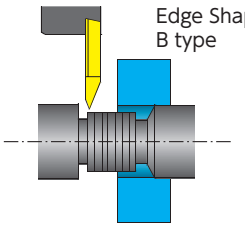
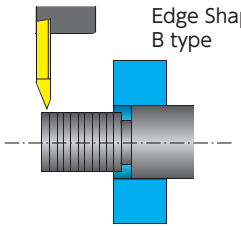
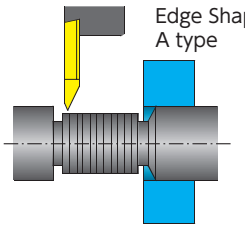
Threading

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	SUS304 SUS440C	SUS303 SUS430F	SCr / SCM	S10C ~ S55C
Grade	1st choice	VM1			VM1 / ZM3		QM3	
	2nd choice	ZM3			QM3		VM1 / ZM3	
Cutting Speed (m/min)		20 40 70	30 60 80		40 70 100	50 90 180	50 90 150	

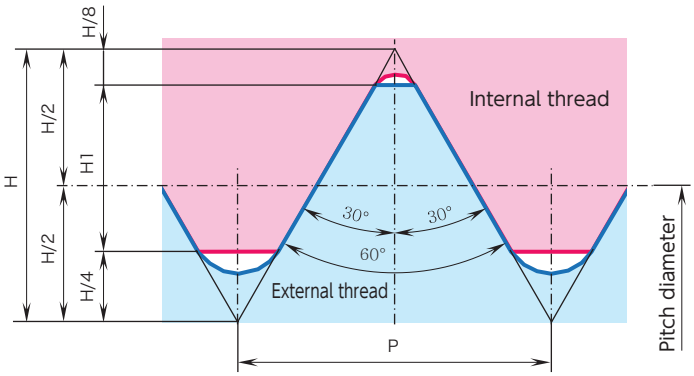
*Unless your machine is equipped with high speed threading program, please set the feed rate to 2000 mm/min or lower to prevent making incomplete threads

Infeed Threading Method

	Features	
	Advantage	Disadvantage
 Radial Infeed	●Most popular and easiest method ●Easy to change parameter ●Uniform wear on both sides of insert	●Chip evacuation ●Vibration due to higher cutting force ●Ineffective for large pitch threading
 Flank Infeed	●2nd most popular and easy method ●Effective for larger pitch and gummy material thanks to lower cutting force ●Excellent chip evacuation	●Larger flank wear on right side of the insert ●Difficult to change cutting depth per cut
 Modified Flank Infeed	●Reduce flank wear on right side ●Effective for larger pitch and gummy material thanks to lower cutting force ●Excellent chip evacuation	●Difficult to program ●Difficult to change cutting depth per cut
 Incremental Infeed	●Uniform flank wear ●Effective for larger pitch and gummy material thanks to lower cutting force	●Difficult to program ●Difficult to change cutting depth per cut ●Chip evacuation

Right Hand Toolholders				Left Hand Toolholders			
							
Toolholder	TTPR	Toolholder	TTPR	Toolholder	TTPL	Toolholder	TTPL
Insert	TTP..FR..A	Insert	TTP..FR..B	Insert	TTP..FL..B	Insert	TTP..FL..A

Tools and Thread Standards



ISO Metric (M)

External thread

Coarse	Fine	Applicable inserts			
		CSVT	TTPS	TTP	TTMH
	M1×0.2	CSVT11F$^{R}/_{L}$P60-035$^{A}/_{B}$	TTPS60F$^{R}/_{L}$4$^{A}/_{B}$	TTP60F$^{R}/_{L}$4$^{A}/_{B}$(S)	–
M1×0.25	M2×0.25	CSVT11F$^{R}/_{L}$P60-035$^{A}/_{B}$	TTPS60F$^{R}/_{L}$4$^{A}/_{B}$	TTP60F$^{R}/_{L}$4$^{A}/_{B}$(S)	–
	M3×0.35	CSVT11F$^{R}/_{L}$P60-035$^{A}/_{B}$	TTPS60F$^{R}/_{L}$4$^{A}/_{B}$	TTP60F$^{R}/_{L}$4$^{A}/_{B}$(S)	–
M2×0.4		CSVT11F$^{R}/_{L}$P60-035$^{A}/_{B}$	TTPS60F$^{R}/_{L}$8$^{A}/_{B}$	TTP60F$^{R}/_{L}$8$^{A}/_{B}$(S)	–
M3×0.5	M4×0.5	CSVT11F$^{R}/_{L}$P60-035$^{A}/_{B}$	TTPS60F$^{R}/_{L}$8$^{A}/_{B}$	TTP60F$^{R}/_{L}$8$^{A}/_{B}$(S)	–
M4×0.7		–	TTPS60F$^{R}/_{L}$8$^{A}/_{B}$	TTP60F$^{R}/_{L}$8$^{A}/_{B}$(S)	–
	M6×0.75	–	TTPS60F$^{R}/_{L}$8$^{A}/_{B}$	TTP60F$^{R}/_{L}$8$^{A}/_{B}$(S)	–
M5×0.8		–	TTPS60F$^{R}/_{L}$-N	TTP60F$^{R}/_{L}$-N(S)	TTMH3260R010
M6×1.0		–	TTPS60F$^{R}/_{L}$-N	TTP60F$^{R}/_{L}$-N(S)	TTMH3260R010
M8×1.25		–	TTPS60F$^{R}/_{L}$-N	TTP60F$^{R}/_{L}$-N(S)	TTMH3260R015
M10×1.5	M12×1.5	–	–	TTP60F$^{R}/_{L}$-N02	TTMH3260R020
M12×1.75		–	–	TTP60F$^{R}/_{L}$-N02	TTMH3260R020
M16×2.0	M20×2.0	–	–	TTP60F$^{R}/_{L}$-N02	TTMH3260R025
M20×2.5		–	–	–	TTMH3260R025
M24×3.0	M30×3.0	–	–	–	TTMH3260R025

Internal thread

Coarse	Fine	Applicable inserts
	M3×0.35	SBT025M3R
M2×0.4		–
M3×0.5		SBT025M3R
	M4×0.5	SBT030M4R(B)
M4×0.7		SBT030M4R(B)
	M6×0.75	SBT040M6RB
M5×0.8		SBT035M5RB
M6×1.0		SBT040M6RB
M8×1.25		SBT050M8RB
M10×1.5	M12×1.5	SBT060M10RB
M12×1.75		SBT060M10RB

Recommended Depth of Cut (DOC) for Diameter (mm)

ISO Metric (M)

External thread

CSVT

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CSVT11F R/L P60 -035A(B)	0.03 Max	0.20	0.25	4	0.08	0.07	0.06	0.04																
		0.25	0.32	5	0.09	0.07	0.07	0.05	0.04															
		0.35	0.48	6	0.12	0.10	0.09	0.07	0.06	0.04														
		0.40	0.55	6	0.15	0.12	0.10	0.08	0.06	0.04														
		0.50	0.70	7	0.16	0.14	0.12	0.10	0.08	0.06	0.04													

TTP/TTPS

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TTP60F R/L 2 A/B TTP(S)60F R/L 4 A/B	0.05 Max Flat	0.20	0.22	4	0.07	0.06	0.05	0.04																
		0.25	0.29	5	0.08	0.07	0.06	0.04	0.04															
		0.35	0.44	5	0.14	0.11	0.09	0.06	0.04															
TTP(S)60F R/L 8 A/B	R0.05	0.40	0.50	6	0.13	0.10	0.09	0.08	0.06	0.04														
		0.50	0.66	6	0.20	0.16	0.12	0.08	0.06	0.04														
		0.70	0.96	7	0.22	0.20	0.18	0.14	0.10	0.08	0.04													
		0.75	1.04	8	0.22	0.20	0.20	0.14	0.10	0.08	0.06	0.04												
TTP(S)60F R/L -N	R0.1	0.80	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04												
		1.00	1.32	8	0.30	0.24	0.20	0.18	0.16	0.12	0.08	0.04												
		1.25	1.69	9	0.31	0.30	0.30	0.24	0.18	0.14	0.10	0.08	0.04											
TTP60F R/L -N02	R0.20	1.50	1.87	10	0.33	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04										
		1.75	2.25	11	0.36	0.35	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04									
		2.00	2.63	12	0.36	0.34	0.32	0.30	0.28	0.26	0.22	0.18	0.14	0.12	0.07	0.04								

TTMH

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TTMH3260R010	R0.1	0.80	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04												
		1.00	1.32	8	0.30	0.24	0.20	0.18	0.16	0.12	0.08	0.04												
TTMH3260R015	R0.15	1.25	1.59	9	0.33	0.30	0.26	0.20	0.16	0.12	0.10	0.08	0.04											
TTMH3260R020	R0.20	1.50	1.90	10	0.36	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04										
		1.75	2.25	11	0.36	0.35	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04									
TTMH3260R025	R0.25	2.00	2.53	12	0.36	0.36	0.32	0.30	0.28	0.24	0.20	0.16	0.12	0.09	0.06	0.04								
		2.50	3.29	14	0.45	0.40	0.40	0.36	0.32	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.04						
		3.00	4.05	15	0.50	0.50	0.45	0.40	0.36	0.32	0.30	0.28	0.24	0.20	0.18	0.12	0.10	0.08	0.04					

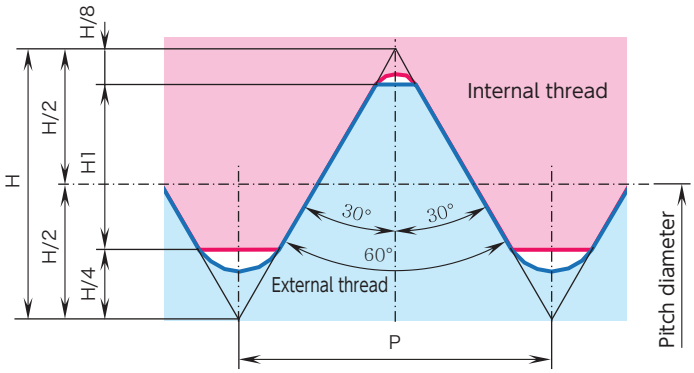
Internal thread

SBT

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SBT025M3R	0.05 Max Flat	0.35	0.37	6	0.11	0.09	0.07	0.05	0.03	0.02														
		0.50	0.56	7	0.12	0.12	0.10	0.08	0.07	0.05	0.02													
SBT030M4R(B)		0.70	0.82	9	0.14	0.14	0.12	0.12	0.10	0.08	0.06	0.04	0.02											
SBT035M5RB		0.80	0.95	10	0.14	0.14	0.14	0.12	0.12	0.10	0.08	0.06	0.03	0.02										
SBT040M6RB	R0.05	1.00	1.20	12	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.08	0.06	0.04	0.02								
SBT050M8RB		1.25	1.52	15	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.08	0.06	0.04	0.02					
SBT060M10RB		1.50	1.85	18	0.15	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.10	0.08	0.08	0.06	0.04	0.02		
		1.75	2.17	20	0.15	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.10	0.08	0.08	0.08	0.06	0.04

Tools and Thread Standards

American Unified (UNC/UNF)



External thread

Coarse (UNC)		Fine (UNF)		Pitch (mm)	Applicable inserts		
Nominal designation of thread	(Reference)	Nominal designation of thread	(Reference)		CSVT	TTP/TTPS	TTMH
		No.0-80 UNF	0.0600-80 UNF	0.3175	CSVT11F R/L P60-035 A/B	TTP(S)60F R/L 4 A/B	–
		No.1-72 UNF	0.0730-72 UNF	0.3528	CSVT11F R/L P60-035 A/B	TTP(S)60F R/L 4 A/B	–
No.1-64 UNC	0.0730-64 UNC	No.2-64 UNF	0.0860-64 UNF	0.3969	CSVT11F R/L P60-035 A/B	TTP(S)60F R/L 4 A/B	–
No.2-56 UNC	0.0860-56 UNC	No.3-56 UNF	0.0990-56 UNF	0.4536	CSVT11F R/L P60-035 A/B	TTP(S)60F R/L 8 A/B	–
No.3-48 UNC	0.0990-56 UNC	No 4-48 UNF	0.1120-48 UNF	0.5292	CSVT11F R/L P60-035 A/B	TTP(S)60F R/L 8 A/B	–
		No.5-44 UNF	0.1250-44 UNF	0.5773	–	TTP(S)60F R/L 8 A/B	–
No.4-40 UNC	0.1120-40 UNC	No.6-40 UNF	0.1380-40 UNF	0.6350	–	TTP(S)60F R/L 8 A/B	–
No.5-40 UNC	0.1250-40 UNC			0.6350	–	TTP(S)60F R/L 8 A/B	–
		No.8-36 UNF	0.1640-36 UNF	0.7056	–	TTP(S)60F R/L 8 A/B	–
No.6-32 UNC	0.1380-32 UNC	No.10-32 UNF	0.1900-32 UNF	0.7938	–	TTP(S)60F R/L-N(S)	TTMH3260R010
No.8-32 UNC	0.1640-32 UNC			0.7938	–	TTP(S)60F R/L-N(S)	TTMH3260R010
		No.12-28 UNF	0.2160-28 UNF	0.9071	–	TTP(S)60F R/L-N(S)	TTMH3260R010
		1/4-28 UNF	0.2500-28 UNF	0.9071	–	TTP(S)60F R/L-N(S)	TTMH3260R010
No.10-24 UNC	0.1900-24 UNC	5/16-24 UNF	0.3125-24 UNF	1.0583	–	TTP(S)60F R/L-N(S)	TTMH3260R010
No.12-24 UNC	0.2160-24 UNC	3/8-24 UNF	0.3750-24 UNF	1.0583	–	TTP(S)60F R/L-N(S)	TTMH3260R010
1/4-20 UNC	0.2500-20 UNC	7/16-20 UNF	0.4375-20 UNF	1.2700	–	TTP(S)60F R/L-N(S)	TTMH3260R015
		1/2-20 UNF	0.5000-20 UNF	1.2700	–	TTP(S)60F R/L-N(S)	TTMH3260R015
5/16-18 UNC	0.3125-18 UNC	9/16-18 UNF	0.5625-18 UNF	1.4111	–	TTP(S)60F R/L-N(S)	TTMH3260R015
		5/8-18 UNF	0.6250-18 UNF	1.4111	–	TTP(S)60F R/L-N(S)	TTMH3260R015
3/8-16 UNC	0.3750-16 UNC	3/4-16 UNF	0.7500-16 UNF	1.5875	–	TTP60F R/L-N02	TTMH3260R020
7/16-14 UNC	0.4375-14 UNC	7/8-14 UNF	0.8750-14 UNF	1.8143	–	TTP60F R/L-N02	TTMH3260R020
1/2-13 UNC	0.5000-13 UNC			1.9538	–	TTP60F R/L-N02	TTMH3260R020
9/16-12 UNC	0.5625-12 UNC	1 -12 UNF	1.0000-12 UNF	2.1167	–	TTP60F R/L-N02	TTMH3260R025
		1 1/8-12 UNF	1.1250-12 UNF	2.1167	–	TTP60F R/L-N02	TTMH3260R025
		1 1/4-12 UNF	1.2500-12 UNF	2.1167	–	TTP60F R/L-N02	TTMH3260R025
		1 3/8-12 UNF	1.3750-12 UNF	2.1167	–	TTP60F R/L-N02	TTMH3260R025
		1 1/2-12 UNF	1.5000-12 UNF	2.1167	–	TTP60F R/L-N02	TTMH3260R025
5/8-11 UNC	0.6250-11 UNC			2.3091	–	–	TTMH3260R025
3/4-10 UNC	0.7500-10 UNC			2.5400	–	–	TTMH3260R025
7/8-9 UNC	0.8750- 9 UNC			2.8222	–	–	TTMH3260R025

Internal thread

Coarse (UNC)		Fine (UNF)		Pitch (mm)	Pilot Bore Dia.	Applicable inserts
Nominal designation of thread	(Reference)	Nominal designation of thread	(Reference)			
		No.8-36 UNF	0.1640-36 UNF	0.7056	3.51	SBT030M4R(B)
No.8-32 UNC	0.1640-32 UNC			0.7938	3.42	SBT030M4R(B)
		No.10-32 UNF	0.1900-32 UNF	0.7938	4.07	SBT035M5RB
		No.12-28 UNF	0.2160-28 UNF	0.9071	4.61	SBT040M6RB
		1/4-28 UNF	0.2500-28 UNF	0.9071	5.47	SBT040M6RB
No.10-24 UNC	0.1900-24 UNC			1.0583	3.83	SBT035M5RB
No.12-24 UNC	0.2160-24 UNC			1.0583	4.47	SBT035M5RB
		5/16-24 UNF	0.3125-24 UNF	1.0583	6.91	SBT050M8RB
		3/8-24 UNF	0.3750-24 UNF	1.0583	8.51	SBT060M10RB
1/4-20 UNC	0.2500-20 UNC			1.2700	5.12	SBT040M6RB
		7/16-20 UNF	0.4375-20 UNF	1.2700	9.88	SBT060M10RB
		1/2-20 UNF	0.5000-20 UNF	1.2700	11.47	SBT060M10RB
5/16-18 UNC	0.3125-18 UNC			1.4111	6.57	SBT050M8RB
		9/16-18 UNF	0.5625-18 UNF	1.4111	12.9	SBT060M10RB
		5/8-18 UNF	0.6250-18 UNF	1.4111	14.5	SBT060M10RB
3/8-16 UNC	0.3750-16 UNC			1.5875	7.98	SBT060M10RB
		3/4-16 UNF	0.7500-16 UNF	1.5875	17.5	SBT060M10RB

Recommended Depth of Cut (DOC) for Diameter (mm)

American Unified (UNC/UNF)

External thread

CSVT

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CSVT11FRP60 -035A(B)	0.03 Max	80	0.43	6	0.10	0.10	0.08	0.06	0.05	0.04														
		72	0.48	6	0.12	0.10	0.09	0.07	0.06	0.04														
		64	0.55	6	0.14	0.13	0.10	0.08	0.06	0.04														
		56	0.63	7	0.14	0.12	0.10	0.09	0.08	0.06	0.04													
		48	0.75	7	0.16	0.16	0.14	0.11	0.08	0.06	0.04													

TTP/TTPS

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TTP60F R/L 2 A/B TTP(S)60F R/L 4 A/B	0.05 Max Flat	80	0.39	5	0.11	0.10	0.08	0.06	0.04															
		72	0.45	5	0.13	0.13	0.09	0.06	0.04															
		64	0.51	6	0.13	0.11	0.10	0.07	0.06	0.04														
TTP(S)60F R/L 8 A/B	R0.05	56	0.59	6	0.16	0.14	0.11	0.08	0.06	0.04														
		48	0.70	6	0.20	0.16	0.14	0.09	0.07	0.04														
		44	0.77	7	0.20	0.16	0.13	0.10	0.08	0.06	0.04													
		40	0.86	7	0.20	0.18	0.16	0.12	0.10	0.06	0.04													
		36	0.97	8	0.20	0.18	0.16	0.14	0.11	0.08	0.06	0.04												
TTP(S)60F R/L -N	R0.1	32	1.00	8	0.24	0.20	0.16	0.12	0.10	0.08	0.06	0.04												
		28	1.17	8	0.26	0.23	0.19	0.15	0.12	0.10	0.08	0.04												
		24	1.40	9	0.28	0.24	0.22	0.18	0.14	0.12	0.10	0.08	0.04											
		20	1.72	9	0.32	0.29	0.27	0.24	0.20	0.16	0.12	0.08	0.04											
		18	1.94	10	0.34	0.30	0.28	0.26	0.22	0.18	0.14	0.10	0.08	0.04										
TTP60F R/L -N02	R0.2	16	2.01	10	0.35	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.08	0.04										
		14	2.35	11	0.36	0.35	0.32	0.30	0.26	0.22	0.18	0.14	0.10	0.08	0.04									
		13	2.56	12	0.36	0.34	0.32	0.30	0.26	0.22	0.20	0.18	0.16	0.10	0.08	0.04								
		12	2.81	13	0.36	0.35	0.32	0.30	0.28	0.26	0.24	0.20	0.16	0.12	0.10	0.08	0.04							

TTMH

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TTMH3260R010	R0.1	32	1.00	8	0.24	0.20	0.16	0.12	0.10	0.08	0.06	0.04												
		28	1.17	8	0.26	0.23	0.19	0.15	0.12	0.10	0.08	0.04												
		24	1.40	9	0.28	0.24	0.22	0.18	0.14	0.12	0.10	0.08	0.04											
TTMH3260R015	R0.15	20	1.62	9	0.32	0.28	0.24	0.20	0.18	0.16	0.12	0.08	0.04											
		18	1.84	10	0.32	0.30	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04										
TTMH3260R020	R0.2	16	2.01	10	0.35	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.08	0.04										
		14	2.35	11	0.36	0.35	0.32	0.30	0.26	0.22	0.18	0.14	0.10	0.08	0.04									
		13	2.56	12	0.36	0.34	0.32	0.30	0.26	0.22	0.20	0.18	0.16	0.10	0.08	0.04								
TTMH3260R025	R0.25	12	2.71	12	0.36	0.35	0.33	0.31	0.29	0.25	0.22	0.20	0.16	0.12	0.08	0.04								
		11	3.00	13	0.40	0.36	0.34	0.30	0.28	0.26	0.24	0.22	0.20	0.16	0.12	0.08	0.04							
		10	3.35	14	0.43	0.40	0.40	0.36	0.32	0.28	0.24	0.20	0.18	0.16	0.14	0.12	0.08	0.04						
		9	3.78	15	0.45	0.43	0.41	0.39	0.36	0.32	0.28	0.24	0.20	0.18	0.16	0.14	0.10	0.08	0.04					

Internal thread

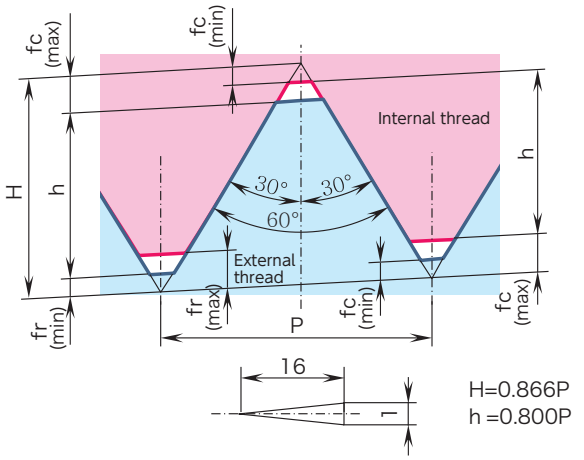
SBT

Item Nunber	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SBT030M4R(B)	0.05 Max Flat	36	0.83	9	0.14	0.14	0.12	0.11	0.10	0.08	0.06	0.04	0.02											
SBT030M4R(B) SBT035M5RB	0.05 Max Flat	32	0.94	10	0.14	0.14	0.13	0.12	0.11	0.10	0.08	0.06	0.04	0.02										
SBT040M6RB	R0.05	28	1.08	12	0.14	0.14	0.12	0.12	0.11	0.10	0.09	0.08	0.07	0.05	0.04	0.02								
SBT035M5RB	0.05 Max Flat	24	1.29	13	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.09	0.08	0.06	0.04	0.02							
SBT050M8RB SBT060M10RB	R0.05	24	1.27	13	0.14	0.14	0.14	0.12	0.12	0.12	0.10	0.10	0.09	0.08	0.06	0.04	0.02							
SBT060M10RB	R0.05	20	1.55	15	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.09	0.06	0.04	0.02					
SBT050M8RB SBT060M10RB	R0.05	18	1.73	17	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.10	0.09	0.08	0.06	0.04	0.02			
SBT060M10RB	R0.05	16	1.96	19	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.08	0.06	0.04	0.02	

Tools and Thread Standards

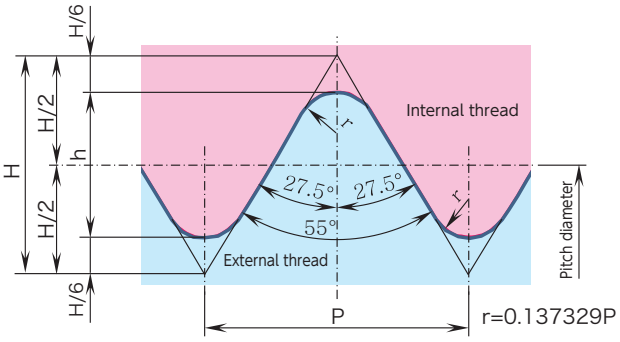
American Tapered Pipe (NPT)

Nominal designation of thread	(Reference)	Pitch (mm)	Applicable inserts
NPT 1/16	27	0.941	TTP(S)60F$^{R}_{L}$8$^{A}_{B}$
NPT 1/8	27	0.941	
NPT 1/4	18	1.411	
NPT 3/8	18	1.411	



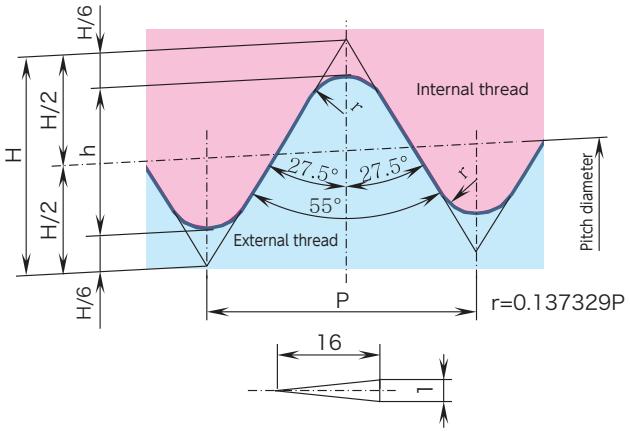
Parallel Pipe (G、BSPP)

Nominal designation of thread	(Reference)	Pitch (mm)	Applicable inserts
G 1/16	28	0.9071	TTP55F$^{R}_{L}$8$^{A}_{B}$
G 1/8	28	0.9071	
G 1/4	19	1.3368	
G 3/8	19	1.3368	



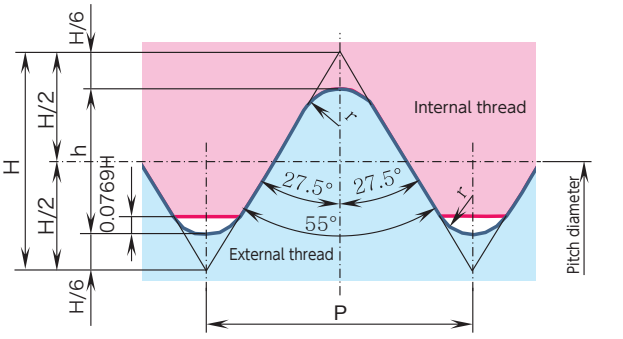
Tapered Pipe (R、BSPT)

Nominal designation of thread	(Reference)	Pitch (mm)	Applicable inserts
R(PT) 1/16	28	0.9071	TTP55F$^{R}_{L}$8$^{A}_{B}$
R(PT) 1/8	28	0.9071	
R(PT) 1/4	19	1.3368	
R(PT) 3/8	19	1.3368	



Whitworth (BSW)

Nominal designation of thread	(Reference)	Pitch (mm)	Applicable inserts
W 1/8	40	0.64	TTP55F$^{R}_{L}$8$^{A}_{B}$
W 3/16	24	1.06	
W 1/4	20	1.27	
W 5/16	18	1.41	
W 3/8	16	1.59	



Recommended Depth of Cut (DOC) for Diameter (mm)

American Tapered Pipe (NPT)

Item Nunber	Edge radius	Nominal designation of thread	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP(S)60F$^{R}/_{L}$8$^{A}/_{B}$	R0.05	NPT $^{1}/_{16}$	27	0.64	6	0.18	0.16	0.12	0.08	0.06	0.04				
		NPT $^{1}/_{8}$	27	0.64	6	0.18	0.16	0.12	0.08	0.06	0.04				
		NPT $^{1}/_{4}$	18	1.28	8	0.26	0.24	0.20	0.18	0.16	0.12	0.08	0.04		
		NPT $^{3}/_{8}$	18	1.28	8	0.26	0.24	0.20	0.18	0.16	0.12	0.08	0.04		

Parallel Pipe (G、BSPP)

Item Nunber	Edge radius	Nominal designation of thread	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP55F$^{R}/_{L}$8$^{A}/_{B}$	R0.05	G$^{1}/_{16}$	28	0.67	6	0.20	0.16	0.12	0.09	0.06	0.04				
		G$^{1}/_{8}$	28	0.67	6	0.20	0.16	0.12	0.09	0.06	0.04				
		G$^{1}/_{4}$	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		
		G$^{3}/_{8}$	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		

Tapered Pipe (R、BSPT)

Item Nunber	Edge radius	Nominal designation of thread	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP55F$^{R}/_{L}$8$^{A}/_{B}$	R0.05	R(PT) $^{1}/_{16}$	28	0.67	6	0.20	0.16	0.12	0.09	0.06	0.04				
		R(PT) $^{1}/_{8}$	28	0.67	6	0.20	0.16	0.12	0.09	0.06	0.04				
		R(PT) $^{1}/_{4}$	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		
		R(PT) $^{3}/_{8}$	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		

Whitworth (BSW)

Item Nunber	Edge radius	Nominal designation of thread	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP55F$^{R}/_{L}$8$^{A}/_{B}$	R0.05	W $^{1}/_{8}$	40	0.45	5	0.13	0.13	0.09	0.06	0.04					
		W $^{3}/_{16}$	24	0.79	7	0.20	0.16	0.14	0.11	0.08	0.06	0.04			
		W $^{1}/_{4}$	20	0.96	8	0.20	0.18	0.16	0.14	0.10	0.08	0.06	0.04		
		W $^{5}/_{16}$	18	1.07	8	0.25	0.22	0.18	0.14	0.10	0.08	0.06	0.04		
		W $^{3}/_{8}$	16	1.21	8	0.26	0.23	0.20	0.16	0.13	0.11	0.08	0.04		

CSV Series Best for up to 5㎜ diameter material

CSV

For Cam-style machine

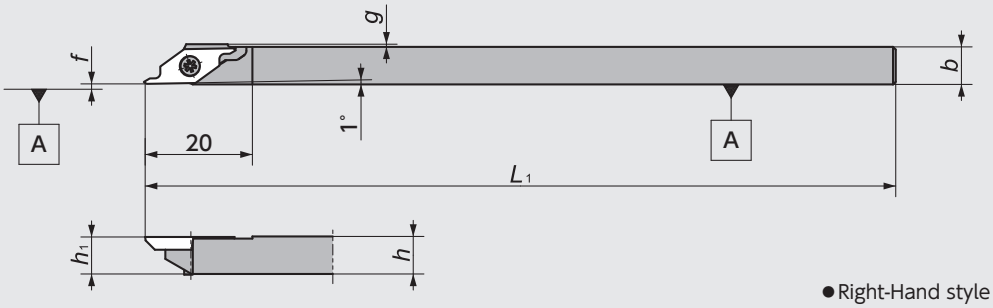


Figure-1

●Right-Hand style shown

CSV-NC

For Gang-style machine

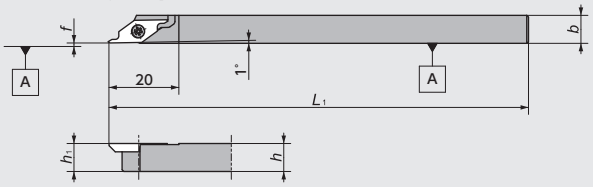


Figure-2

●Right-Hand style shown

CSV-NC-F

For Gang-style machine

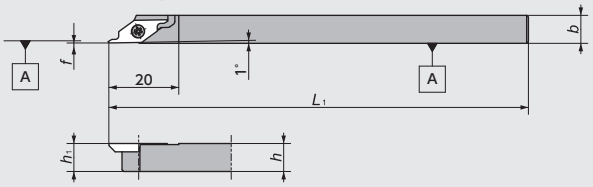


Figure-3

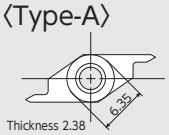
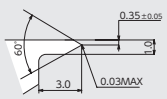
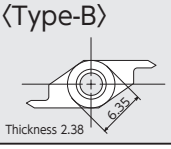
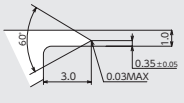
●Right-Hand style shown

CSV Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	h	b	L_1	h_1	f	g	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
						Dimensions (㎜)								
1	5492962		CSV[R/L]07GX	●		7	7	85	7	0.1	0.5	CSVT	LR1S-2.5*7	CLR-15S
	5303169	5303193	07	●	●			140						
	5492954		08GX	●		8	8	85	8		0.0			
	5303151	5303201	08	●	●			140						
	5303136		095	●		9.5	9.5		9.5					
	5303144	5303177	10	●	●	10	10		10					
	5474770		12GX	●		12	12	85	12					
	5327929		12	●				140						
2	5514062	5514070	CSV[R/L]08NC	●	●	8	8	120	8	0.1		CSVT	LR1S-2.5*7	CLR-15S
	5563010		10GXNC	●		10	10	85	10					
	5477492	5477542	10NC	●	●			120						
	5477534	5477500	12NC	●	●	12	12		12					
3	5789615		CSV[R/L]08NC-F	●		8	8	120	8	0.0～0.1	—	CSVT	LR1S-2.5*7	CLR-15S

☆All the inserts can use the same toolholder CSV series ➡ G94

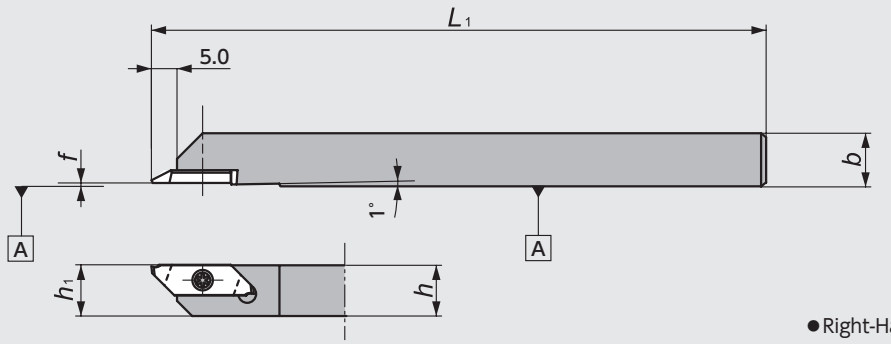
CSV Series - Inserts Mirror finish

Shape	Item Number	Chip-breaker	Dimensions (㎜) r_ε	Thread Type Pitch	PVD Coated Carbide VM1 R	Stock	L	Stock
〈Type-A〉   ●Right-Hand style shown	CSVT11F[R/L]P60-035A Ⓜ	No	R0.03MAX	0.2 ～ 0.5	5344874	●	5386909	●
〈Type-B〉   ●Right-Hand style shown	CSVT11F[R/L]P60-035B Ⓜ				5344882	●	5386917	●

☆All angles shown are obtained when insert is set in the holder

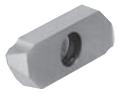
CTPS Series

CTPS



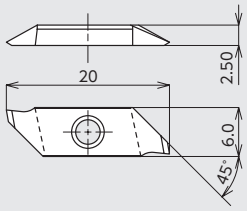
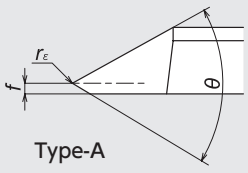
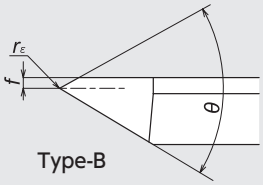
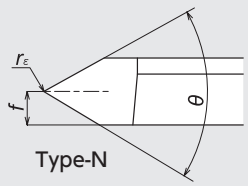
●Right-Hand style shown

CTPS Series - Toolholders

Code No.	Item Number	Stock		Dimensions (mm)					Gage insert	Spare Parts	
										Clamp Screw	Wrench
		R	L	h	b	L_1	h_1	f			
5346572	CTPS**R/L10**	●		10	10	120	10	0.0	TTPS	LRIS-2.5*7	CLR-15S
5397187	**12**	●		12	12		12				

☆All the inserts can use the same toolholder　CTPS series ➡ G98

CTPS Series - Inserts

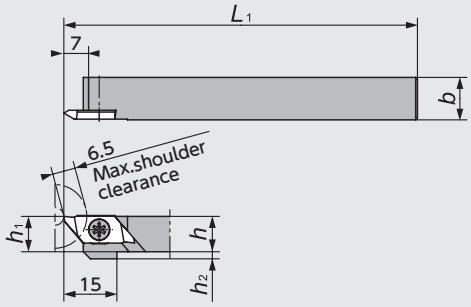
Shape	Item Number	Dimensions (mm)				Thread Type	PVD Coated Carbide			
		Type	θ	f	r_ε	Pitch	ZM3	Stock	VM1	Stock
	**TTPS60FR4A**	A	60°	0.4	(0.05) MAX Flat	0.2 ~ 0.75	5346648	●	5362710	●
 Type-A	**60FR4B**	B					5346663	●	5362728	●
 Type-B	**60FR8A**	A		0.8	(0.05)	0.4~1.25	5346689	●	5362744	●
	60FR8B	B					5346671	●	5362736	●
 Type-N	**60FR-N**	N		1.25	(0.1)	1.0~1.5	5346655	●	5362751	●

●Right-Hand style shown

☆All angles shown are obtained when insert is set in the holder

TTP Series

TTP



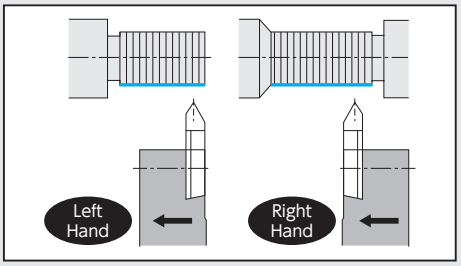
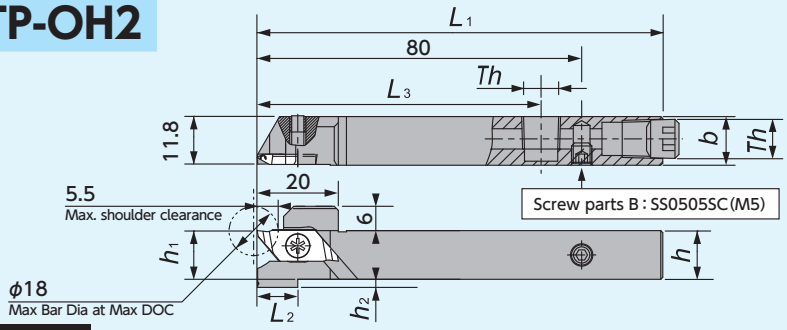


Figure-1

●Right-Hand style shown

TTP-OH2



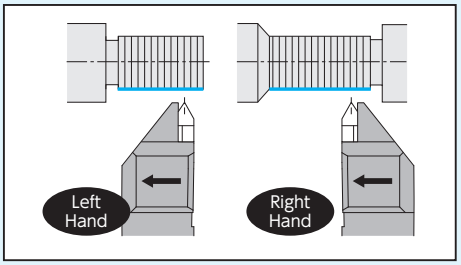


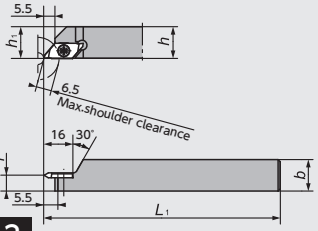
Figure-2

Th(screw parts「A」)
1212/1616size : SPR1/8(Rc1/8)

●Right-Hand style shown

TTP-F

Shift Holder



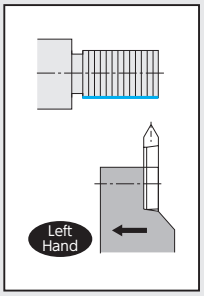
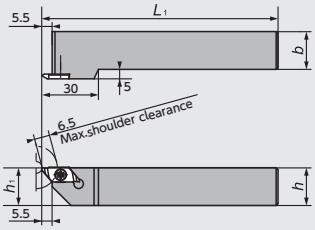


Figure-3

●Left-Hand style shown

TTP



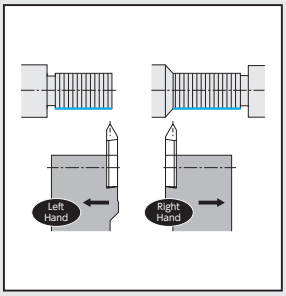
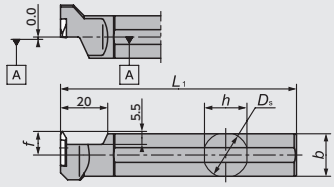


Figure-4

●Right-Hand style shown

DS-TTP

(DS Holder)



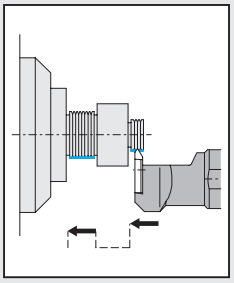
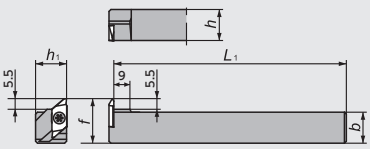


Figure-5

●Left-Hand style shown
☆Takes Right-hand insert

CH-TTP



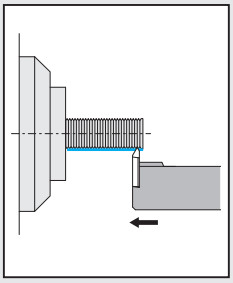


Figure-6

●Left-Hand style shown
☆Takes Right-hand insert

TTP Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Ds	h	b	L1	h1	f	h2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5146238	5146220	TTP R/L 08	●	●	–	8	10	120	8	–	4	TTP I 13	LR1S-4*10PW (A)	CLR-15S (A)
	5145693	5145685	10	●	●		10			10		2			
	5459854	5503024	12GX	●	●		12	12	85	12		0		LR1S-4*12PW (A)	
	5145701	5145719	12	●	●				120						
	5459862	5459870	16H	●	●		16	16	100	16					
	5191234	5267190	16	●	●				120						
	5459573	5459581	20F	●	●		20	20	80	20				LR1S-4*10 (B)	LLR-25S-20*65 (B)

※Compatible with 16mm / 22mm round shank DS Series holders. DS-Sleeve G103

TTP Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) D_s	h	b	L_1	h_1	f	h_2	L_2	L_3	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
2	5061882	5061890	TTP R/L 12H-OH2	●	●	—	12	12	100	12	—	2	10	70	TTP I 13	LRIS-4*12PW	CLR-15S
	5062229	5062237	TTP R/L 16X-OH2	●	●	—	16	16	120	16	—	0	—	70			
3		5978150	TTPL12-F06		●	—	12	12	120	12	6	—	—	—	TTP FL I 13	LRIS-4*6 (B)	LLR-25S (B)
		5978168	TTPL16-F08		●	—	16	16	120	16	8	—	—	—			
4	5989959	5989942	TTP R/L 20K-25	●	●	—	20	20	125	20	—	—	—	—	TTP FR/L I 13	LRIS-4*10 (B)	LLR-25S (B)
	5989975	5989967	TTP R/L 25M-30	●	●	—	25	25	150	25	—	—	—	—			
5		5782149	DS-TTP R/L 16F※		●	16.00	15	15	80	—	10.0	—	—	—	TTP I 13	LRIS-4*10 (B)	LLR-25S-20*65 (B)
		5278270	19		●	19.05	18	18	120								
		5278296	20		●	20.00	19	19									
		5324033	22※		●	22.00	21	21									
		5830641	25MET		●	25.00	24	24	150								
		5317151	25		●	25.40	24	24	150								
6		5885090	CH-TTP R/L 16		●	—	16	16	120	16	23	—	—	—	TTP FR I 13	LRIS-4*10 (B)	LLR-25S (B)
		5885108	20		●		20	20		20	27						

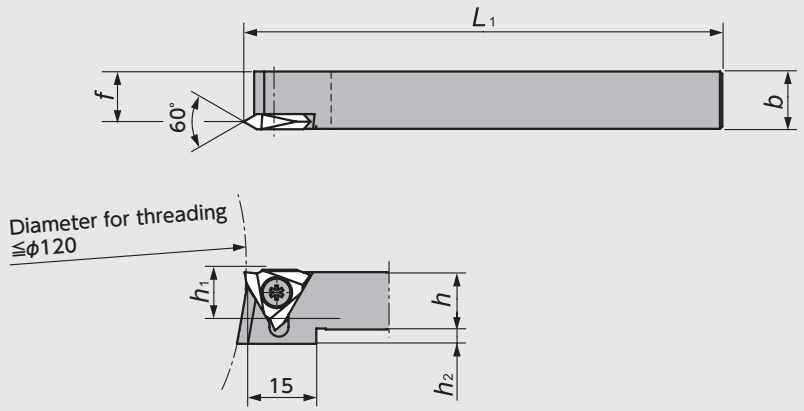
※Compatible with 16mm / 22mm round shank DS Series holders. DS-Sleeve ➔G103

TTP Series - Inserts

	Shape	Item Number	Dimensions (mm) θ	f	r_ε	Thread Type: Pitch	TPI	Carbide KM1	Stock	PVD Coated Carbide ZM3	Stock	QM3	Stock
Right-Hand	Type-A	TTP60FR2A	60°	0.2	(0.05) MAX Flat	0.2~0.35				5892278	●		
		60FR4A		0.4		0.2~0.75				5145602	●	5234216	●
		60FR4AS Ⓜ						5578158	●				
		60FR8A		0.8	(R0.05)	0.4~1.25				5145537	●	5337340	●
		60FR8AS Ⓜ						5578117	●				
		TTP55FR8A	55°				48~16			5145495	●		
	Type-B	TTP60FR2B	60°	0.2	(0.05) MAX Flat	0.2~0.35				5892302	●		
		60FR4B		0.4		0.2~0.75				5145586	●	5601315	●
		60FR4BS Ⓜ						5578133	●				
		60FR8B		0.8	(R0.05)	0.4~1.25				5145529	●	5506472	●
		60FR8BS Ⓜ						5578091	●				
		TTP55FR8B	55°				48~16			5145487	●		
	Type-N	TTP60FR-N	60°	1.25	(R0.1)	1.0~1.5				5145560	●	5474630	●
		60FR-NS Ⓜ						5578067	●				
		60FR-N02			(R0.2)	1.5~2.0				5626247	●	5626254	●
Left-Hand	Type-A	TTP60FL2A	60°	0.2	(0.05) MAX Flat	0.2~0.35				5892286	●		
		60FL4A		0.4		0.2~0.75				5145594	●	5601307	●
		60FL4AS Ⓜ						5578174	●				
		60FL8A		0.8	(R0.05)	0.4~1.25				5145545	●	5601273	●
		60FL8AS Ⓜ						5578125	●				
		TTP55FL8A	55°				48~16			5145503	●		
	Type-B	TTP60FL2B	60°	0.2	(0.05) MAX Flat	0.2~0.35				5912555	●		
		60FL4B		0.4		0.2~0.75				5145578	●	5601299	●
		60FL4BS Ⓜ						5578141	●				
		60FL8B		0.8	(R0.05)	0.4~1.25				5145511	●	5503438	●
		60FL8BS Ⓜ						5578109	●				
		TTP55FL8B	55°				48~16			5145479	●		
	Type-N	TTP60FL-N	60°	1.25	(R0.1)	1.0~1.5				5145552	●	5601265	●
		60FL-NS Ⓜ						5578083	●				
		60FL-N02			(R0.2)	1.5~2.0				5626270	●	5626262	●

STTN Series

STTN



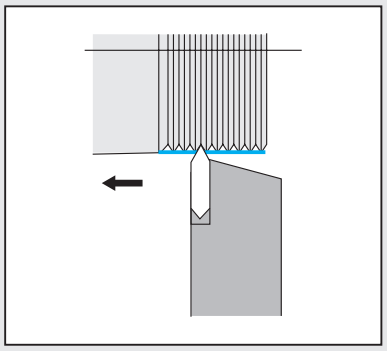
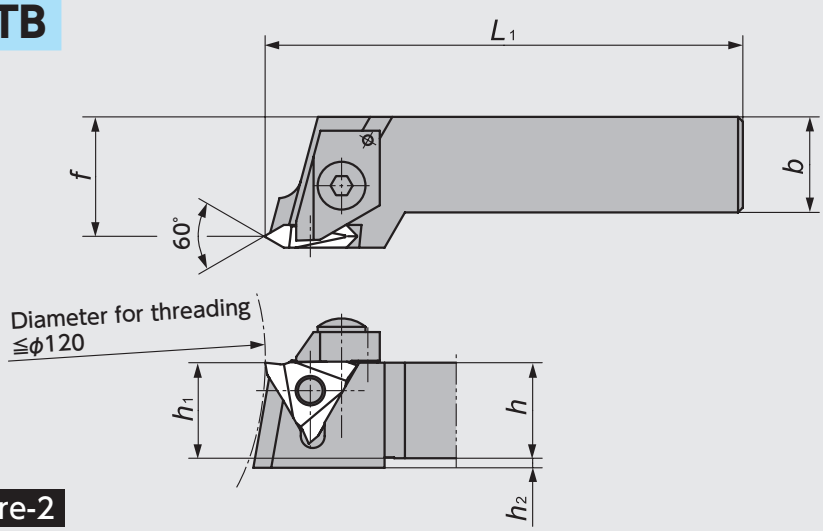


Figure-1

●Right-Hand style shown

NTTB



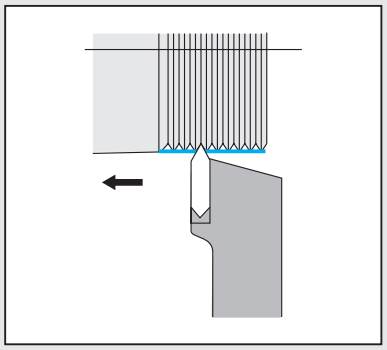
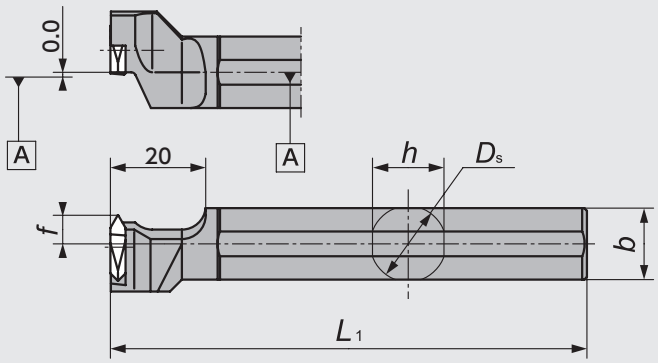


Figure-2

●Right-Hand style shown

DS-STT



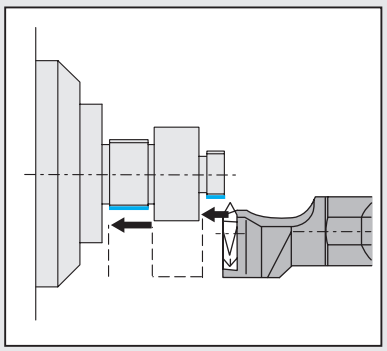


Figure-3

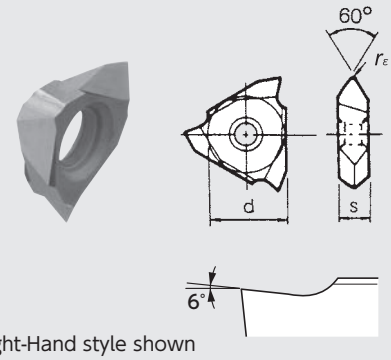
●Left-Hand style shown
☆Takes Right-hand insert

STTN Series - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Dimensions (mm) D_s	h	b	L_1	h_1	f	h_2	Gage insert	Spare Parts: Clamp	Clamp Bolt	Spring	Clamp Screw	Wrench
1	5630405		STTN[R/L]101032	●		—	10	10	80	10	8.5	5.0	TTMH	—	—	—	LR-S-4*9	RLR-20S (A)
	5827662		121232	●			12	12		12	10.5							
	5834817		121232-K	●					125									
2	5262530		NTTB[R/L]161632	●		—	16	16	120	16	20.0	4.0	TTMH	CPR/L5	A0S-5*25	ASG-5	—	LW-2.5 (B)
	5262548		202032	●			20	20	140	20	25.0	0.0						
3		5348552	DS-STT[R/L]14F		●	14.000	13	13	80	—	6.0	—	TTMH	—	—	—	LR-S-4*9	RLR-20S (A)
		5348099	15H		●	15.875	15	15	100									
		5341508	16X※		●	16.000			95									

※Compatible with 16mm round shank DS Series holders. DS-Sleeve ➡ G104

STTN Series - Inserts

Shape	Item Number	Dimensions (mm) d	s	r_ε	Thread Type Pitch	PVD Coated Carbide ZM3	Stock
 ●Right-Hand style shown	TTMH3260R010	9.525	3.18	0.10	0.8～3.0	5120928	●
	3260R015			0.15	1.0～3.0	5211826	●
	3260R020			0.20	1.5~3.0	5105697	●

SBT Series ID Threading

SBT Minimum Bore Diameter 2.5mm

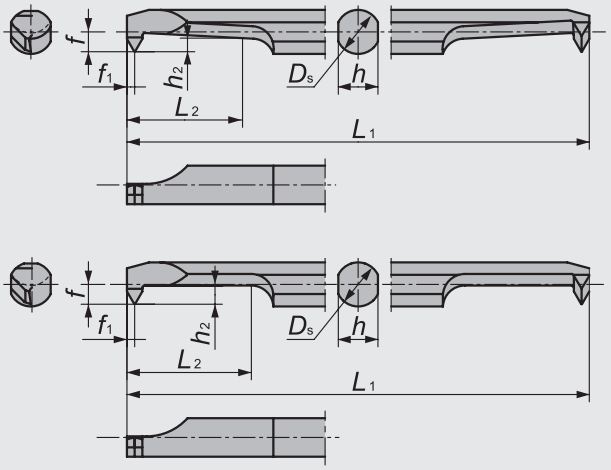
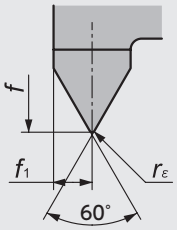
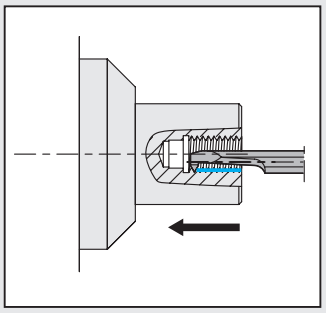


Figure-1

Figure-2





● Right-Hand style shown

Figure	Item Number	Min Bore Dia.	chipbreaker	Dimensions (mm)								Thread Type: Metric Thread		Thread Type: UNC/UNF Thread		Recommended Thread Type: Metric Thread	Recommended Thread Type: UNC Thread	PVD Coated Carbide: ZM3	Stock
				D_s	L_2	h_2	L_1	f	f_1	h	r_ε	Nominal designation of thread	Pitch (mm)	Nominal designation of thread	TPI	Nominal designation of thread			
1	SBT025M3R	2.5	No	2.5	5.4	0.6	50	1.1	0.4	2.3	0.05 max Flat	M3	0.5	—	—	M3×0.5	—	5784459	●
	030M4R	3.0		3.0	7.5	0.8	50	1.3	0.5	2.7	0.05 max Flat	M4 ～	0.5～0.8	No.8-32UNC～	36～32	M4×0.7	No.8-32UNC	5784467	●
	030M4RB	3.0	Yes	3.0	7.5	0.8	50	1.3	0.5	2.7	0.05 max Flat	M4 ～	0.5～0.8	No.8-32UNC～	36～32	M4×0.7	No.8-32UNC	5658018	●
	035M5RB	3.5		3.5	8.5	1.0	60	1.55	0.55	3.2	0.05 max Flat	M4.5 ～	0.5～1.0	No.10-24UNC～	32～24	M5×0.8	No.10-24UNC No.12-24UNC	5658117	●
	040M6RB	4.0		4.0	10.5	1.2	60	1.8	0.7	3.6	R0.05	M5.5 ～	0.75～1.25	No.12-24UNC～	28～20	M6×1.0	1/4-20UNC	5658000	●
2	SBT050M8RB	5.0	Yes	5.0	15.8	1.5	70	2.3	0.8	4.5	R0.05	M7 ～	0.75～1.5	1/4-28UNF～	28～18	M8×1.25	5/16-18UNC	5657994	●
	060M10RB	6.0		6.0	18.4	1.8	80	2.8	0.95	5.4	R0.05	M8 ～	0.75～1.75	5/16-24UNF～	28～16	M10×1.5	3/8-16UNC	5685870	●

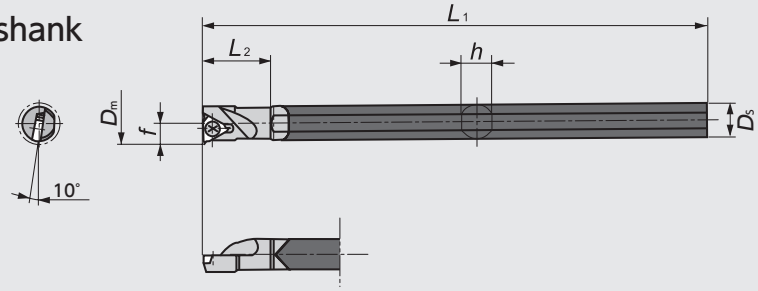
※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

Sleeves ➡ K8

TMN Series ID Threading

TGC Minimum Bore Diameter 8.0mm

Carbide shank



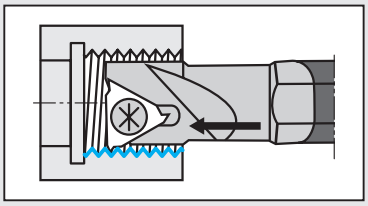
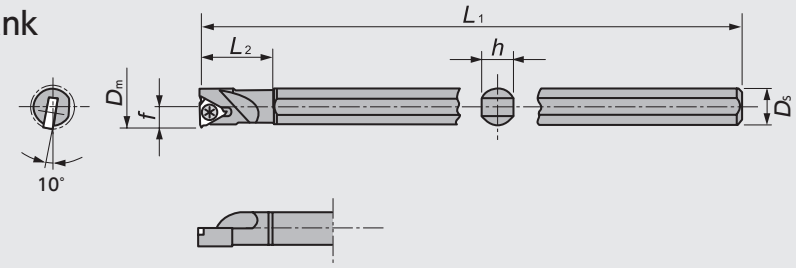


Figure-1

●Right-Hand style shown

HN Minimum Bore Diameter 8.0mm

Steel shank



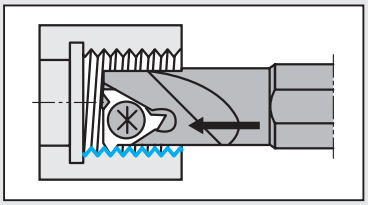
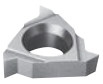


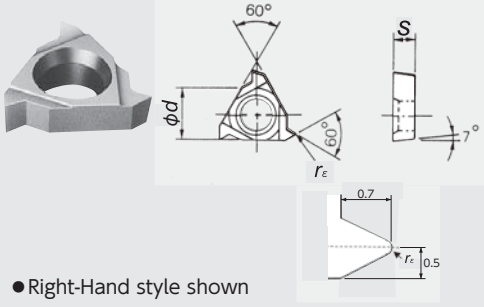
Figure-2

●Right-Hand style shown

TMN Series - Toolholders

Figure	Code No.	Item Number	Stock	Min Bore Dia. (mm) D_m	Dimensions (mm) D_s	h	L_1	f	L_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
												
1	5455092	TGC10T06H161R	●	8.0	6	5.5	100	3.8	13.0	TMN06	LR-S-2＊4.4	CLR-13S
	5455084	08K162R	●	10.0	8	7.0	125	4.7	17.0	TMN08	LR-S-2＊5.5	
	5455076	10M163R	●	12.0	10	9.0	150	6.0	20.0	TMN09	LRIS-2.2＊6	
2	5845177	HN59Z-0028	●	8.0	6	5.5	100	3.8	13.0	TMN06	LR-S-2＊4.4	CLR-13S
	5845193	-0029	●	10.0	8	7.0	125	4.7	17.0	TMN08	LR-S-2＊5.5	
	5845185	-0030	●	12.0	10	9.0	150	6.0	20.0	TMN09	LRIS-2.2＊6	

TMN Series - Inserts

Shape	Item Number	Dimensions (mm) ϕd	s	r_ε	Thread Type: Recommended Pitch	Thread Type: Pitch	PVD Coated Carbide ZM3	Stock
 ●Right-Hand style shown	TMN06FR03	3.97	1.59	0.03	0.5	0.4 ～ 0.75	5228044	●
	08FR03	4.76	2.38				5293642	●
	09FR03	5.56					5484647	●

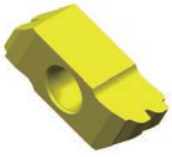
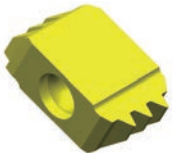
Thread Whirling

Features

New Double-lead video is on WATCH 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

	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm gear
Work material	Ti-6Al-4V ELI	brass
Work appearance		
Insert appearance		
Major Dia.	ϕ4.0mm	ϕ7.0mm
Minor Dia.	ϕ2.4mm	ϕ4.7mm
Lead [Pitch×No. of Lead]	3.42mm (1.71mm×2)	4.9mm (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 / Conditions		9	6	4	
Main spindle	RPM	**10 - 40**	10 - 25	7 - 15	Faster RPM reduces machining time
Whirling cutter	RPM	**1500 - 4000**			
Feed Rate		**Same as thread-lead**			
Bar stock	ϕ	**~ϕ10.0 ***		~ϕ5.0	* For cutter with ϕ12㎜ ID
Work Material		**Ti-6Al-4V ELI / SUS316 / Titanium**			

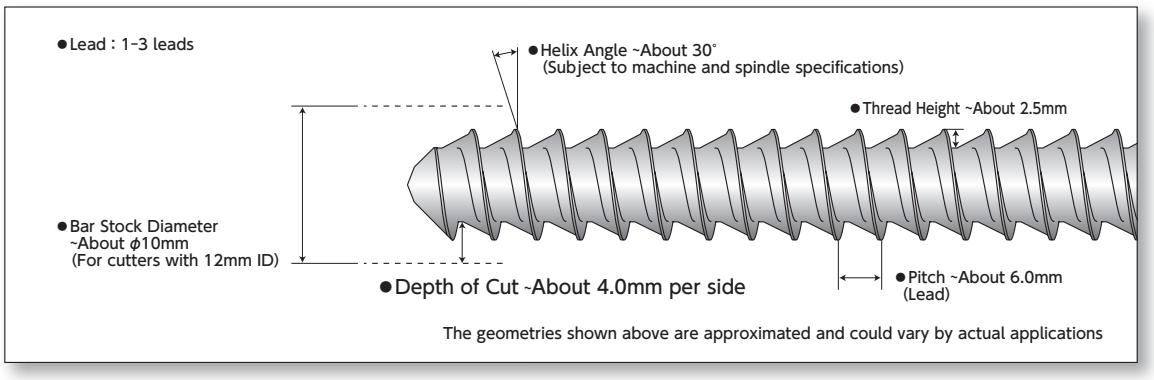
- Formula for calculating thread whirling process time

$$T\ (\text{Seconds}) = \frac{60 \times \text{Thread length}}{\text{Main spindle rpm} \times \text{Feed rate (Thread lead)}}$$

Ex.) Double lead / 50㎜ length / 2.54 lead (2×1.27 pitch) / 30 rpm

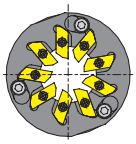
$$T\ (\text{Seconds}) = \frac{60 \times 50}{30 \times 2.54} = 40\ \text{Seconds}$$

Applicable Thread Geometry (Approximated)

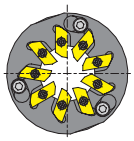


Thread Whirling System

Type 1

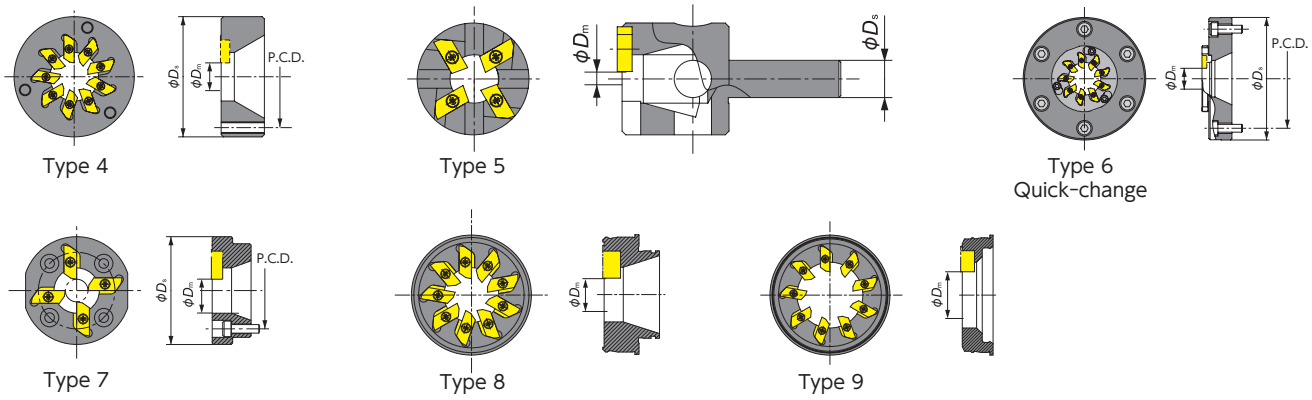


Type 2
Quick-change



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	M32-VIII	Gang	CITIZEN	BTW-4000	0° – 15°	TWC9C0746HP1	●	9	φ12	1	φ46	φ35	M3
	L20/L20E/L20X	Gang		BTW-3000 BTW-3100	0° – 15°								
	L32/L32X			BTW-3100	0° – 15°								
	D25	Gang		BTW-6000	±25°	TWC9C1040HP1 TWC6C1040HP1 TWC9C1040HP1-D16	● ● ●	9 6 9	φ12 φ12 φ16	1	φ33	φ40	M3 (Provided with spindle)
	L32X												
	L20X			BTW-5000	±25°								
	M16				0° – 15°								
	A20			BTW-2000	±25°								
	A32												
	L20/L20X												
	L32/L32X												
	M20												
	M32												
	C32			BTW-1000	±25°								
	L20												
	M20				+20° – −25°								
	M32				±25°								
	C12/16	Gang	CITIZEN	LTR0170	±15°	TWC9C1037P2	●	9	φ12	2	φ37	φ30.5	CS0310(M3)
	M12/16	Turret		LTR0128/LTR0168									
	M12/16III			MSW105									
	M20/32III			KSW110									
	L20	Gang		LTR0183	±15°	TWC9J1040P2		9	φ12	2	φ40	φ32.5	H-M4 × 12
	M20/32												
	M20/32	Turret		LTR0169									
	K16	Attachment	PCM	GSW-101	±15°	TWC6P1620HP1-D9		6	φ9	1	φ32	φ26	M4 (Provided with spindle)
	L20	Gang		LSW-101-L20	±10°	TWC9P1340P2	●	9	φ12	2	φ40	φ32.5	M4 (Provided with spindle)
	M12/16	Turret		MSW-101									
	M20/M32			KSW-101									
STAR	SW-12	Attachment	STAR	10159	±20°	TWC4S1433HP1	●	4	φ8	7	φ38	φ27	CS0310(M3)
	ECAS-12/20			54178	±10°	TWC9S1640P2	●	9	φ12	3	φ40	φ33	CS04148S(M4)
	SB-20R			0M171	−20° – 0°								
	SR-20J/20RIII 20RIV/32JII			68172	−20° – 0°								
	SR-38			10172	±10°								
	ECAS-20T	Turret		59172	−20° – 0°								
	ECAS-32T			58171	±20°								
	ST-38			43156	±20°								
	SV-12			45172	±10°								
	SV-20/SV-20R			42173	±10°								
	SV-32			43172	±10°								
	SV-38R			43156	±20°								
TSUGAMI	BH20/BH38	Turret	TSUGAMI	3263-Y481	±10°	TWC9TS2252P2	●	9	φ12	3	φ52	φ42	CS0515(M5)
	BS20	Attachment		3214-Y1371	±10°	TWC9TS20550P2		9	φ16	3	φ50	φ40	CS0515(M5)
	SS20/SS26/SS32 B0265/B0266-II B0325/B0326-II	Attachment		3268-Y450 3268-Y451	0° – 10°	TWC9TS2244HP1	●	9	φ12	4	φ52	φ44	CS0520(M5)
	S205/S206			3281-Y450 3281-Y451	0° – 20°	TWC9TS1944HP1	●	9	φ12	4	φ52	φ44	CS0520(M5)
	B0123/B0124/B0125/ B0126-II/III B0203/B0204/B0205/ B0205/B0206-II/III			3220-Y6540 3220-Y6541	0° – 25°	TWC9TS1644HP1	●	9	φ12	4	φ52	φ44	CS0515(M5)
					0° – 30°	TWC9TS1044HP1	●	9	φ12	4	φ52	φ44	CS0515(M5)
	SS20/SS26/SS32			3268-Y271	0° – 10°	TWC9TS1952P2BK		9	φ12	4	φ52	φ38	CS0515(M5)
					0° – 20°	TWC9TS1652P2BK		9	φ12	4	φ52	φ38	CS0515(M5)
	SS207/SS267/SS327	—	Using B-axis		0° – 15°	TWC4TS3010HP1	●	4	φ7	5	φ10	For single-corner inserts only	



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	±15°	TWC6TO11542HP1		6	ϕ12	4	ϕ42	ϕ32	CS0410(M4)
	Evo DECO 10/10			242-1900									
	DECO 13a/13e			226-1900	±15°	TWC9TO10540P2		9	ϕ12	3	ϕ40	ϕ31	CS0410(M4)
	Evo DECO 16/10			243-1900									
	Swiss ST26			246-1900									
	DECO 20a			223-1900									
	DECO 26a			225-1900									
	Sigma 20			234-2750	±25°	TWC9TO12050P2-D18		9	ϕ18	3	ϕ50	ϕ40	CS0410(M4)
	Sigma 32			236-2750									
HASEGAWA	JS-1W	—	HASEGAWA	—	0° - 20°	TWC9HA22594P2		9	ϕ16	6	ϕ94	ϕ76	CS0620(M6)
Various Machines			WTO	42BJ	-22° ※1	TWC9WT42BJ20D12RH ※2	●	9	ϕ12	8	—	—	—
				54BJ	30°	TWC9WT54BJ30D12RH ※2	●	9	ϕ12	9	—	—	—
					30°	TWC9WT54BJ25D22RH ※2	●	9	ϕ22	9	—	—	—

※1 Would be changed by spindle
※2 Designed for 6.5mm thickness inserts

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

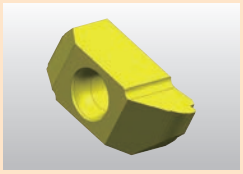
NTK's Unique Attachment System

NTK's whirling insert holder can be attached and detached without removing mounting screws

① Loosen the Mounting Screws
② Rotate the Insert Holder 10 degrees
③ Detach the Insert Holder without removing the Mounting Screws

Basic Insert Grade

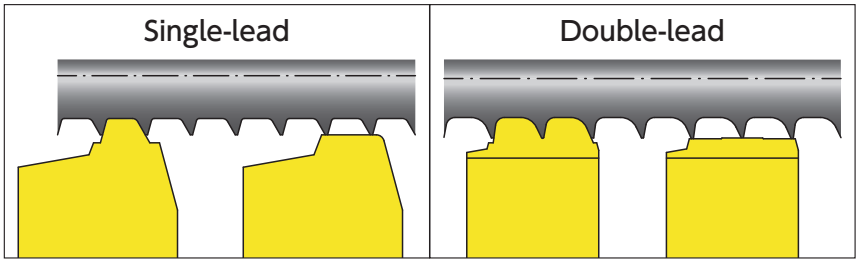
ZM3



- 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

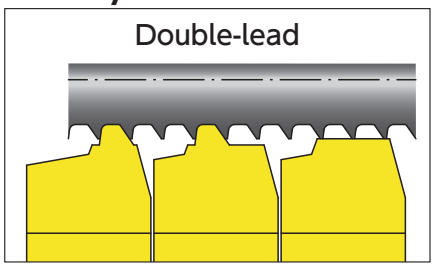
NTK Experiences and Solutions Example

For absolute flat on OD



- Two insert combination brings absolute flat on OD to meet the drawing

For tiny thread

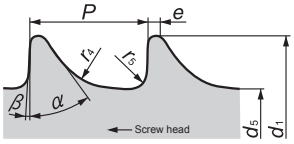


- NTK's Thread Whirling system can machine small diameter multi-lead screws to spec, with lower tool pressure, by using several types of specially designed and accurately ground inserts on the cutter.

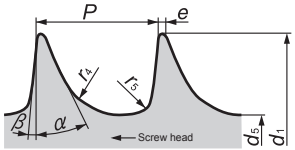
Standard Thread Whirling Inserts (two-sided) for Medical ISO Style Threads

4mm thickness insert

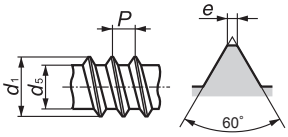
(Note: Must use Thread whirling cutters with 12㎜ ϕDm dimension. See page U18-19 to find ϕDm for each cutter.)



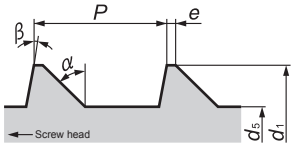
ISO5835 HA



ISO5835 HB



ISO9268 HC



ISO9268 HD

Metric dimensions

Item number	ISO Standard		d_1	d_5	P	e	r_4	r_5	α	β	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°	ϕ8	●
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°	ϕ10	●
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°	ϕ8	●
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°	ϕ10	●
TW9268-HC2.9-D12	ISO9268	HC2.9	2.79 to 2.9	2.03 to 2.18	1.06	0.1max	—	—	—	—	ϕ8	
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.	ϕ9.5	Number of start	2
Major Dia.	ϕ4.0	Helix Angle	28.5°
Minor Dia.	ϕ2.5	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	15	Speed of whirling cutter (rpm)	3,500
Lead = Feed (mm/rev)	5.5	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling	*Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.*		
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.	ϕ8.9	Number of start	2
Major Dia.	ϕ4.57	Helix Angle	23.0°
Minor Dia.	ϕ3.05	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	12	Speed of whirling cutter (rpm)	2,500
Lead = Feed (mm/rev)	5.08	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling	*Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.*		
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.	ϕ6.35	Number of start	2
Major Dia.	ϕ3.0	Helix Angle	15.4°
Minor Dia.	ϕ2.1	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	11	Speed of whirling cutter (rpm)	2,200
Lead = Feed (mm/rev)	2.2	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling	*Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.*		
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.	ϕ8.0	Number of start	1
Major Dia.	ϕ3.45	Helix Angle	7.5°
Minor Dia.	ϕ2.67	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	23	Speed of whirling cutter (rpm)	2,000
Pitch = Feed (mm/rev)	1.24	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.	ϕ5.0	Number of start	1
Major Dia.	ϕ2.3	Helix Angle	5.3°
Minor Dia.	ϕ1.7	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	30	Speed of whirling cutter (rpm)	3,100
Pitch = Feed (mm/rev)	0.58	Result	OK
NTK Thread Whirling	2200 pcs		
This thread is up to 32 mm 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 32 mm length thread.			

Triple-lead Worm Gear			
Work Material : Brass			
Bar Stock Dia.	ϕ8.0	Number of start	3
Major Dia.	ϕ7.0	Helix Angle	14.6°
Minor Dia.	ϕ4.7	Hand of thread	Left
Cutting condition			
Main Spindle Speed (rpm)	20	Speed of whirling cutter (rpm)	3,500
Lead = Feed (mm/rev)	4.8	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 whilring 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

J

Shaper

SHAPER DUO

■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	●No high speed spindle needed ●A lot less cycle time
End milling	○	×	△	Necessary	Complicated	●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.

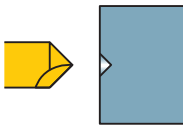
Comparison Chart of HEX Socket Machining

	Tool Pressure	Cycle Time	Flexibility	Tool Cost	
Shaper Duo	◎	△ ＊Can be off-set by over-wrapping operation	○	◎	●Less tool pressure-especially on small diameter parts ●One size can cover several socket sizes
Broach Tool	△	○	×	△	●Need to have tools for each socket size

- Rotary-broach is an efficient way for Hexagon socket. But tool pressure is high and often it pushes part too hard.
- SHAPER DUO system enables less tool pressure and provides better tolerance with less cost.

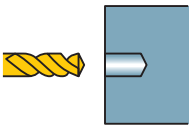
Process Chart

① Center drilling



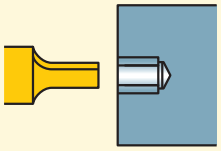
Make a center hole which is smaller than pilot hole drill.

② Drilling (Pilot hole)



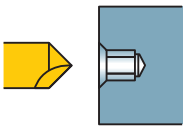
Select a drill with same or smaller (0 ~ -0.1mm) dia. as AF and machine a bit deeper because burrs may cause chipping on shaper insert

③ Shaper tool



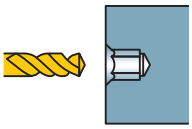
Machine socket rotating 60 degrees 6 times

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-

Holder => K9

Socket Size	Tool	Pilot bore Dia. (mm)	Starting "X" position (mm)	Number of passes: Final "X" position (mm)	Number of passes: Roughing pass 0.025mm	Number of passes: Finishing pass 0.005mm	Estimated cycle time *: ISO10664 Stadard depth of Hexalobular hole (mm)	Estimated cycle time *: Whole process ①-⑤	Estimated cycle time *: 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-

Holder => K9

HEX Standard	Tool	Pilot bore Dia. (mm)	Starting "X" position (mm)	Number of passes: Final "X" position (mm)	Number of passes: Roughing pass 0.025mm	Number of passes: Finishing pass 0.005mm	Estimated cycle time *: ISO 2936 standard depth of Hex hole (mm)	Estimated cycle time *: Whole process ①-⑤	Estimated cycle time *: 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

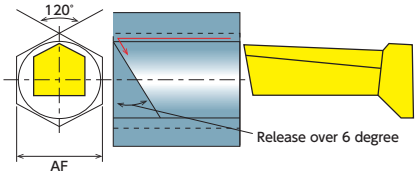
＊Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.005 mm (Finishing)

Recommended Cutting Conditions

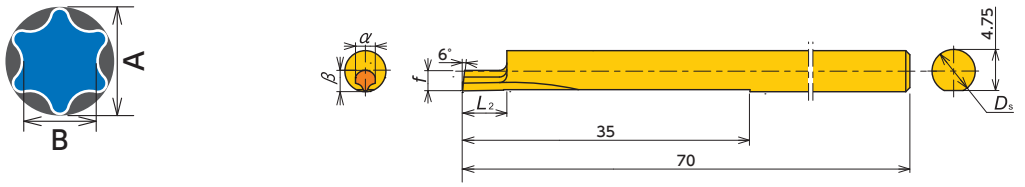
Feed : 3000 mm/min
DOC : Roughing ··· 0.025 mm + Finishing ··· 0.005 mm

Program Example ➡J6 • J7



Sleeves ➡K8 • K9

Insert Bar -Hexalobular-



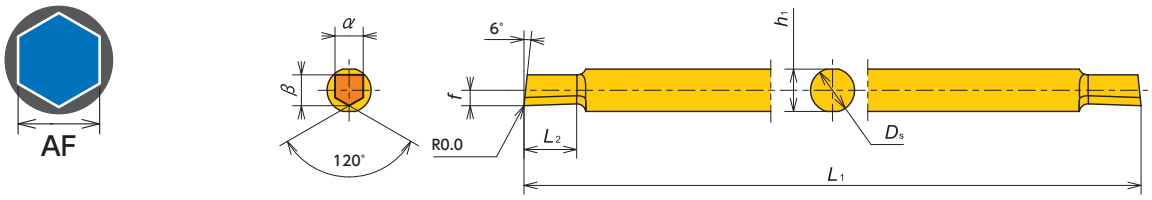
Single-sided

Item Number	Socket Size	Hexalobular Socket #	A (mm)	B (mm)	Ds (mm)	L2 (mm)	α (mm)	β (mm)	f (mm)	Pilot Bore Dia (mm)	Coated Carbide TM4
SSP050N25T06	T6	6	1.75	1.27	ϕ5	2.5	1.08	1.09	2.4	ϕ1.15	●
SSP050N31T07	T7	–	–	–	ϕ5	3.1	1.27	1.29	2.4	ϕ1.38	●
SSP050N36T08	T8	8	2.4	1.75	ϕ5	3.6	1.48	1.50	2.4	ϕ1.62	●
SSP050N41T10	T10	10	2.8	2.05	ϕ5	4.1	1.67	1.70	2.4	ϕ1.92	●
SSP050N43T15	T15	15	3.35	2.4	ϕ5	4.3	2.04	2.10	2.4	ϕ2.30	●
SSP050N46T20	T20	20	3.95	2.85	ϕ5	4.6	2.41	2.50	2.4	ϕ2.71	●
SSP050N50T25	T25	25	4.5	3.25	ϕ5	5.0	2.78	2.90	2.4	ϕ3.13	●
SSP050N55T27	T27	–	–	–	ϕ5	5.5	3.15	3.30	2.4	ϕ3.52	●
SSP050N55T30	T30	30	5.6	4.05	ϕ5	5.5	3.52	3.70	2.4	ϕ3.91	●

※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

Sleeves ➡K8 • K9

Insert Bar -Hexagon-



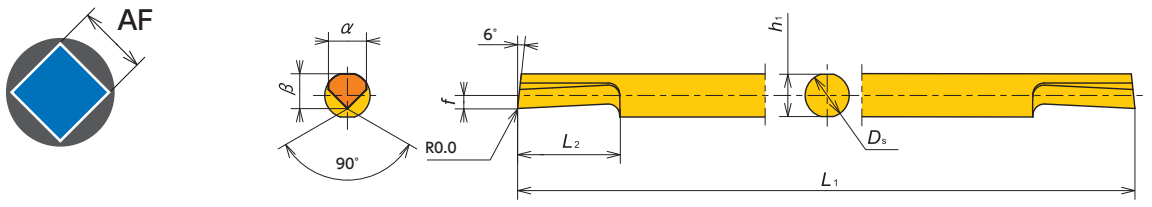
Double-sided

Item Number	Base AF (mm)	HEX Standard size range (mm)	AF range (mm)	Ds (mm)	L1 (mm)	L2 (mm)	h1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide TM4
SSP020N1130H	HEX 1.5	HEX 1.5 – 2.0	1.4 – 2.0	ϕ2	50	3.0	1.8	1.1	0.8	0.40	●
SSP020N1430H	HEX 2.0	HEX 2.0 – 2.5	1.9 – 2.6	ϕ2	50	3.0	1.8	1.4	1.1	0.55	●
SSP030N1940H	HEX 3.0	HEX 2.5 – 3.5	2.4 – 3.6	ϕ3	50	4.0	2.8	1.9	1.6	0.8	●
SSP040N2450H	HEX 4.0	HEX 3.5 – 4.5	3.4 – 4.6	ϕ4	60	5.0	3.8	2.4	2.6	1.3	●
SSP050N3260H	HEX 5.0	HEX 4.5 – 6.0	4.4 – 6.2	ϕ5	70	6.0	4.8	3.2	3.4	1.70	●
SSP060N42120H	HEX 6.0	HEX 6.0 – 8.0	5.9 – 8.2	ϕ6	80	12.0	5.6	4.2	4.0	2.00	●
SSP080N62160H	HEX 8.0	HEX 8.0 – 12.0	7.9 – 12.2	ϕ8	80	16.0	7.6	6.2	4.7	2.35	●

※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

Sleeves ➡K8 • K9

Insert Bar -Square-



Double-sided

Item Number	Base AF (mm)	AF range (mm)	Ds (mm)	L1 (mm)	L2 (mm)	h1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide TM4
SSP020N1740S	2.0	1.9 – 2.3	ϕ2.0	50	4.0	1.8	1.70	1.60	0.70	●
SSP025N1940S	2.5	2.2 – 2.6	ϕ2.5	50	4.0	2.3	1.95	1.80	0.65	●
SSP030N2260S	3.0	2.5 – 3.0	ϕ3.0	50	6.0	2.8	2.20	2.05	0.65	●
SSP035N2760S	3.5	2.9 – 3.7	ϕ3.5	60	6.0	3.3	2.70	2.25	0.60	●
SSP040N3380S	4.0	3.6 – 4.6	ϕ4.0	60	8.0	3.8	3.35	3.05	1.15	●
SSP050N39100S	5.0	4.5 – 5.4	ϕ5.0	70	10.0	4.8	3.90	3.95	1.55	●
SSP060N47120S	6.0	5.3 – 6.6	ϕ6.0	80	12.0	5.6	4.75	4.50	1.70	●
SSP080N58160S	8.0	6.5 – 8.1	ϕ8.0	80	16.0	7.6	5.80	5.50	1.70	●

※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

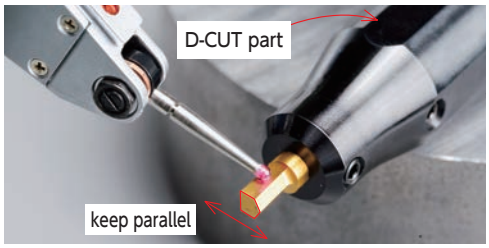
Sleeves ➡K8 • K9

● : Stock

SHAPER DUO Set-up Instructions -Hexagonal

■Outside machine

①



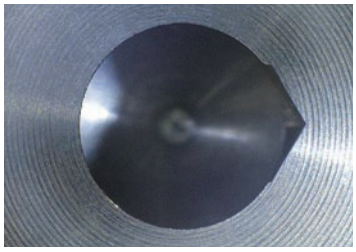
- Set the insert bar in the sleeve and check the parallelism of the flat portion of the sleeve and the insert bar.
- Minimize the overhang of the insert.

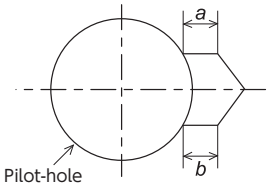
■Inside machine

②

- Set the sleeve into the tool post and make sure the sleeve is set parallel.
- Minimize sleeve overhang.

③

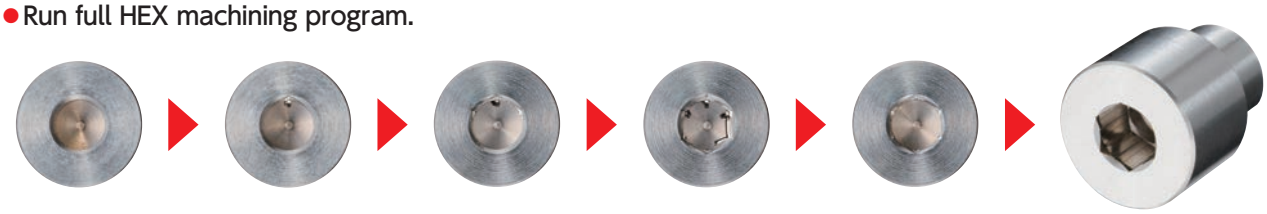




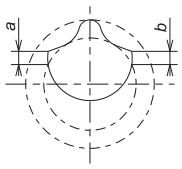
- Increase the number of machining passes with smaller depth of cut if the insert chips with large depth of cut. (0.025mm×5pass is recommended)
  No chamfering process is required for measuring purpose.
- Measure the length of both [a] and [b] with comparator or magnifier.
- Adjust centerline height by rotating the sleeve until you get the same length for [a] and [b].(The difference should be less than 0.02mm)
  *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.

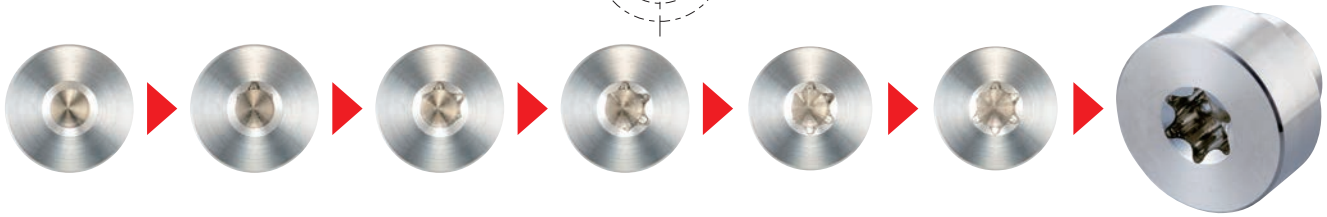
④ **Machine Hexagonal shape**

- 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 J3)**
Insert : SSP030N1940N TM4
Parameters : Feed 3000mm/min, 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÷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×(11−**1**)) = 2.95mm : 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
```

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 #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
```

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
```

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 #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
```

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

```
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

```
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.
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 J3.
D. Return to the X position + 0.05mm (the DOC for diameter).
V. Go to the Sub-Program #2, for finishing sequence.
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, DOC(Roughing) 0.025mm, (Finishing) 0.005mm

Programming tips

- **Make a program considering final " X "position.**

#1 Final " X "position : 3.35mm(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÷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×(22−**1**)) = 2.29mm : 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
```

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 #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
```

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
```

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 #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
```

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

```
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
```

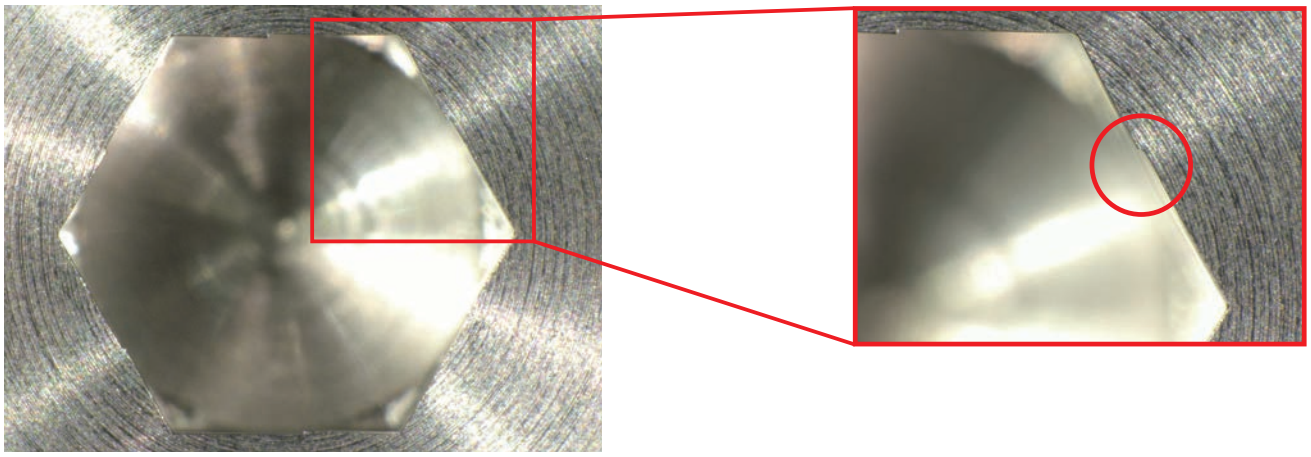
Sub-Program Sequence #2 for Finishing

```
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.
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 J3.
D. Return to the X position + 0.05mm (the DOC for diameter).
V. Go to the Sub-Program #2, for finishing sequence.
E. Finishing operation with 0.005mm DOC (X 3.35) is recommended for better surface finish.

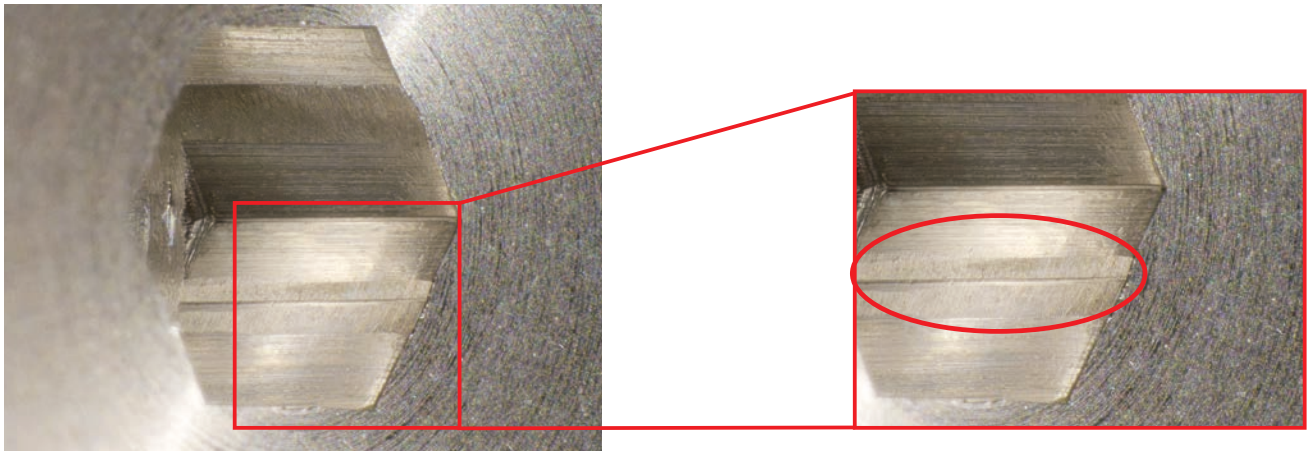
SHAPER DUO Troubleshooting

■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 feed rate
● Smaller depth of cut

- 3000 mm/min 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.

K

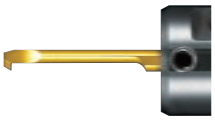
ID Tooling

- ID Tooling Tools ····· K2
- Recommended Cutting Conditions ···· K4
- Tool List ····· K6

LBM Series ····· K6
STICK DUO ····· K8
STICK DUO SPLASH ····· K12
STICK DUO HYPER ····· K18
Mogul Bar Series ····· K22
Boring Bar Adaptors ····· K33
Multi Clamp Toolholders Series ····· K34

NTK ID Tooling - Product Lines

Solid Series

Application	Shape	Coolant Through	Amount of Overhang (L/D)	Min Bore Dia. (mm) 1	1.5	2	2.5	3	3.5	4	5	6	7	8	9
ID Boring	LBM ➡K7		~ 3	●	●	●	●	●							
	SBF ➡K11	●	~ 5			●	●	●	●	●	●	●		●	
	SHF ➡K21	●	~ 5			●	●	●	●	●	●				
ID Back Turning	SBB  ➡K10	●	~ 5					●		●					
ID Grooving	SBG ➡H34		~ 1.5 ~ 3					●		●	●	●		●	
ID Threading	SBT ➡I 16		~ 2.5				●	●	●	●	●	●			
Shaper	SSP Hexalobular/Hexagon/ Square Socket ➡J4		~ 2		●	●	●	●	●	●	●	●	●	●	

Multi Clamp Series

Application	Shape	Coolant Through	Amount of Overhang (L/D) Steel shank	Carbide shank	Min Bore Dia. (mm) 10	12	16	20	25	33	40	42	50	63
ID Boring	S-□CLN (80°Diamond) ➡K34		~ 3							●	●		●	●
	S-□DUN (55°Diamond) ➡K35		~ 3									●	●	
	S-□SKN (Square) ➡K36		~ 3										●	
	S-□WLN (Trigon) ➡K37		~ 3							●	●		●	

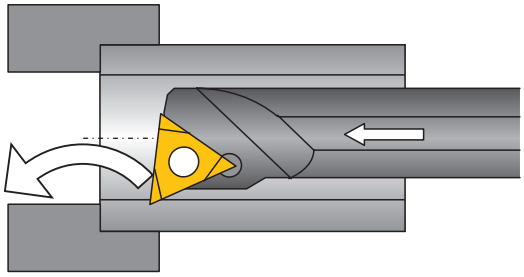
Indexable Series

Application	Shape	Coolant Through	Amount of Overhang (L/D) Steel shank	Amount of Overhang (L/D) Carbide shank	Min Bore Dia. (mm) 5	6	7	8	10	12	14	16	18	20	25	30	40	55
ID Boring	S-MBR ➡K24	●	~5		●													
	C-MBR ➡K25	●		~7	●													
	S-SEXR ➡K26	●	~5			●												
	C-SEXR ➡K26	●		~7		●												
	S-SCLC/P ➡K28	●	~5				●	●	●	●	●		●					
	C-SCLC/P ➡K28	●		~7			●	●	●	●	●		●					
	S-STUC/P ➡K30	●	~5					●	●	●	●		●					
	C-STUC/P ➡K30	●		~7				●	●	●	●		●					
ID Back Turning	C-MSBR ➡K25			~7		●		●										
	C-STZP ➡K32	●		~7					●	●	●		●					
ID Grooving	BG ➡H35		~3						●	●	●	●		●	●			
	GKV ➡H36		~3													●	●	●
ID Threading	HN ➡I 17		~3					●	●	●								
	TGC ➡I 17			~7				●	●	●								

Recommended Insert Grade and Cutting Conditions

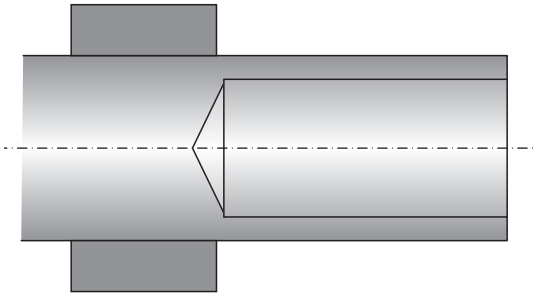
Work Material				Grade Feed Rate(mm/rev)			Cutting Speed (m/min)
				LBM	STICK DUO	MOGUL BAR	
Common Name	JIS	GB	AISI/ASTM	~φ3	φ2.2 ~ φ6.2	φ5 ~	
Low Carbon Steel	S10C ~ S30C	10 ~ 30	1010 ~ 1030	VM1 · ZM3 0.03 (0.006 ~ 0.03)	ZM3 · TM4 0.05 (0.02 ~ 0.06)	TM4 0.08 (0.03 ~ 0.15)	50 100 150
Carbon Steel	S45C ~ S55C	45 ~ 55	1045 ~ 1055	VM1 · ZM3 0.03 (0.005 ~ 0.03)	ZM3 · TM4 0.05 (0.01 ~ 0.06)	TM4 0.06 (0.03 ~ 0.12)	50 80 120
Alloy Steel	SCr415 ~ SCr440	15Cr ~ 40Cr	5140				
Stainless Steel (Austenitic)	SUS303	Y1Cr18Ni9	303	VM1 · ZM3 0.03 (0.005 ~ 0.03)	ZM3 · TM4 0.05 (0.01 ~ 0.07)	ST4 0.06 (0.03 ~ 0.12)	50 80 120
Stainless Steel (Austenitic)	SUS304 SUS316 SUS316L	0Cr18Ni9 0Cr17Ni12Mo2 00Cr17Ni14Mo2	304 316 316L	VM1 · ZM3 0.02 (0.005 ~ 0.03)	ZM3 · DT4 0.03 (0.01 ~ 0.06)	ST4 0.05 (0.03 ~ 0.12)	40 70 100
Stainless Steel (Ferritic)	SUS430 SUS430F	1Cr17 Y1Cr17	430 430F				
Stainless Steel (Martensitic) (Precipitation hardenic)	SUS440C SUS630	9Cr18 11Cr17 9Cr18Mo	440C	VM1 · ZM3 0.02 (0.005 ~ 0.03)	DT4 · TM4 0.03 (0.01 ~ 0.05)	ST4 0.05 (0.03 ~ 0.1)	30 50 70
Sulfur free cutting steel Sulfur complex free cutting steel	SUM22 SUM23 SUM24L	Y15	1213 1215 12L14	VM1 · ZM3 0.03 (0.006 ~ 0.03)	ZM3 · TM4 0.05 (0.02 ~ 0.1)	TM4 0.06 (0.03 ~ 0.15)	50 100 150
Electromagnetic soft iron	SUY-0 SUY-1 SUY-2			VM1 · ZM3 0.03 (0.005 ~ 0.03)	ZM3 · TM4 0.05 (0.01 ~ 0.07)	QM3 0.06 (0.03 ~ 0.12)	200 300 350
Electromagnetic stainless				VM1 · ZM3 0.02 (0.005 ~ 0.03)	ZM3 · DT4 0.03 (0.01 ~ 0.05)	QM3 0.05 (0.03 ~ 0.1)	40 60 80
High-carbon chromium bearing steel	SUJ2	GCr5	52100	VM1 · ZM3 0.02 (0.005 ~ 0.03)	ZM3 · DT4 0.03 (0.01 ~ 0.05)	TM4 · ZM3 0.05 (0.03 ~ 0.1)	40 60 80
Titanium alloy	6AL-4V 6AL-4VELI			VM1 0.02 (0.005 ~ 0.03)	TM4 · DT4 0.04 (0.02 ~ 0.05)	TM4 · DT4 0.06 (0.03 ~ 0.1)	30 50 70
Aluminum alloy	A5052 A6061 A7025	5A02 7A09	5052 7175	VM1 0.03 (0.01 ~ 0.05)	ZM3 · TM4 0.06 (0.02 ~ 0.1)	KM1 · PD1 0.1 (0.03 ~ 0.15)	Carbide 50 100 200 PCD 100 200 350

Through hole

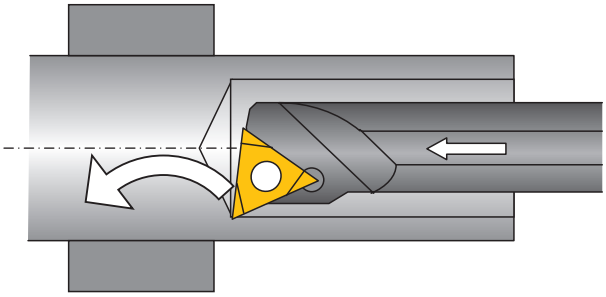


For chip control : chips can be evacuated forward

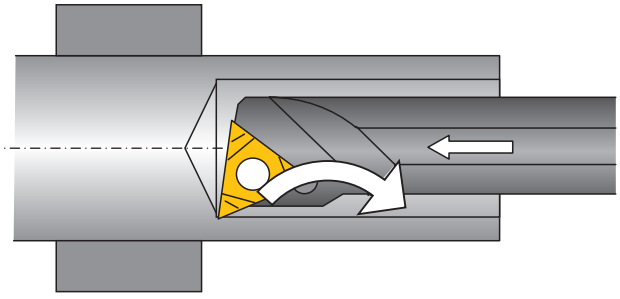
Blind hole



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

LBM Series Minimum bore diameter 1.0㎜～ 3.0㎜

LBMA/LBMA-S

LBMAR□□-S

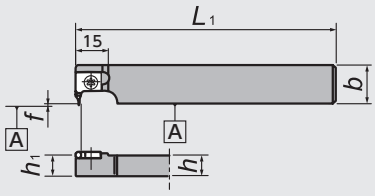


Figure-1

LBMAR□□

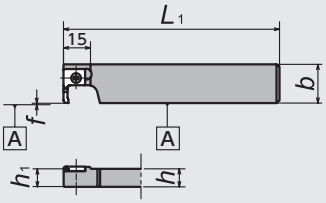


Figure-2

LBMAR□□-F

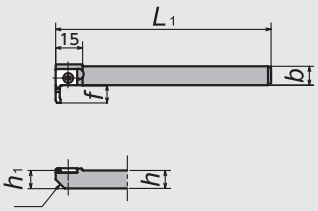


Figure-3

●Right-Hand style shown

CH-LBM

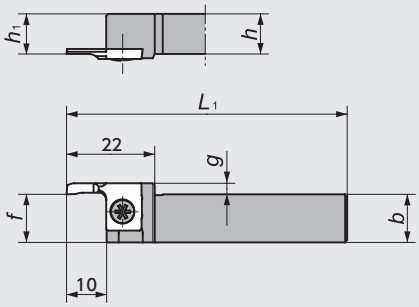
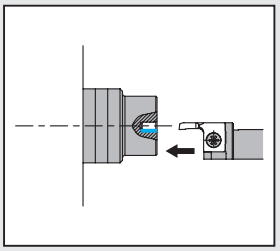


Figure-4



●Left-Hand style shown

DS-LBMB

(DS Holder)

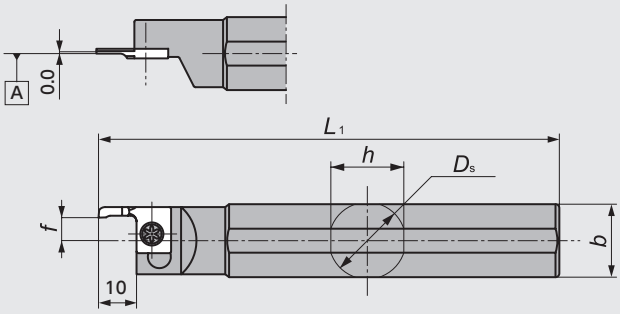
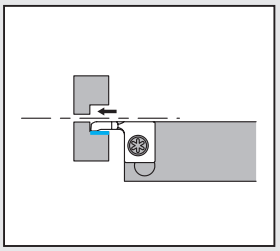
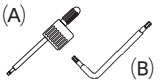


Figure-5



●Left-Hand style shown

LBM Series - Toolholders

Figure	Code No.	Item Number	Stock	Dimensions (㎜) Ds	h	b	L1	h1	f	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
												 (A) (B)
1	5571435	**LBMAR10SGX**	●	—	10	18	85	10	0.0	Short Type **K7**	LRIS-4*10PW	CLR-15S (A)
	5486311	**R10S**	●	—	10		120	10				
	5486329	**R12S**	●	—	12		120	12			LRIS-4*12PW	
2	5383476	**LBMAR08**	●	—	8	21.5	120	8	0.0 ※4	Short Type Long Type **K7**	LRIS-4*10	LLR-25S (B)
	5359849	**R10**	●	—	10			10			LRIS-4*10PW	CLR-15S (A)
	5362199	**R12**	●	—	12			12				
	5378278	**R16**	●	—	16			16			LRIS-4*12PW	
3	5359831	**LBMAR10-F**	●	—	10	10.0	120	10	10.0※4			
4	5659164	**CH-LBML1012H**	●	—	10	12	100※3	10	※1		LRIS-4*10PW	CLR-15S (A)
	5659172	**L1212H**	●	—	12			12				
5	5359856	**DS-LBMBL14F**	●	14.000	13	13	80※3	—	※2		LRIS-4*10PW	CLR-15S (A)
	5359914	**L15H**	●	15.875	15	15	100※3	—				
	5359906	**L16X**※5	●	16.000			95※3	—				
	5359898	**L19**	●	19.050	18	18	120※3	—				
	5359880	**L20**	●	20.000	19	19		—				
	5359872	**L22**※5	●	22.000	21	21		—				
	5483441	**L25-MET**	●	25.000	24	24		—				
	5393905	**L25**	●	25.400			150※3	—				

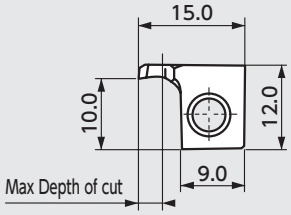
※1 With an insert having the min, machining diameter of ϕ3→12.75㎜ With an insert having any min, machining diameter than ϕ3→12.75㎜
※2 With an insert having the min, machining diameter of ϕ3→6.35㎜ With an insert having any min, machining diameter than ϕ3→6.75㎜
※3 WIth a short type insert mounted, the over all length(L1) becomes reduced by apporox. 4.0㎜
※4 WIth a short type insert mounted, f dimension becomes reduced by apporox. 4.0㎜
※5 Compatible with 16㎜ / 22㎜ round shank DS Series holders. DS-Sleeve⇒

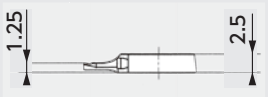
LBMD-S

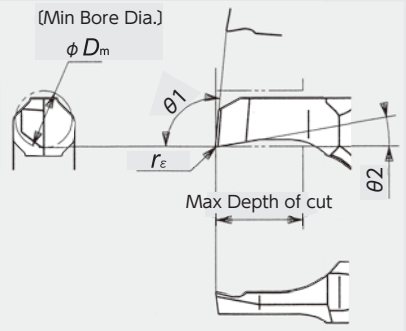
Short type

Mirror finish

with chipbreaker







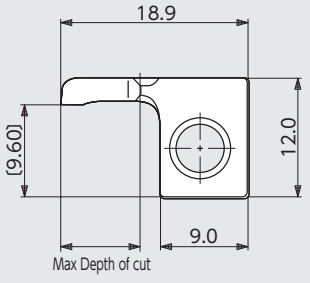
LBMD2335FLPB05S shown

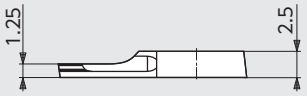
LBM

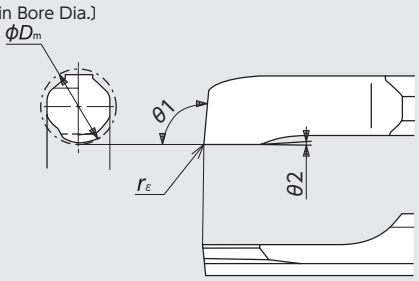
Long type

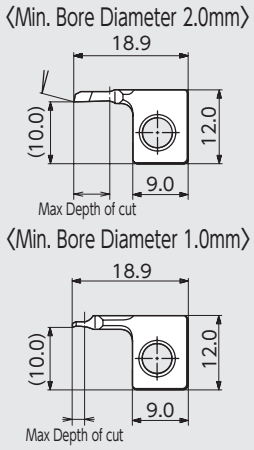
Mirror finish

without chipbreaker









LBMC3080FLP05 shown

LBM Series - Inserts Mirror finish

Insert type	Item Number	Chip-breaker	Min Bore Dia. ϕ D_m	Max. Depth of Cut	Dimensions (mm) θ1	θ2	r_ε	PVD Coated Carbide ZM3	Stock	VM1	Stock
Short type	LBMD1020FLVBS (M)	Yes	ϕ1.0	2.0	95°	10°	0.00			5638150	●
	1020FLPB05S (M)						0.05			5486592	●
	LBMD1430FLVBS (M)		ϕ1.4	3.0			0.00			5529169	●
	1430FLPB05S (M)						0.05			5486600	●
	LBMD1730FLVBS (M)		ϕ1.7				0.00			5638143	●
	1730FLPB05S (M)						0.05			5486618	●
	LBMD2035FLVBS (M)		ϕ2.0	3.5			0.00			5638135	●
	2035FLPB05S (M)						0.05			5486626	●
	LBMD2335FLVBS (M)		ϕ2.3				0.00			5638127	●
	2335FLPB05S (M)						0.05			5486634	●
Long type	LBMD1020FLVB (M)	Yes	ϕ1.0	2.0	95°	10°	0.00			5433222	●
	1020FLPB05 (M)						0.05			5433214	●
	LBMD2060FLVB (M)		ϕ2.0	6.0			0.00			5421888	●
	2060FLPB05 (M)						0.05			5421896	●
	LBME2060FLV (M)	No			105°	2°	0.00			5421920	●
	2060FLP05 (M)						0.05			5421938	●
	2060FLVB (M)	Yes					0.00			5421904	●
	2060FLPB05 (M)						0.05			5421912	●
	LBMC3080FLV (M)	No	ϕ3.0	8.0	95°		0.00	5372834	●	5359799	●
	3080FLP05 (M)						0.05	5372826	●	5359807	●
	LBM3080FLVB (M)	Yes			90°		0.00			5368030	●
	3080FLPB05 (M)						0.05			5368048	●
	LBMC3080FLVB (M)				95°		0.00	5372842	●	5359815	●
	3080FLPB05 (M)						0.05	5372859	●	5359823	●

STICK DUO - Sleeves for ID machining -

NBH Shank diameter ϕ 15.875 ~ 19.05

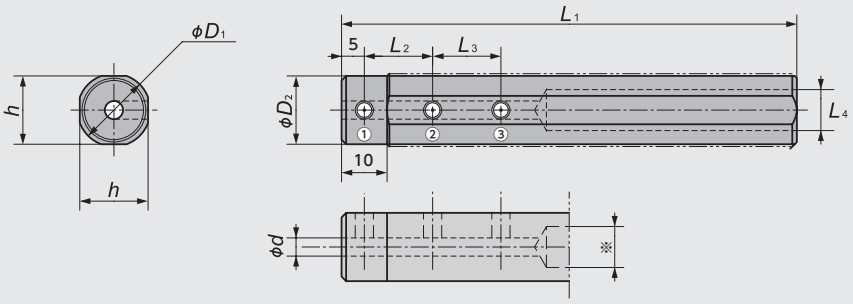


Figure-1

NBH Shank diameter ϕ 20.0 ~ 32.0

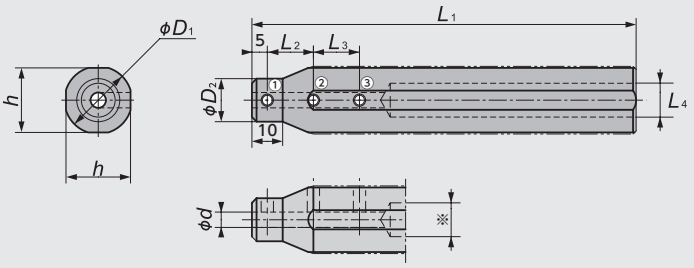


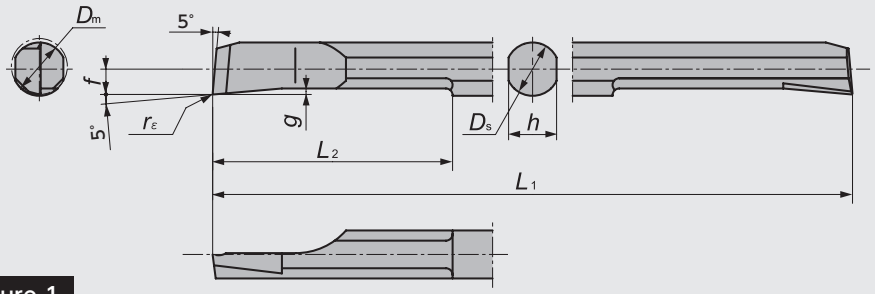
Figure-2

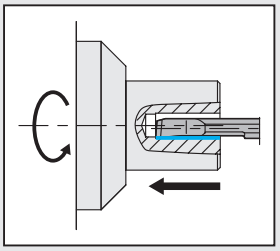
Figure	Code No.	Item Number	Stock	Dimensions (mm)								Clamp Screw			Wrench
				ϕ d	ϕ D1	ϕ D2	h	L1	L2	L3	L4	①	②	③	
1	5631403	NBH02015H	●	2.0	15.875	15	15	100	10	—	9.0	SS0406F	SS0406F	—	LW-2
	5702915	02515H	●	2.5											
	5631411	03015H	●	3.0						10		SS0404F	SS0404F	SS0404F	
	5586110	03515H	●	3.5											
	5586128	04015H	●	4.0					15	15					
	5585997	04515H	●	4.5											
	5585989	05015H	●	5.0											
	5585971	06015H	●	6.0					20	20					
	5585963	08015H	●	8.0								SS0403F	SS0403F	SS0403F	
	5631429	NBH02016H	●	2.0	16	15	15	100	10	—	9.0	SS0406F	SS0406F	—	LW-2
	5702899	02516H	●	2.5											
	5631437	03016H	●	3.0						10		SS0404F	SS0404F	SS0404F	
	5586102	03516H	●	3.5											
	5586094	04016H	●	4.0					15	15					
	5586086	04516H	●	4.5											
	5586078	05016H	●	5.0											
	5586060	06016H	●	6.0					20	20					
	5774195	07016H	●	7.0								SS0403F			
	5586052	08016H	●	8.0									SS0403F	SS0403F	
	5631445	NBH02019K	●	2.0	19.05	18	18	125	10	—	11.0	SS0408F	SS0408F	—	LW-2
	5702907	02519K	●	2.5											
	5631452	03019K	●	3.0						10		SS0406F	SS0406F	SS0406F	
	5586045	03519K	●	3.5											
	5586037	04019K	●	4.0					15	15					
	5586029	04519K	●	4.5											
	5586011	05019K	●	5.0											
	5586003	06019K	●	6.0					20	20					
	5774203	07019K	●	7.0								SS0404F	SS0404F	SS0404F	
	5586227	08019K	●	8.0											
	5586219	10019K	●	10.0								SS0403F			

Figure	Code No.	Item Number	Stock	Dimensions (mm)								Clamp Screw			Wrench
				ϕd	ϕD_1	ϕD_2	h	L_1	L_2	L_3	L_4	①	②	③	
2	5631460	**NBH02020K**	●	2.0	20	11	19	125	10	—	11.0	SS0404F	SS0404F	—	LW-2
	5702881	**02520K**	●	2.5											
	5631478	**03020K**	●	3.0		12				10				SS0406F	
	5586201	**03520K**	●	3.5											
	5586185	**04020K**	●	4.0		13			15	15			SS0406F		
	5586177	**04520K**	●	4.5											
	5586169	**05020K**	●	5.0		14									
	5586151	**06020K**	●	6.0		15			20	20					
	5774211	**07020K**	●	7.0		16									
	5586144	**08020K**	●	8.0		17							SS0404F	SS0404F	
	5586136	**10020K**	●	10.0		19									
	5914742	**12020K**	●	12.0					25	25	14.0	SS0403F	SS0403F	SS0403F	
	5631486	**NBH02022K**	●	2.0	22	11	21	125	10	—	11.0	SS0404F	SS0406F	—	LW-2
	5702873	**02522K**	●	2.5											
	5631494	**03022K**	●	3.0		12				10				SS0408F	
	5586326	**03522K**	●	3.5											
	5586318	**04022K**	●	4.0		13			15	15					
	5586300	**04522K**	●	4.5										SS0406F	
	5586292	**05022K**	●	5.0		14									
	5586284	**06022K**	●	6.0		15			20	20					
	5774229	**07022K**	●	7.0		16									
	5586276	**08022K**	●	8.0		17									
	5586268	**10022K**	●	10.0		19							SS0404F	SS0404F	
	5631502	**12022K**	●	12.0		21			25	25	14.0				
	5631510	**NBH02023K**	●	2.0	23	11	21	125	10	—	11.0	SS0404F	SS0406F	—	LW-2
	5702857	**02523K**	●	2.5											
	5631528	**03023K**	●	3.0		12				10				SS0408F	
	5586250	**03523K**	●	3.5											
	5651336	**04023K**	●	4.0		13			15	15					
	5586243	**04523K**	●	4.5										SS0406F	
	5631536	**05023K**	●	5.0		14									
	5631544	**06023K**	●	6.0		15			20	20					
	5631551	**08023K**	●	8.0		17									
	5631569	**10023K**	●	10.0		19							SS0404F	SS0404F	
	5631577	**12023K**	●	12.0		21			25	25	14.0				
	5631585	**NBH02025K-MET**	●	2.0	25	11	24	125	10	—	11.0	SS0404F	SS0406F	—	LW-2
	5704283	**02525K-MET**	●	2.5											
	5631593	**03025K-MET**	●	3.0		12				10				SS0408F	
	5631601	**03525K-MET**	●	3.5											
	5651328	**04025K-MET**	●	4.0		13			15	15			SS0408F		
	5631619	**04525K-MET**	●	4.5											
	5631627	**05025K-MET**	●	5.0		14									
	5631635	**06025K-MET**	●	6.0		15			20	20					
	5774252	**07025K-MET**	●	7.0		16									
	5631643	**08025K-MET**	●	8.0		17							SS0406F	SS0406F	
	5631650	**10025K-MET**	●	10.0		19									
	5631668	**12025K-MET**	●	12.0		21			25	25	14.0		SS0404F	SS0404F	
	5631676	**NBH02025K**	●	2.0	25.4	11	24	125	10	—	11.0	SS0404F	SS0406F	—	LW-2
	5702865	**02525K**	●	2.5											
	5631684	**03025K**	●	3.0		12				10				SS0408F	
	5586235	**03525K**	●	3.5											
	5586383	**04025K**	●	4.0		13			15	15			SS0408F		
	5586375	**04525K**	●	4.5											
	5586367	**05025K**	●	5.0		14									
	5586359	**06025K**	●	6.0		15			20	20					
	5774260	**07025K**	●	7.0		16									
	5586342	**08025K**	●	8.0		17							SS0406F	SS0406F	
	5586334	**10025K**	●	10.0		19									
	5631692	**12025K**	●	12.0		21			25	25	14.0		SS0404F	SS0404F	
	5939475	**NBH04532K**	●	4.5	32.0	13	30	125	15.0	15.0	11.0	SS0404F	SS0408F	SS0408F	LW-2
	5939483	**05032K**	●	5.0		14									
	5939491	**06032K**	●	6.0		15			20.0	20.0					
	5939509	**07032K**	●	7.0		16									
	5939525	**08032K**	●	8.0		17									
	5939533	**10032K**	●	10.0		19									
	5939467	**12032K**	●	12.0		21					14.0		SS0406F	SS0406F	
	5939459	**14032K**	●	14.0		23			25.0	25.0	16.0	SS0504	SS0506	SS0506	
	5939442	**16032K**	●	16.0		25					18.0				

Bars for STICK DUO

SBFS-S Chips can be evacuated forward





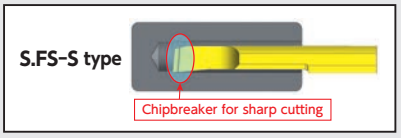
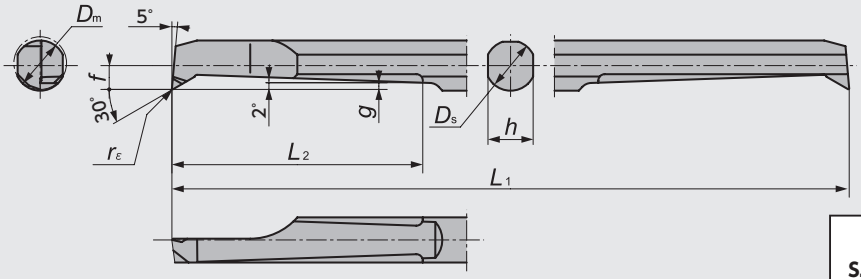
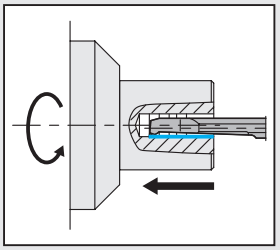


Figure-1

SBFB-F Evacuate chips backward





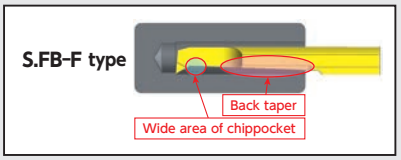
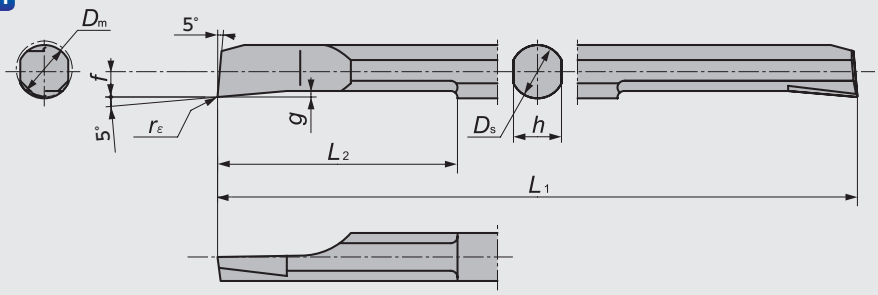


Figure-2

SBFS-H Flat type (without chipbreaker)

Mirror finish



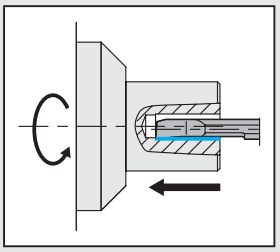


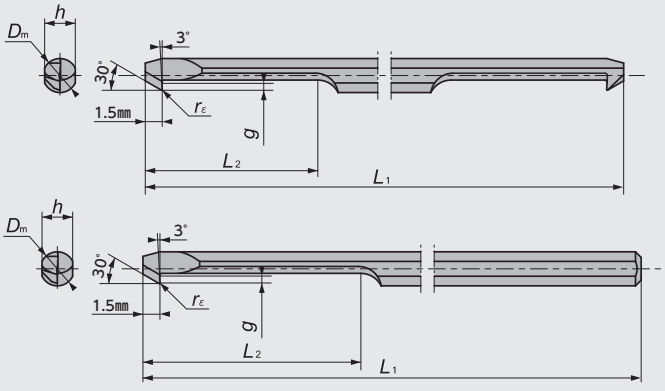
Figure-3

SBB Series (ID Back Turning)

SBB (Minimum Bore Diameter 3.0mm)

Short type
two-sided

Long type
single-sided



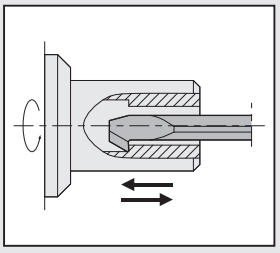


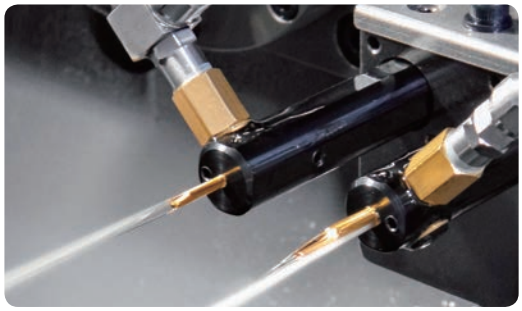
Figure-4

Figure	Item Number	Min Bore Dia. (mm) D_m	Chip-breaker	Dimensions (mm)							PVD Coated Carbide			
				D_s	L_1	L_2	f	h	g	r_ε	DT4	Stock	ZM3	Stock
1	SBFS020R005S	2.2	Yes	2	50	10	0.9	1.8	0.25	0.05	5882907	●	5654975	●
	025R005S	2.7		2.5	50	12.5	1.15	2.3	0.30	0.05	5882881	●	5685995	●
	025R015S									0.15	5882873	●	5685987	●
	030R005S	3.2		3	50	15	1.4	2.7	0.40	0.05	5882865	●	5640891	●
	030R015S									0.15	5882857	●	5649165	●
	035R005S	3.7		3.5	60	17.5	1.65	3.2	0.40	0.05	5882840	●	5685888	●
	035R015S									0.15	5882832	●	5685979	●
	040R005S	4.2		4	60	20	1.9	3.6	0.45	0.05	5882824	●	5640867	●
	040R015S									0.15	5882816	●	5649140	●
	050R005S	5.2		5	70	25	2.4	4.5	0.50	0.05	5882808	●	5654983	●
	050R015S									0.15	5882790	●	5654991	●
	060R005S	6.2		6	80	30	2.9	5.4	0.60	0.05	5882782	●	5704861	●
	060R015S									0.15	5882766	●	5704853	●
2	SBFB020R005F	2.2	Yes	2	50	8	0.95	1.8	0.25	0.05	5882758	●	5658026	●
	025R005F	2.7		2.5	50	12.5	1.2	2.3	0.30	0.05	5882741	●	5685920	●
	025R015F									0.15	5882733	●	5685912	●
	030R005F	3.2		3	50	15	1.4	2.7	0.45	0.05	5882725	●	5640883	●
	030R015F									0.15	5882717	●	5649173	●
	035R005F	3.7		3.5	60	17.5	1.65	3.2	0.50	0.05	5882709	●	5685904	●
	035R015F									0.15	5882691	●	5685896	●
	040R005F	4.2		4	60	20	1.9	3.6	0.50	0.05	5882683	●	5640875	●
	040R015F									0.15	5882675	●	5649157	●
	050R005F	5.2		5	70	25	2.4	4.5	0.70	0.05	5882667	●	5655006	●
	050R015F									0.15	5882659	●	5655014	●
	060R005F	6.2		6	80	30	2.9	5.4	0.90	0.05	5882634	●	5704796	●
	060R015F									0.15	5882626	●	5704812	●
3	SBFS020R005H Ⓜ	2.2	No	2	50	10	0.9	1.8	0.25	0.05			5674866	●
	025R005H Ⓜ	2.7		2.5	50	12.5	1.15	2.3	0.30	0.05			5685961	●
	025R015H Ⓜ									0.15			5685953	●
	030R005H Ⓜ	3.2		3	50	15	1.4	2.7	0.40	0.05			5674874	●
	030R015H Ⓜ									0.15			5674882	●
	035R005H Ⓜ	3.7		3.5	60	17.5	1.65	3.2	0.40	0.05			5685946	●
	035R015H Ⓜ									0.15			5685938	●
	040R005H Ⓜ	4.2		4	60	20	1.9	3.6	0.45	0.05			5674890	●
	040R015H Ⓜ									0.15			5674908	●
	050R005H Ⓜ	5.2		5	70	25	2.4	4.5	0.50	0.05			5674924	●
	050R015H Ⓜ									0.15			5674940	●
	060R005H Ⓜ	6.2		6	80	30	2.9	5.4	0.60	0.05			5705207	●
	060R015H Ⓜ									0.15			5705199	●
	080R005H Ⓜ	8.2		8	80	30	3.9	7.3	0.80	0.05			5705850	●
	080R015H Ⓜ									0.15			5705843	●
4 Short Type	SBB030RB005-S	3.0	Yes	3	50	15	1.3	2.7	0.50	0.05			5917067	●
	030RB010-S									0.1			5917042	●
	040RB005-S	4.0		4	60	18	1.8	3.6	0.80	0.05			5917414	●
	040RB015-S									0.15			5917372	●
4 Long Type	SBB030RB005	3.0	Yes	3	50	19	1.3	2.7	0.50	0.05			5917059	●
	030RB010									0.1			5917034	●
	040RB005	4.0		4	60	24	1.8	3.6	0.80	0.05			5917380	●
	040RB015									0.15			5917364	●

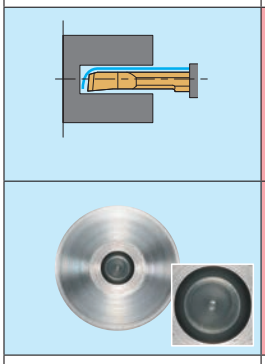
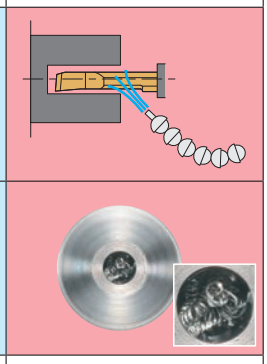
※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

STICK DUO SPLASH

- Coolant through sleeves for ID Boring with Adjustable Overhang Mechanism -

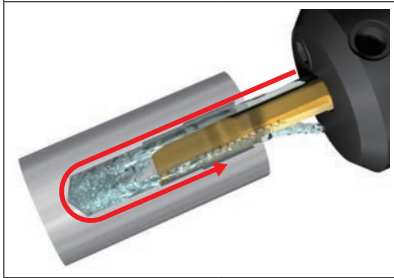
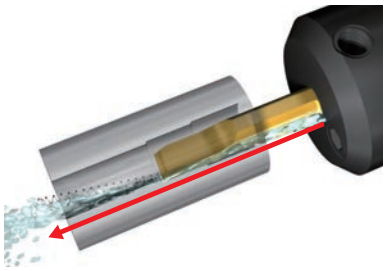
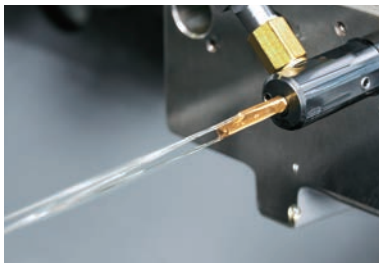
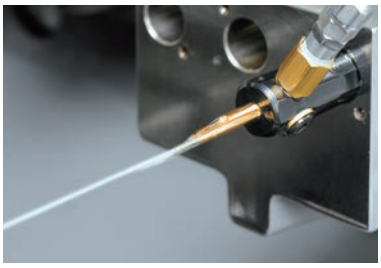


■No chip problems

STICK DUO SPLASH	External coolant
	
No chip inside hole	*Chip packed*

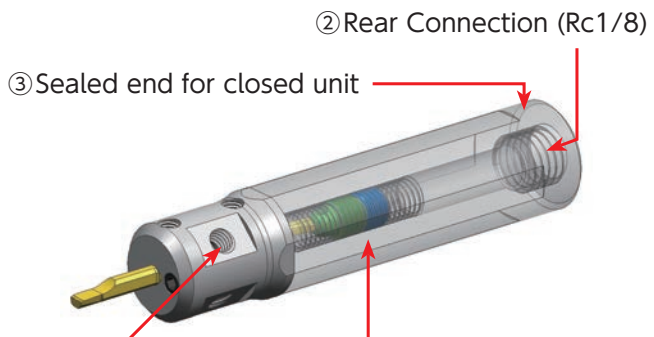
Material : SCM435
Insert bar : SHFS040R005S
Hole depth : 15㎜
Pilot hole : φ5.1×28.0㎜L
Coolant Pressure : 5MPa

■Choose from 2 coolant directions

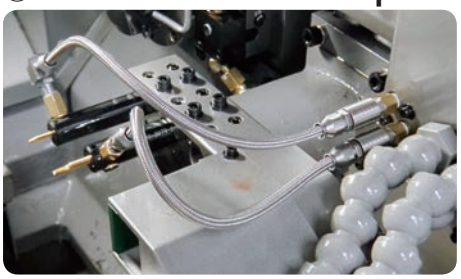
Ⅰ) For Blind hole	Ⅱ) For Through hole
	
Coolant hole	Coolant hole
	

Just rotated 180 degrees

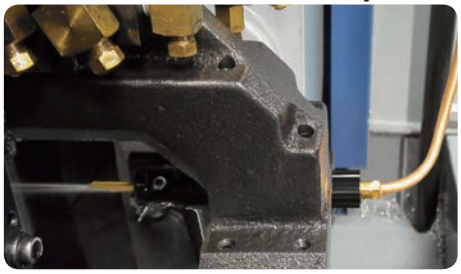
■3 coolant connection options



①Front Connection example



②Rear Connection example



STICK DUO SPLASH - Stick Duo Hyper with Coolant through -

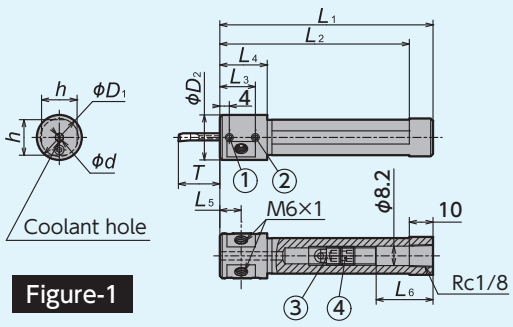


Figure-1

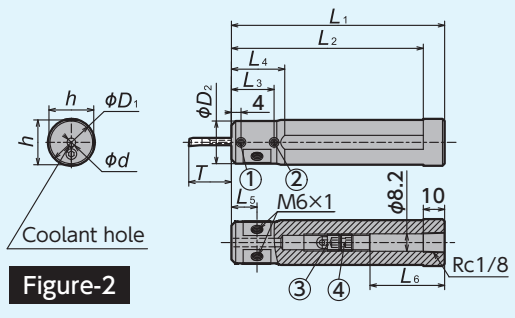
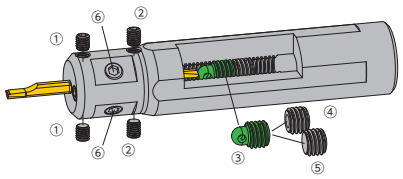


Figure-2

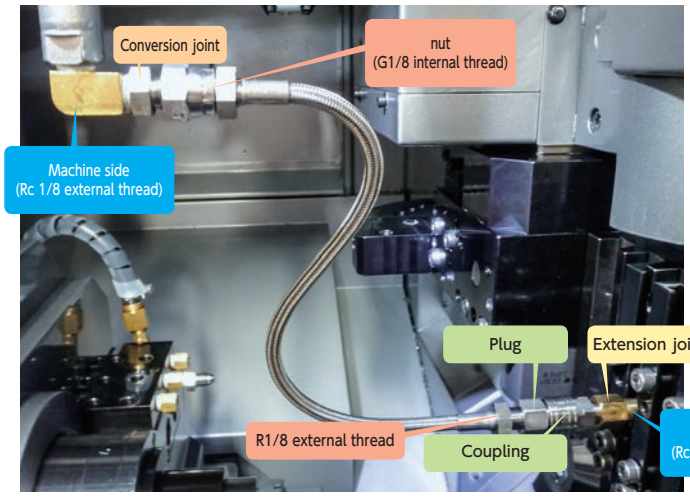
Figure	Code No.	Stock	Item Number	Dimensions (mm)										Overhang Length of Bar T (mm)	
				φd	φD1	φD2	h	L1	L2	L3	L4	L5	L6	Min.	Max.
1	5893011	●	HY-NBH02016G-OH	2	16	19	15	90	80	15	19	9.5	29	5	18
	5893029	●	02516G-OH	2.5									30	6.3	19.5
	5893037	●	03016G-OH	3									31	7.5	21
	5893045	●	03516G-OH	3.5									23	8.8	24.5
	5893052	●	04016G-OH	4						20	24	12	24	10	28
	5893060	●	05016G-OH	5									16	12.5	35
2	5893078	●	HY-NBH02019J-OH	2	19.05	19.05	18	110	100	15	—	9.5	49	5	18
	5893086	●	02519J-OH	2.5									50	6.3	19.5
	5893094	●	03019J-OH	3									51	7.5	21
	5893102	●	03519J-OH	3.5									43	8.8	24.5
	5893136	●	04019J-OH	4						20		12	44	10	28
	5893144	●	05019J-OH	5									36	12.5	35
	5967922	●	06019J-OH	6									28.5	15	42
	5893151	●	HY-NBH02020J-OH	2	20	20	19	110	100	15	—	9.5	49	5	18
	5893169	●	02520J-OH	2.5									50	6.3	19.5
	5893177	●	03020J-OH	3									51	7.5	21
	5893185	●	03520J-OH	3.5									43	8.8	24.5
	5893193	●	04020J-OH	4						20		12	44	10	28
	5893201	●	05020J-OH	5									36	12.5	35
	5967930	●	06020J-OH	6									28.5	15	42
	5893219	●	HY-NBH02022X-OH	2	22	20	21	120	110	15	25	9.5	59	5	18
	5893227	●	02522X-OH	2.5									60	6.3	19.5
	5893235	●	03022X-OH	3									61	7.5	21
	5893243	●	03522X-OH	3.5									53	8.8	24.5
	5893250	●	04022X-OH	4						20		12	54	10	28
	5893268	●	05022X-OH	5									46	12.5	35
	5967948	●	06022X-OH	6									28.5	15	42
	5893276	●	HY-NBH02025.0K-OH	2	25.0	20	24	125	115	15	25	9.5	64	5	18
	5893284	●	02525.0K-OH	2.5									65	6.3	19.5
	5893292	●	03025.0K-OH	3									66	7.5	21
	5893300	●	03525.0K-OH	3.5									58	8.8	24.5
	5893318	●	04025.0K-OH	4						20		12	59	10	28
	5893326	●	05025.0K-OH	5									51	12.5	35
	5967955	●	06025.0K-OH	6									28.5	15	42
	5893334	●	HY-NBH02025.4K-OH	2	25.4	20	24	125	115	15	25	9.5	64	5	18
	5893367	●	02525.4K-OH	2.5									65	6.3	19.5
	5893375	●	03025.4K-OH	3									66	7.5	21
	5893383	●	03525.4K-OH	3.5									58	8.8	24.5
	5893391	●	04025.4K-OH	4						20		12	59	10	28
	5893409	●	05025.4K-OH	5									51	12.5	35
	5967963	●	06025.4K-OH	6									28.5	15	42

Parts for STICK DUO SPLASH

Item Number	Clamp Screw		Overhang Adjustment		
HY-NBH ... -OH	①	②	③	④	⑤
	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

Quick-change Coolant Components

Coolant hose for connecting with R1/8



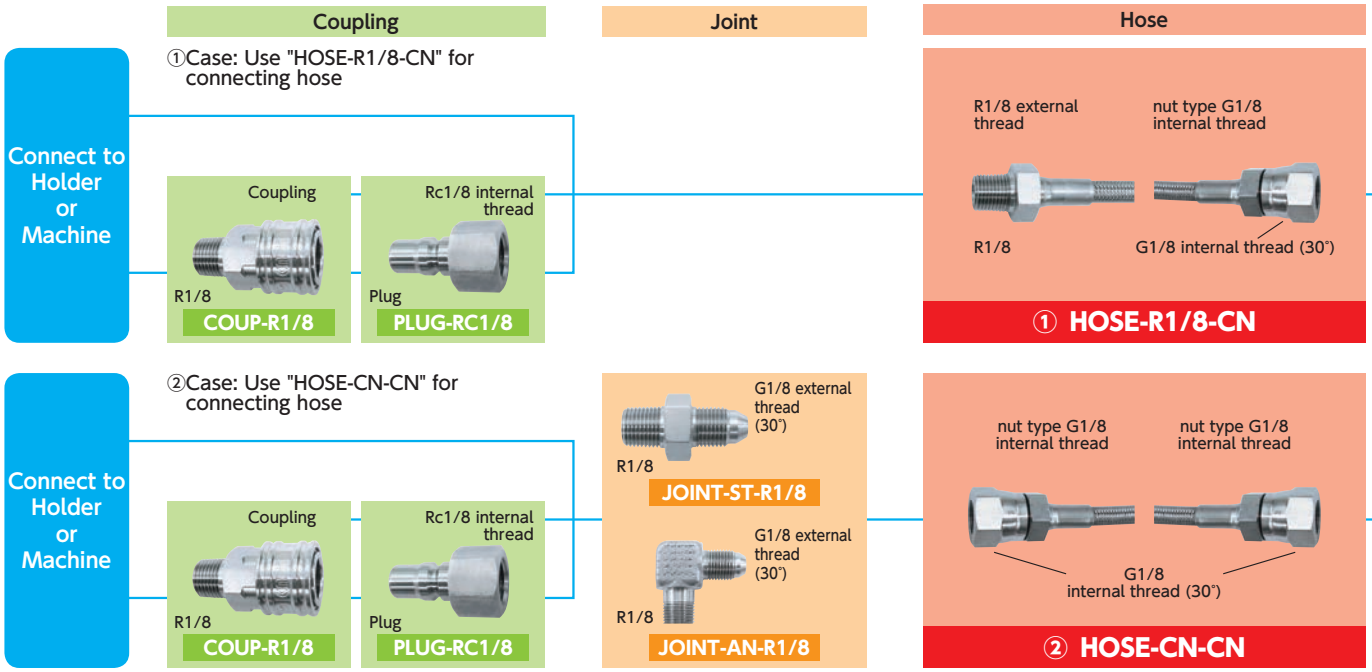
Ex. of connecting ①

- ***Line up a wide range of coolant hose length***
- ***Available for 2 types of coupling and conversion joint***
- ***Working pressure MAX. 20.6 MPa***
- ***High quality flexible stainless steel braided hose***

Ex. of connecting ①

Parts	P/N
Conversion joint	JOINT-ST-R1/8
hose	HOSE-R1/8-CN-400
Plug	PLUG-RC1/8
Coupling	COUP-R1/8
Extension joint	SCJ-R1/8-RC1/8-L

Chart for connecting coolant components



Hose

Shape	P/N	Dimensions (mm) L	Working pressure MAX.	Working pressure MIN.
① R1/8 External thread + nut: G1/8 intrenal thread	HOSE-R1/8-CN-200	200	20.6	50
	HOSE-R1/8-CN-250	250	20.6	50
	HOSE-R1/8-CN-300	300	20.6	50
	HOSE-R1/8-CN-400	400	20.6	50
	HOSE-R1/8-CN-500	500	20.6	50
	HOSE-R1/8-CN-800	800	20.6	50
② Both side: nut G1/8 intrenal thread	HOSE-CN-CN-200	200	20.6	50
	HOSE-CN-CN-250	250	20.6	50
	HOSE-CN-CN-300	300	20.6	50
	HOSE-CN-CN-400	400	20.6	50
	HOSE-CN-CN-500	500	20.6	50
	HOSE-CN-CN-800	800	20.6	50

R1/8 External thread
Fix by rotating hose

nut G1/8 internal thread
Fix by rotating nut
(No need to rotate hose)

SPLASH Series Selection Support Sheet
Able to search the material you need by choosing the combination you wish to the support sheet.

CUTTING TOOLS

Conversion / Extension Joint

Stock	Spare parts	Dimensions (mm)					
		T_1	T_2	L_1※1	L_2	B	d
●	**SCJ-M6-RC1/8-L**	M6	Rc1/8 (PT1/8)	16	15	13	2.5
●	**SCJ-R1/8-M10-L**	Rc1/8 (PT1/8)	M10×1	16	12	13	4.5
●	**SCJ-R1/8-RC1/8-L**	Rc1/8 (PT1/8)	Rc1/8 (PT1/8)	16	15	13	4.5
●	**SCJ-R1/8-NPT1/8-L**	Rc1/8 (PT1/8)	NPT1/8	16	15	13	4.5
●	**SCJ-M6-M10**	M6×1	M10×1	6	15	12	2.5
●	**SCJ-M6-RC1/8**	M6×1	Rc1/8 (PT1/8)	6	15	13	2.5
●	**SCJ-M6-NPT1/8**	M6×1	NPT1/8	6	15	13	2.5
●	**SCJ-M8-RC1/8**	M8×1	Rc1/8 (PT1/8)	6	15	13	3.5
●	**SCJ-R1/8-M10**	Rc1/8 (PT1/8)	M10×1	10	15	12	4.5
●	**SCJ-R1/8-NPT1/8**	Rc1/8 (PT1/8)	NPT1/8	10	15	13	4.5

※1 To prevent hitting the coolant connecting part of holder from the gang tool post, "L1" dimension length is set longer.
NPT: ANSI/ASME B.1.20···1-1983(National Taper Pipe)

Joint | **Coupling**

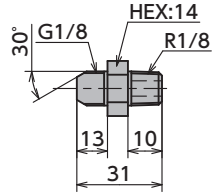
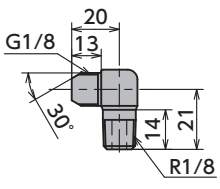
G1/8 external thread (30°) — R1/8 — **JOINT-ST-R1/8**
G1/8 external thread (30°) — R1/8 — **JOINT-AN-R1/8**

Rc1/8 internal thread — Plug — **PLUG-RC1/8**
Coupling — R1/8 — **COUP-R1/8**

Connect to Holder or Machine

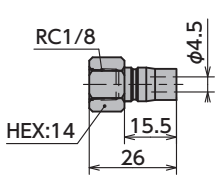
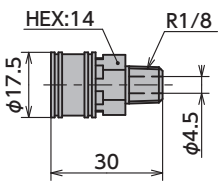
Suitable use of Coupling and Joint
- Detach Hose frequently
  ⇒ Coupling is suitable
- Less detach Hose
  ⇒ Joint is suitable

■Conversion joint (nut G1/8 internal thread)

Parts	Straight style	L style
P/N	**JOINT-ST-R1/8**	**JOINT-AN-R1/8**
Working pressure MAX.	**20.6**	**20.6**
Shape		

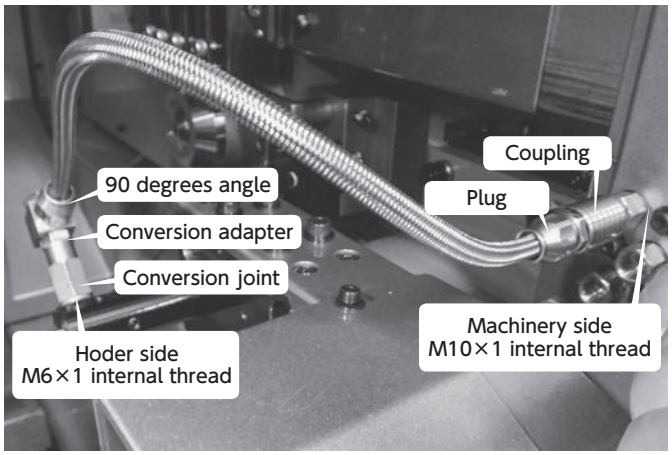
※Screw standard will be different in both sides of straight and L style screw part.
Please use the same screw standard when connecting to hose or one touch coupler.

■Coupling

Parts	Plug	Coupling
P/N	**PLUG-RC1/8**	**COUP-R1/8**
Working pressure MAX.	**7.5**	**7.5**
Shape		

Quick-change Coolant Components

Coolant hose by HEB for connecting M10×1, M8×1, G1/8



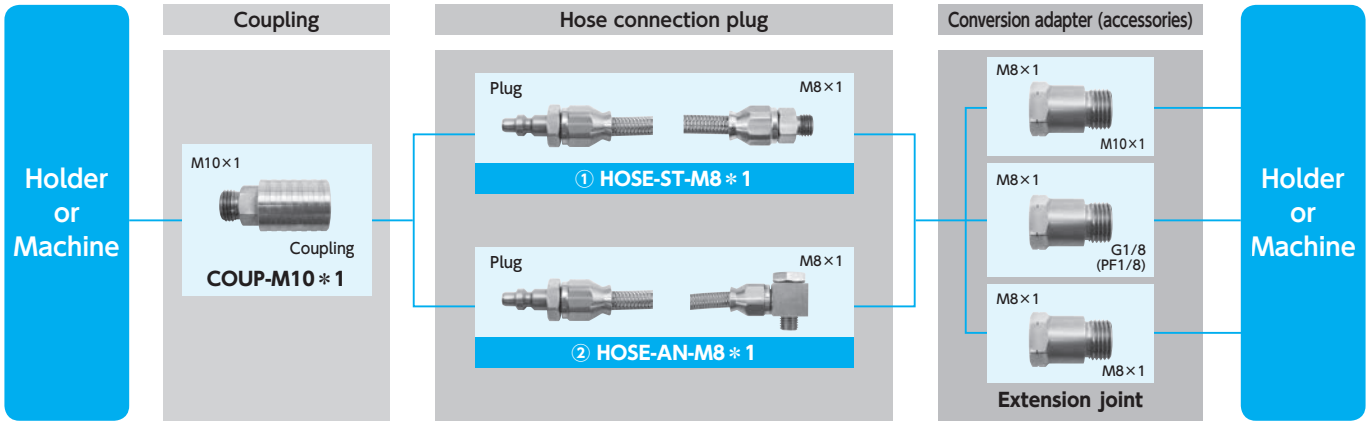
Ex. of connecting

- ***Hose length 300mm***
- ***Coupling by HEB***
- ***Working pressure MAX. 20MPa***

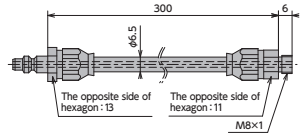
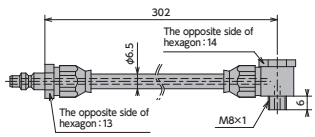
Ex. of connecting

Parts	P/N
Coupling	**COUP-M10＊1**
Hose	**HOSE-AN-M8＊1**
Conversion adapter	**M8×1-M10×1**
Conversion joint	**SCJ-M6-M10**

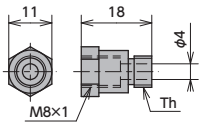
■Ex. of coolant hose connection



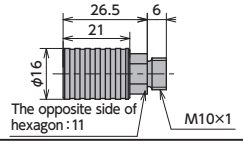
■Hose set with plug

Shape	Code No.	部品品番	Adapter (Th) ①	Adapter (Th) ②	Adapter (Th) ③	Working pressure MAX. (MPa)
① Straight type 	5894290	**HOSE-ST-M8＊1**	M10×1	G1/8 (PF1/8)	—	20
② 90 degrees angle type 	5894282	**HOSE-AN-M8＊1**	M10×1	G1/8 (PF1/8)	M8×1	

■Conversion Adapter (Accessories of Hose Set)

Shape	

■Coupling

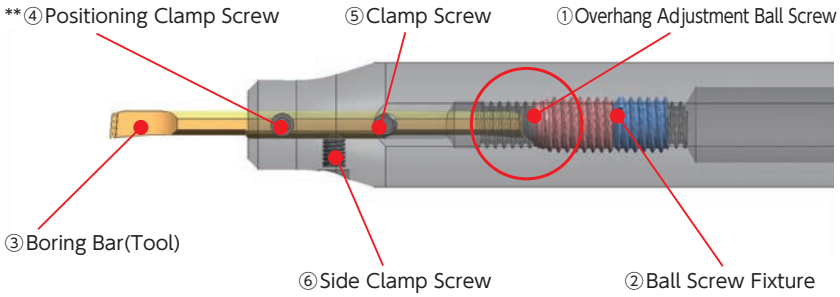
Parts	Coupling
Part No.	**COUP-M10＊1**
Code No.	5894308
Shape	

MEMO

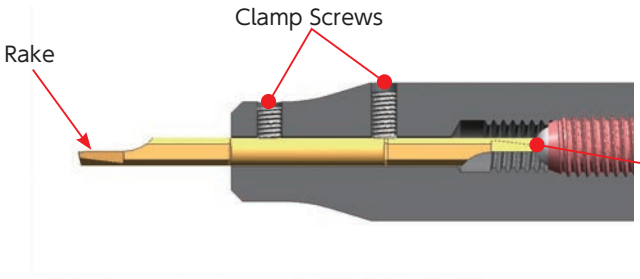
STICK DUO HYPER

- Sleeves for ID Boring with Adjustable Overhang Mechanism -

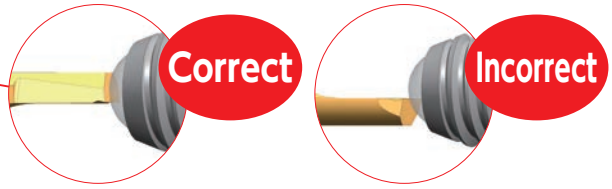
■Can Index boring bars like inserts

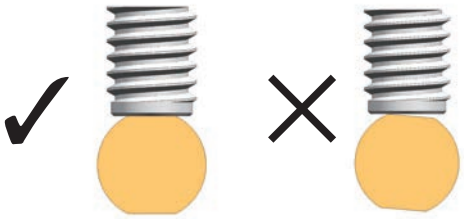


■Installation Procedure for STICK DUO Hyper



Caution: Improper installation dramatically increases the chance of chipping cutting edge

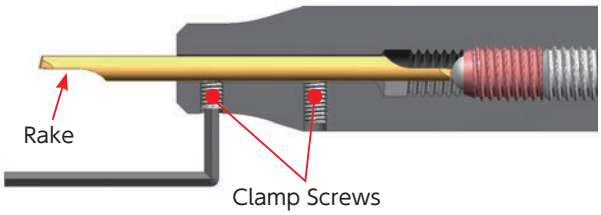




Improper clamping of boring bar causes unstable centerline height and offset

①Position the overhang adjustment ball screw to determine overhang amount
②Slide the ball screw fixture to secure the ball screw location
③Insert 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
④Secure the boring bar by tightening the positioning clamp screw ▶Recommended Clamping Torque: 2.0N·m
** Make sure to clamp the boring bar so that the flat surface of the bar makes proper contact with clamp screws
⑤Secure the boring bar by tightening the remaining clamp screws ▶Recommended Clamping Torque: 2.0N·m
⑥Even 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

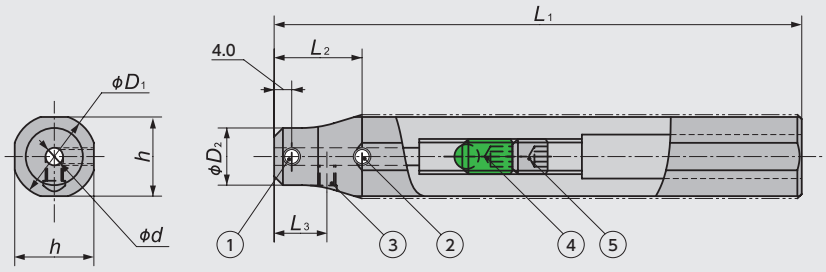
■When the tool is installed upside down



Toolholder must be installed so that clamp screws and rake of the tool face toward the same side

STICK DUO HYPER - Sleeves for ID machining -

HY-NBH



Please refer to φd to find correct-size inserts (bars)

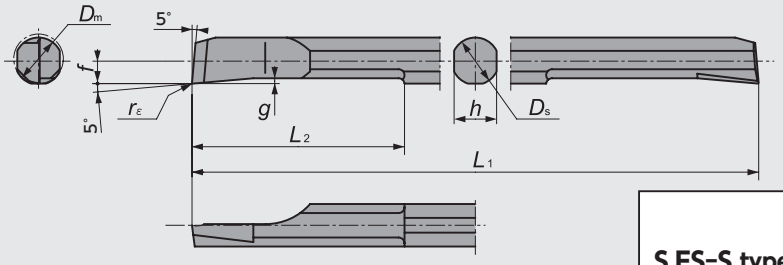
Code No.	Item Number	Stock	Dimensions (mm)							Clamp Screw		
			φd	φD1	φD2	h	L1	L2	L3	①	②	③
5709894	HY-NBH02016H	●	2.0	16	11	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
5709902	02516H	●	2.5		11.5							
5709910	03016H	●	3.0		12							
5709936	03516H	●	3.5		12.5			20	12		SS0404F	
5709944	04016H	●	4.0		13							
5709951	05016H	●	5.0		14							
5709969	HY-NBH02019K	●	2.0	19.05	11	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
5709977	02519K	●	2.5		11.5							
5709985	03019K	●	3.0		12							
5709993	03519K	●	3.5		12.5			20	12			
5710009	04019K	●	4.0		13							
5710017	05019K	●	5.0		14							
5712708	HY-NBH02020K	●	2.0	20	11	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
5712716	02520K	●	2.5		11.5							
5712724	03020K	●	3.0		12							
5712740	03520K	●	3.5		12.5			20	12			
5712757	04020K	●	4.0		13							
5712765	05020K	●	5.0		14							
5712773	HY-NBH02022K	●	2.0	22	11	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
5712799	02522K	●	2.5		11.5							
5712831	03022K	●	3.0		12							
5712856	03522K	●	3.5		12.5			20	12			
5712872	04022K	●	4.0		13							
5712914	05022K	●	5.0		14							
5712732	HY-NBH02025K-MET	●	2.0	25	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
5712823	02525K-MET	●	2.5		11.5							
5712849	03025K-MET	●	3.0		12							
5712864	03525K-MET	●	3.5		12.5			20	12			
5712898	04025K-MET	●	4.0		13							
5712922	05025K-MET	●	5.0		14							
5713003	HY-NBH02025K	●	2.0	25.4	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
5713029	02525K	●	2.5		11.5							
5713045	03025K	●	3.0		12							
5713060	03525K	●	3.5		12.5			20	12			
5713086	04025K	●	4.0		13							
5713102	05025K	●	5.0		14							

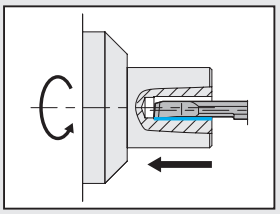
Spare Parts

Item Number	Overhang Adjustment		Wrench	
	④	⑤	for①②③	for④⑤
HY-NBH ... K	SS0812R	SS0808F	LW-2	LW-4×104

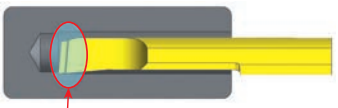
Bars for STICK DUO SPLASH / STICK DUO HYPER

SHFS-S Chips can be evacuated forward





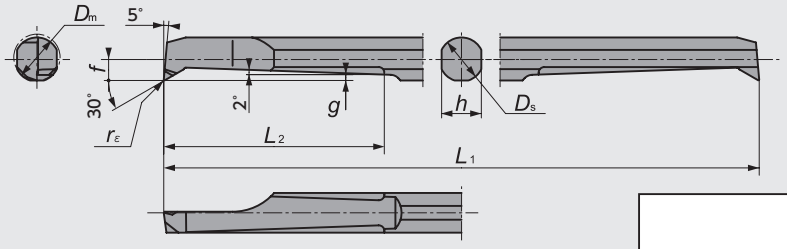
S.FS-S type

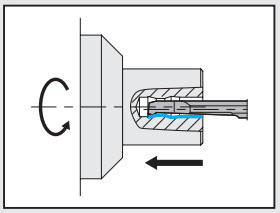


Chipbreaker for sharp cutting

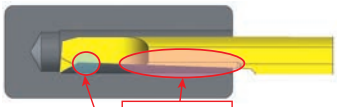
Figure-1

SHFB-F Evacuate chips backward





S.FB-F type



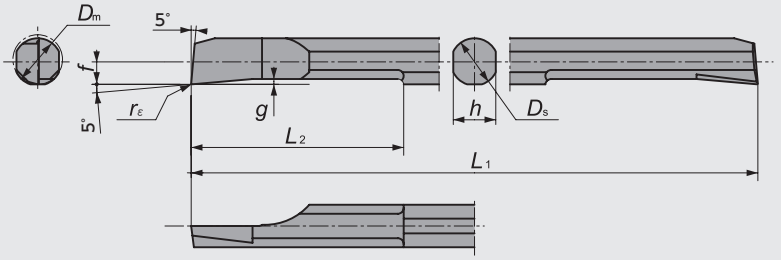
Back taper

Wide area of chippocket

Figure-2

SHFS-H Flat type (without chipbreaker)

Mirror finish



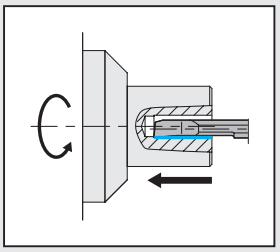
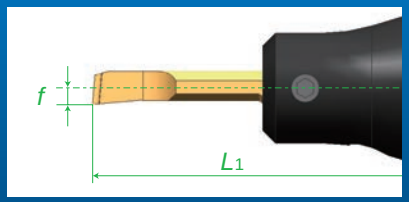
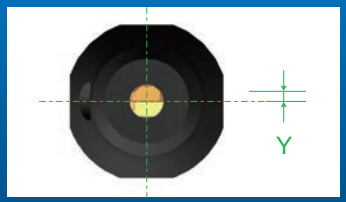


Figure-3

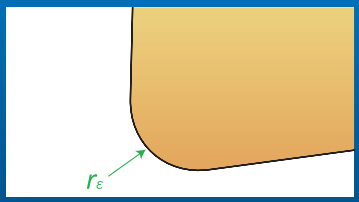
Tolerance of SHFS-S/SHFB-F/SHFS-H bars



Offset f : ±0.015mm
Tool Length L_1 : ±0.02mm

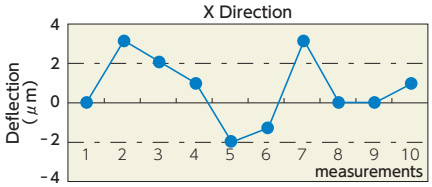


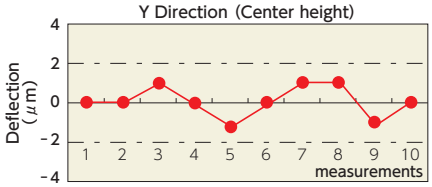
Centerline Y : +0.05/−0mm



Corner r_ε : ±0.015mm

Repeatability of (STICK DUO SPLASH / STICK DUO Hyper) with (SHFS / SHFB) bars





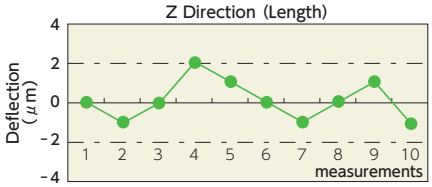
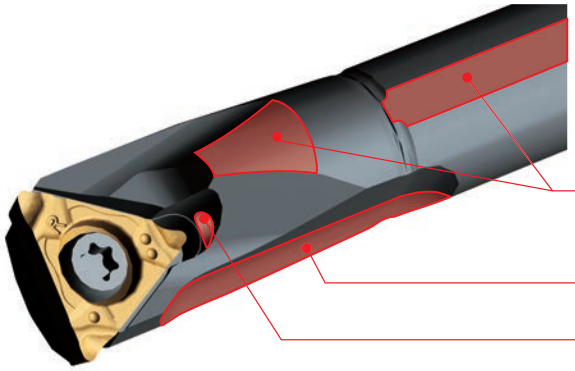


Figure	Item Number	Min Bore Dia. (mm) D_m	Chip-breaker	Dimensions (mm)							PVD Coated Carbide	
				D_s	L_1	L_2	f	h	g	r_ε	TM4	Stock
1	SHFS020R005S	2.2	Yes	2	50	10	0.9	1.8	0.25	0.05	5709548	●
	025R005S	2.7		2.5	50	12.5	1.15	2.3	0.30	0.05	5709563	●
	025R015S									0.15	5709571	●
	030R005S	3.2		3	50	15	1.4	2.7	0.40	0.05	5709589	●
	030R015S									0.15	5709597	●
	035R005S	3.7		3.5	60	17.5	1.65	3.2	0.40	0.05	5709605	●
	035R015S									0.15	5709613	●
	040R005S	4.2		4	60	20	1.9	3.6	0.45	0.05	5709621	●
	040R015S									0.15	5709639	●
	050R005S	5.2		5	70	25	2.4	4.5	0.50	0.05	5709647	●
	050R015S									0.15	5709654	●
2	SHFB020R005F	2.2	Yes	2	50	8	0.95	1.8	0.25	0.05	5709779	●
	025R005F	2.7		2.5	50	12.5	1.2	2.3	0.30	0.05	5709787	●
	025R015F									0.15	5709795	●
	030R005F	3.2		3	50	15	1.4	2.7	0.45	0.05	5709803	●
	030R015F									0.15	5709811	●
	035R005F	3.7		3.5	60	17.5	1.65	3.2	0.50	0.05	5709829	●
	035R015F									0.15	5709837	●
	040R005F	4.2		4	60	20	1.9	3.6	0.50	0.05	5709845	●
	040R015F									0.15	5709852	●
	050R005F	5.2		5	70	25	2.4	4.5	0.70	0.05	5709860	●
	050R015F									0.15	5709878	●
3	SHFS020R005H (M)	2.2	No	2	50	10	0.9	1.8	0.25	0.05	5709662	●
	025R005H (M)	2.7		2.5	50	12.5	1.15	2.3	0.30	0.05	5709670	●
	025R015H (M)									0.15	5709688	●
	030R005H (M)	3.2		3	50	15	1.4	2.7	0.40	0.05	5709696	●
	030R015H (M)									0.15	5709704	●
	035R005H (M)	3.7		3.5	60	17.5	1.65	3.2	0.40	0.05	5709712	●
	035R015H (M)									0.15	5709720	●
	040R005H (M)	4.2		4	60	20	1.9	3.6	0.45	0.05	5709738	●
	040R015H (M)									0.15	5709746	●
	050R005H (M)	5.2		5	70	25	2.4	4.5	0.50	0.05	5709753	●
	050R015H (M)									0.15	5709761	●

※Caution: Due to the tolerance, it might not fit into the holder which is made by other company.

Mogul Bar

High rigidity boring bars



Features

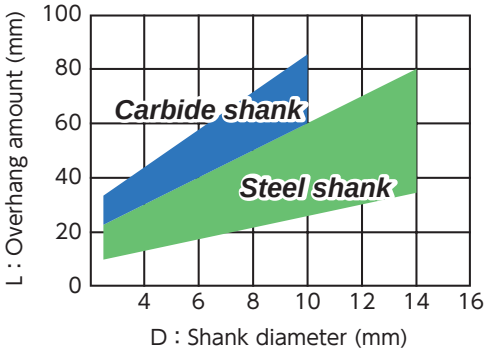
- ***High rigidity + Minimal flat widths Reduce vibration***
- ***Large clearance for improved chip evacuation***
- ***All Mogul Bar boring bars are coolant through***

Recommended amount of overhang

Steel Shank L/D≦5

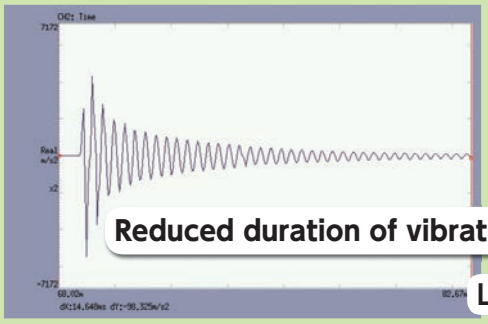
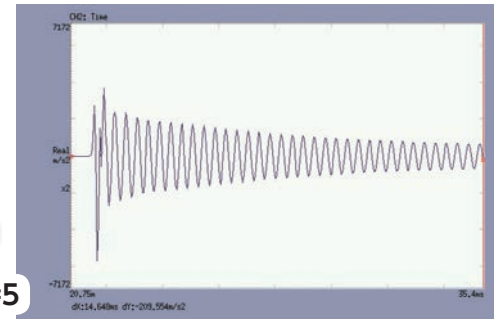
Carbide Shank L/D≦7

L : Overhang
D: Shank diameter



[Cutting condition example]
Work materials: Alloy steel, stainless
V_c=80m/min f =0.05 ~ 0.1mm/rev a_p=0.1 ~ 0.5mm(DOC) WET

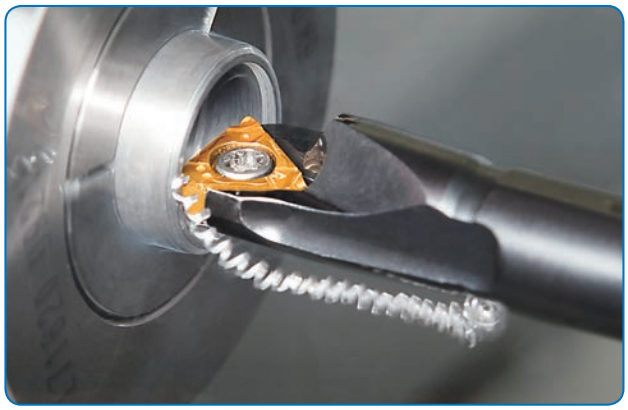
Vibration analysis

MogulBar	Other boring bars
	

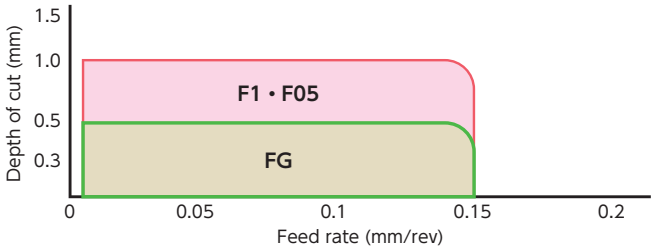
Note: Assuming a 100N load is applied. An equal amount of force was applied to both bars for vibration analysis.
Boring bar used in above analysis: S08H-STUPR09D10-OH

F Chipbreakers - Evacuate chips BACKWARD

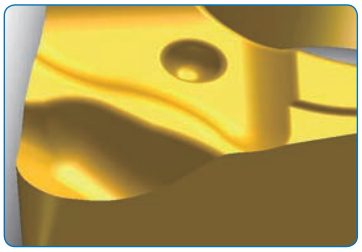
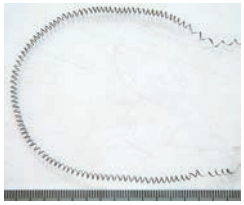
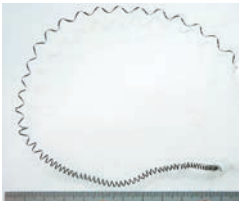
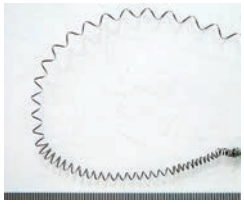
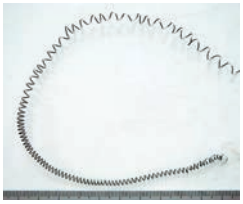
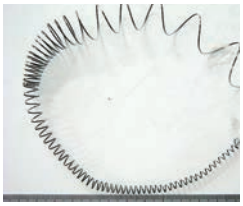
- F chipbreakers allow chips to evacuate backward
- Combination of the F-chipbreakers and Mogul Bar delivers the best performance



Recommended Cutting Condition Range



F Chipbreakers - Features

	DOC (mm)	Feed(mm/rev) 0.05	Feed(mm/rev) 0.1
FG Chipbreaker ● Best for finishing ● Works for small DOC (0.5mm or less) ● High rake angle 	0.1		
	0.3		
F1/F05 Chipbreakers ● Cover wide condition range ● Ground chipbreaker 	0.5		
Note: Right-hand inserts with FG and F1 chipbreakers should be used with right-hand holders		[Cutting condition example] SCM435 Diameter : ϕ12.0 V_c=80m/min Depth of Bore : 20mm Wet Holder : S10K-STUPR11D12-OH Insert : TPGH110304	

Mogul Bar for 75° Diamond (MBL style)

Minimum Bore Diameter 5.0㎜

S-MBR (Coolant through) Steel shank (tapered type)

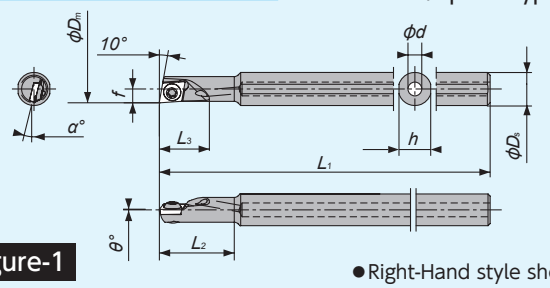
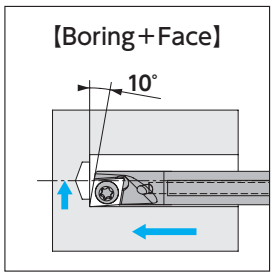


Figure-1

●Right-Hand style shown



F1 chipbreakers evacuates chips BACKWARD (S-STUC style shown)

C-MBR (Coolant through) Carbide shank (straight type)

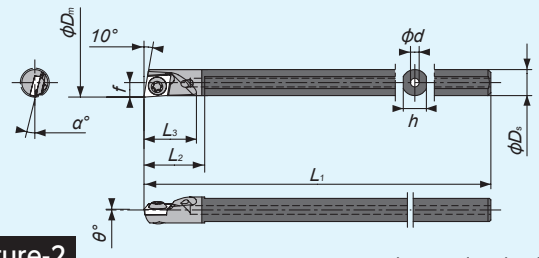


Figure-2

●Right-Hand style shown

C-MBR (Coolant through) Carbide shank (tapered type)

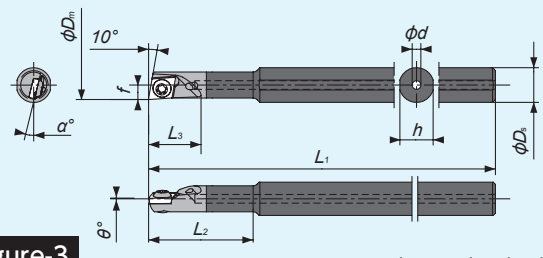


Figure-3

●Right-Hand style shown

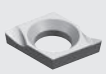
MBL style - Toolholders

Figure	Code No.	Item Number	Stock	Min Bore Dia. (㎜) D_m	Dimensions (㎜) ϕD_s	h	L_1	f	L_2	L_3	ϕd	θ	α	Std. corner radius (㎜) r_ε	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5789888	S06F-MBRD05-OH	●	5.0	6.0	5.7	80	2.5	13.5	9.0	2.5	0°	-13°	0.15	MBL	LR-S-2*3.5	CLR-13S
2	5789896	C045F-MBRD05-OH	●		4.5	4.0			–		1.5						
3	5789904	C06F-MBRD05-OH	●		6.0	5.7			18								

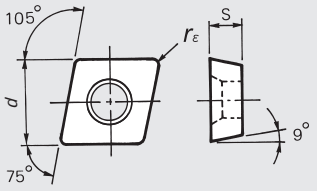
MBL style - Insert

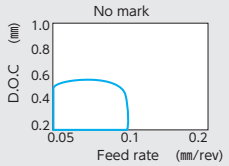
MBL

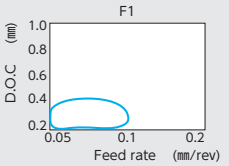
Left-Hand style shown



F1※
Right-Hand style shown







Item Number	Dimensions (㎜) d	s	r_ε	PVD Coated Carbide ST4	Stock	ZM3	Stock	TM4	Stock	QM3	Stock
MBL005FL	3.6	1.0	0.05			5161252	●	5696018	●	5036884	●
MBL015FL			0.15			5161245	●	5696026	●	5168000	●
MBL005FRF1※	3.6	1.0	0.05	5038872	●			5789763	●	5036892	●
MBL015FRF1※			0.15	5038955	●			5789771	●	5933858	●

※F1 chipbreaker, right-hand inserts fit to right-hand toolholder
Note : F1 chipbreaker evacuates chips BACKWARD

Standard Bar for 75° Diamond (MBL style) Minimum Bore Diameter 5.0mm

C-MBR

Carbide shank
(straight type)

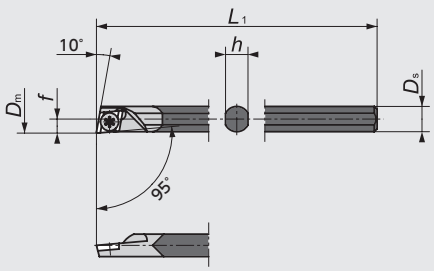
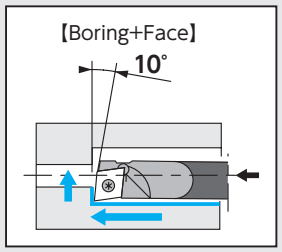


Figure-1



●Right-Hand style shown

C-MBR

Carbide shank
(tapered type)

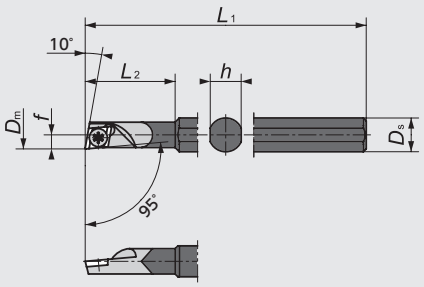
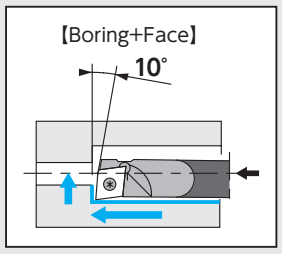


Figure-2



●Right-Hand style shown

C-MSBR

Carbide shank
(straight type)

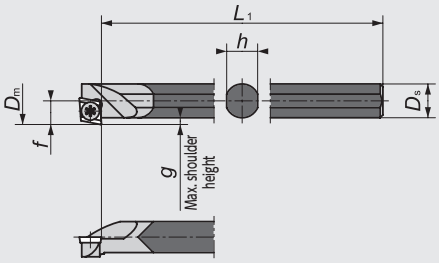
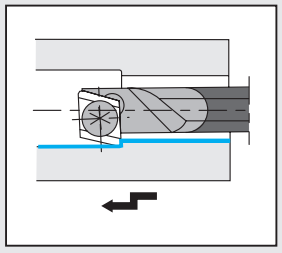
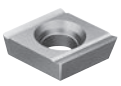


Figure-3



●Right-Hand style shown

MBL style - Toolholders

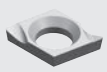
Figure	Code No.	Item Number	Stock	Min Bore Dia. (mm) D_m	Max. shoulder height (mm) g	Dimensions (mm)※ D_s	h	L_1	f	L_2	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
													
1	5610175	**C045F-MBR**	●	**5.0**	—	4.5	4.0	80	2.5	—	MBL	LR-S-2＊3.5	CLR-13S
2	5162706	**C06F-MBR**	●	**5.0**	—	6.0	5.5	80	2.5	18			
3	5161054	**C04J-MSBR**	●	**5.7**	**1.0**	4.0	3.5	110	3.2	—			
	5161047	**C06J-MSBR**	●	**7.7**		6.0	5.5		4.2	—			

＊ Std. corner radius r_ε =0.15mm

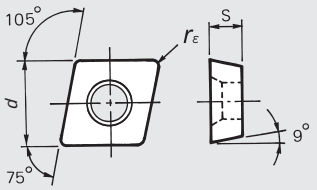
MBL style - Insert

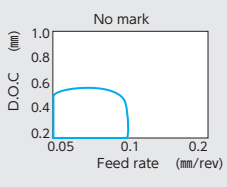
MBL

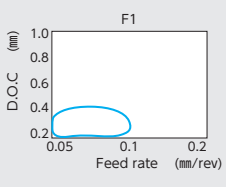
Left-Hand style shown



F1※
Right-Hand style shown







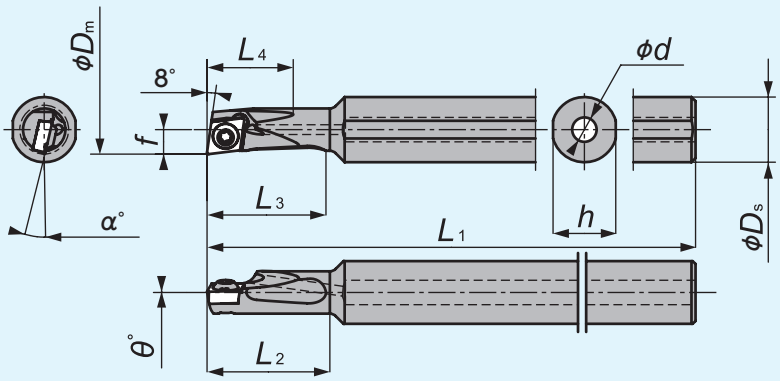
Item Number	Dimensions (mm) d	s	r_ε	PVD Coated Carbide ST4	Stock	ZM3	Stock	TM4	Stock	QM3	Stock
MBL005FL	3.6	1.0	0.05			5161252	●	5696018	●	5036884	●
MBL015FL			0.15			5161245	●	5696026	●	5168000	●
MBL005FRF1※	3.6	1.0	0.05	5038872	●			5789763	●	5036892	●
MBL015FRF1※			0.15	5038955	●			5789771	●	5933858	●

※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 6.0㎜

S-SEXR (Coolant through)

Steel shank
(tapered type)



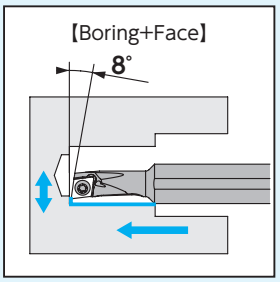
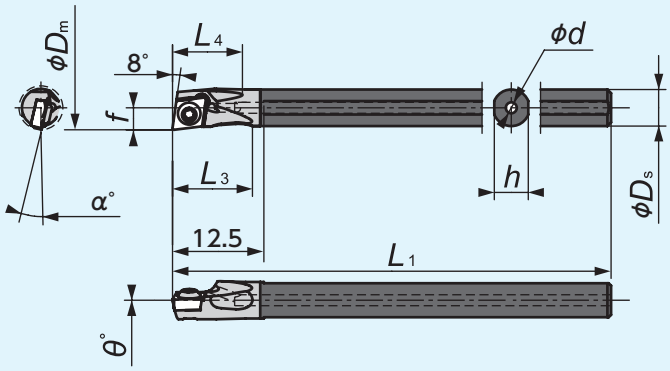


Figure-1

●Right-Hand style shown

C-SEXR (Coolant through)

Carbide shank
(straight type)



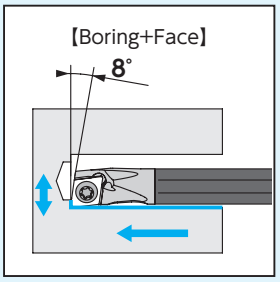
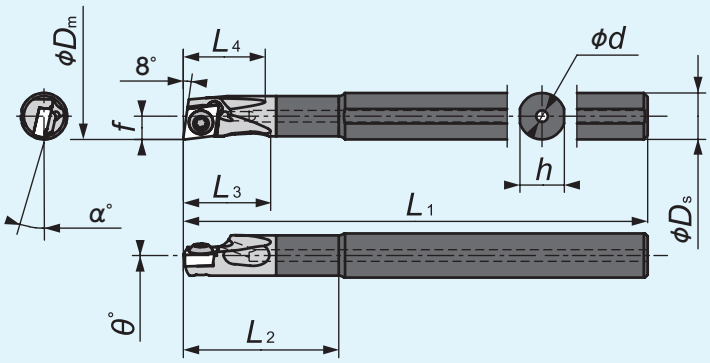


Figure-2

●Right-Hand style shown

C-SEXR (Coolant through)

Carbide shank
(tapered type)



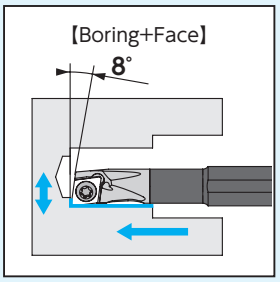


Figure-3

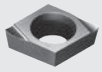
●Right-Hand style shown

ERGP style - Toolholders

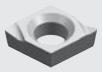
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (mm) D_m	Dimensions (mm) ϕD_s	h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius (mm) r_ε	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5789912		S08G-SEXR$^{R}_{L}$T3D06-OH	●		6.0	8.0	7.7	90	3.0	15	15	10	3.0	0°	-13°	0.2	ERGHT301	LR-S-2*3.7	CLR-13S
2	5789920		C05G-SEXR$^{R}_{L}$T3D06-OH	●			5.0	4.0			–	11		1.5						
3	5789938 5800487		C06G-SEXR$^{R}_{L}$T3D06-OH	●	●		6.0	5.7			20									

ERGP style - Insert

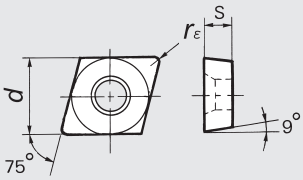
ERGH

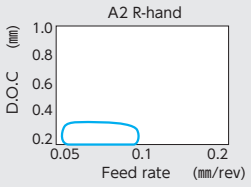


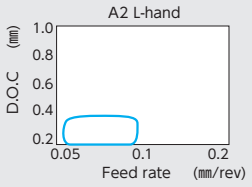
A2※1
Right-Hand style shown

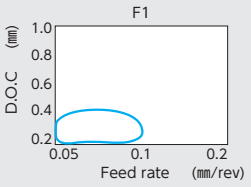


F1※2
Right-Hand style shown









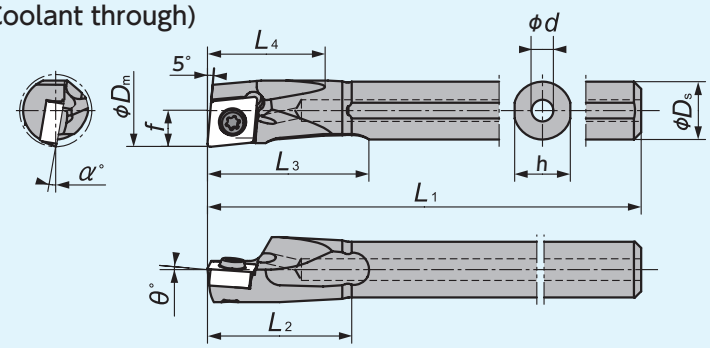
ISO Item Number	Item Number	Dimensions (mm) ϕd	s	r_ε	PVD Coated Carbide ST4 R	ST4 Stock	ST4 L	ST4 Stock	ZM3 R	ZM3 Stock	ZM3 L	ZM3 Stock	TM4 R	TM4 Stock	TM4 L	TM4 Stock	QM3 R	QM3 Stock	QM3 L	QM3 Stock
ERGHT30102F$^{R}_{L}$A2	ERGP52Y-F$^{R}_{L}$- -A2	3.97	1.6	0.2					5899158	●	5889670	●	5696034	●	5696059	●				
T30104F$^{R}_{L}$A2	521-F$^{R}_{L}$- -A2			0.4							5146063	●	5696067	●	5969035	●				
ERGHT30101F$^{R}_{L}$F1	—	3.97	1.6	0.1	5038971	●							5793039	●			5036868	●		
T30102F$^{R}_{L}$F1	—			0.2	5039003	●							5789789	●			5012703	●		
T30104F$^{R}_{L}$F1	—			0.4	5039011	●							5789797	●			5036876	●		

※1 A2chipbreaker, Control chips at light feed and light depth of cut
※2 F1 chipbreaker, right-hand inserts fit to right-hand toolholder
F1 chipbreaker evacuates chips BACKWARD

Mogul Bar for 80° Diamond (CC/CP style) Minimum Bore Diameter 7.0㎜

S-SCLP(C) (Coolant through)

Steel shank



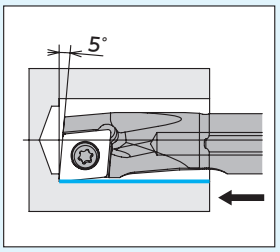
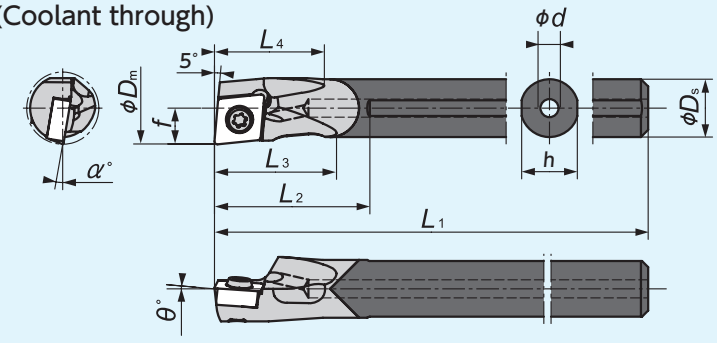


Figure-1

●Right-Hand style shown

C-SCLP(C) (Coolant through)

Carbide shank



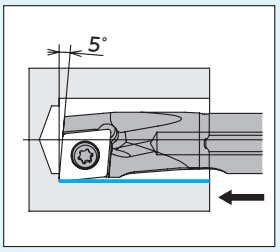
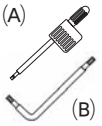


Figure-2

●Right-Hand style shown

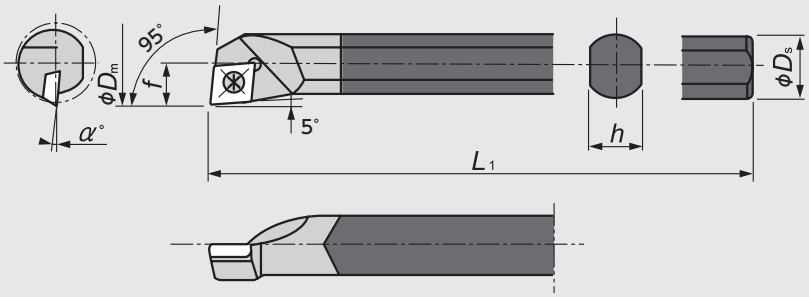
CC/CP style - Toolholders

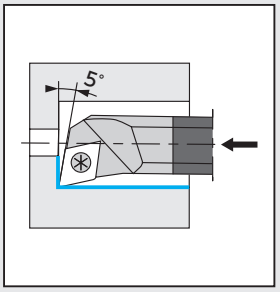
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (㎜) φDm	Dimensions (㎜) φDs	h	L1	f	L2	L3	L4	φd	θ	α	Std. corner radius (㎜)	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
																				 (A) (B)
1	5770029		S06F-SCLPR/L04D07-0H	●		7.0	6.0	5.75	80	3.5	14	17	12	2.5	+5°	−9°	0.2	CP○○0401 **E41**	LR-S-2*3.7	CLR-13S (A)
	5770037		S07G-SCLPR/L04D08-0H	●		8.0	7.0	6.75	90	4.0	16	19.5	13.5	3.0		−7°				
	5770045		S08H-SCLPR/L06D10-0H	●		10.0	8.0	7.7	100	5.0	20	22	16	3.0		−10°	0.4	CP○○0602 **E41**	LR-S-2.5*6	CLR-15S (A)
	5770052		S08H-SCLCR/L06D10-0H	●		10.0	8.0	7.7	100	5.0	20	22	16	3.0	0°	−13°	0.4	CC○○0602 **E39~40**	LRIS-2.5*5	CLR-15S (A)
	5770060		S10K-SCLCR/L06D12-0H	●		12.0	10.0	9.6	125	6.0	24	27.5	20	3.5		−11°				
	5770078		S12M-SCLCR/L06D14-0H	●		14.0	12.0	11.5	150	7.0	28	32.5	23	4.0		−9°				
	5770086		S16Q-SCLCR/L09D18-0H	●		18.0	16.0	15.4	180	9.0	36	42.5	30	5.0		−10°		CC○○09T3 **E39~40**	LRIS-4*8	LLR-25S-20*6.5 (B)
2	5770136 5800495		C06H-SCLPR/L04D07-0H	●	●	7.0	6.0	5.75	100	3.5	15.5	11.5	12	2.0	+5°	−9°	0.2	CP○○0401 **E41**	LR-S-2*3.7	CLR-13S (A)
	5770151		C07J-SCLPR/L04D08-0H	●		8.0	7.0	6.75	110	4.0	17.5	13	13.5	2.0		−7°				
	5770169 5800503		C08K-SCLPR/L06D10-0H	●	●	10.0	8.0	7.7	125	5.0	21.5	16.5	15	2.5		−10°	0.4	CP○○0602 **E41**	LR-S-2.5*6	CLR-15S (A)
	5770185		C08K-SCLCR/L06D10-0H	●		10.0	8.0	7.7	125	5.0	21.5	16.5	15	2.5	0°	−13°	0.4	CC○○0602 **E39~40**	LRIS-2.5*5	CLR-15S (A)
	5770193 5800511		C10M-SCLCR/L06D12-0H	●	●	12.0	10.0	9.6	150	6.0	25	20	19.5	2.5		−11°				
	5770201		C12M-SCLCR/L06D14-0H	●		14.0	12.0	11.5	150	7.0	29	23.5	22.5	3.0		−9°				

Standard Bar for 80° Diamond (CP style) Minimum Bore Diameter 8.0㎜

C-SCLP

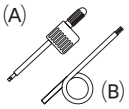
Carbide shank





●Right-Hand style shown

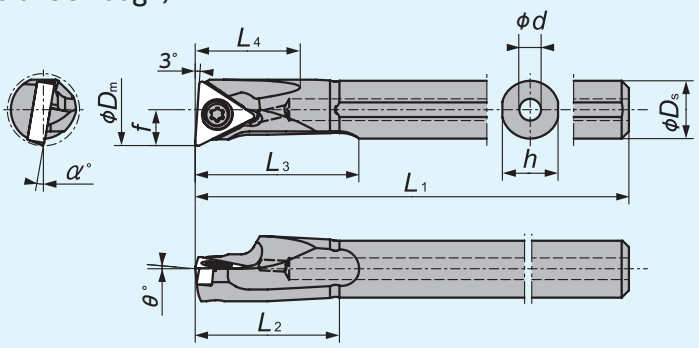
CP style - Toolholders

Code No.	Item Number	Stock	Min Bore Dia. (㎜)	Dimensions (㎜)							Gage insert	Spare Parts	
												Clamp Screw	Wrench
R		R	ϕDm	ϕDs	h	b	L1	f	L2	α			
5853288	**C06J-SCLPR-04-N**	●	**8.0**	6.0	5.2		110	4.0		−6°	CP○○0401 **E41**	LR-S-2∗4.4	CLR-13S (A)
5853296	**C08K-SCLPR-06-N**	●	**10.0**	8.0	7.0	—	125	5.0	—	−10°	CP○○0602 **E41**	LR-S-2.5∗5.5	CLR-15S (A)
5853304	**C10M-SCLPR-08-N**	●	**12.0**	10.0	9.0		150	6.0		−6°	CPGH0802 **E41**	LR-S-3∗6.2	RLR-20S (B)

Mogul Bar for 60° Triangle (TC/TP style) Minimum Bore Diameter 8.0㎜

S-STUC(P) (Coolant through)

Steel shank



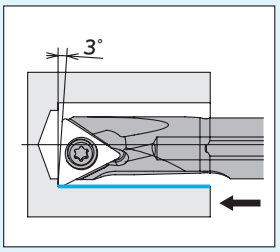
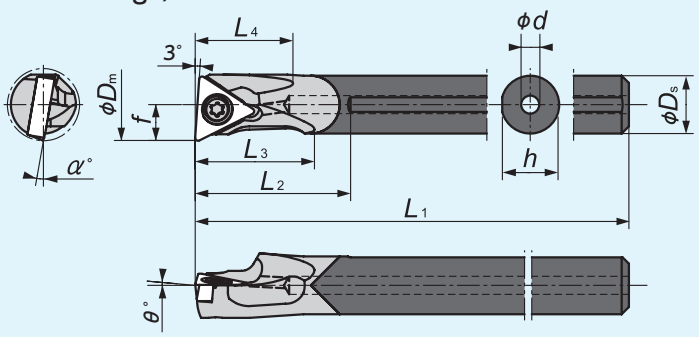


Figure-1

●Right-Hand style shown

C-STUC(P) (Coolant through)

Carbide shank



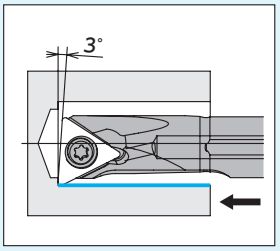
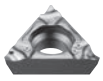
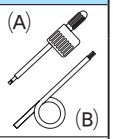


Figure-2

●Right-Hand style shown

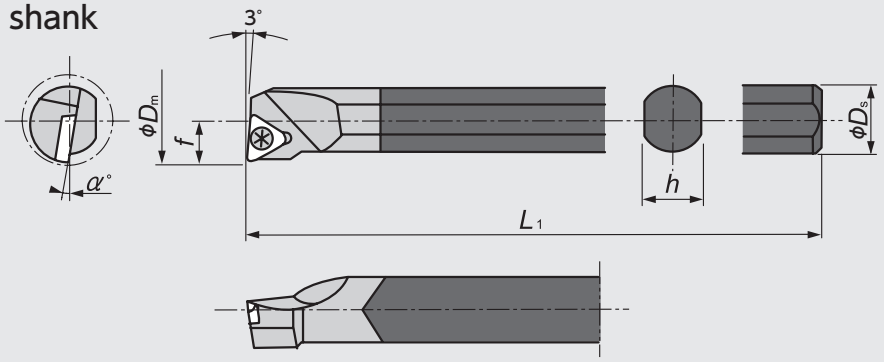
TC/TP style - Toolholders

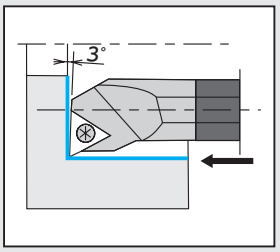
Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (㎜) ϕDm	Dimensions (㎜) ϕDs	h	L1	f	L2	L3	L4	ϕd	θ	α	Std. corner radius (㎜)	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
																				
1	5769971		S07G-STUCR/L06D08-0H	●		8.0	7.0	6.75	90	4.0	16.0	19.5	12.5	2.5	0°	−11°	0.2	TC○○0601 **E46**	LR-S-2*4.4	CLR-13S (A)
	5769989		S08H-STUPR/L09D10-0H	●		10.0	8.0	7.7	100	5.0	20.0	22.5	14.5	3.0		−10°		TP○○0902 **E32~33•47**	LR-S-2.5*4.8	CLR-15S (A)
	5769997		S10K-STUPR/L11D12-0H	●		12.0	10.0	9.6	125	6.0	24.0	27.5	18.5	3.5		−7.5°				
	5770003		S12M-STUPR/L11D14-0H	●		14.0	12.0	11.5	150	7.0	28.0	32.5	22	4.0	+5°	−5°	0.4	TP○○1103 **E32~33•47**	LR-S-3*5.8	RLR-20S (B)
	5770011		S16Q-STUPR/L11D18-0H	●		18.0	16.0	15.4	180	9.0	32.0	42.5	28.5	5.0		−3°				
	5886817		S20Q-STUPR11D22-0H	●		22.0	20.0	19.4	180	11	40	46	38	5.0		−3°				
2	5770094(R)		C07J-STUCR/L06D08-0H	●	●	8.0	7.0	6.75	110	4.0	17.5	13.0	12.5	2.0	0°	−11°	0.2	TC○○0601 **E46**	LR-S-2*4.4	CLR-13S (A)
	5800529(L)																			
	5770102(R)		C08K-STUPR/L09D10-0H	●	●	10.0	8.0	7.7	125	5.0	21.5	16.5	14.5	2.5		−10°		TP○○0902 **E32~33•47**	LR-S-2.5*4.8	CLR-15S (A)
	5800537(L)																			
	5770110(R)		C10M-STUPR/L11D12-0H	●	●	12.0	10.0	9.6	150	6.0	25.0	20.0	17.5	2.5	+5°	−7.5°	0.4	TP○○1103 **E32~33•47**	LR-S-3*5.8	RLR-20S (B)
	5800545(L)																			
	5770128		C12M-STUPR/L11D14-0H	●		14.0	12.0	11.5	150	7.0	29.0	23.0	21.5	3.0		−5°				
	5821814		C16Q-STUPR/L11D18-0H	●		18.0	16.0	15.4	180	9.0	37.0	29.0	28.0	4.0		−3°				

Standard Bar for 60° Triangle (TC/TP style)　Minimum Bore Diameter 8.0㎜

C-STUC(P)

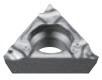
Carbide shank





●Right-Hand style shown

TC/TP style - Toolholders

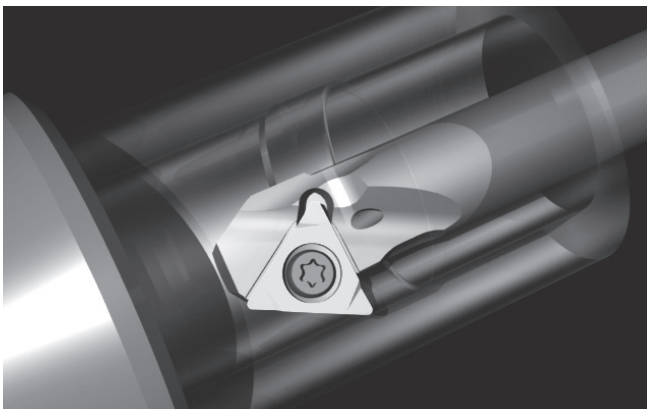
Code No.	Item Number	Stock	Min Bore Dia. (㎜) ϕD_m	Dimensions (㎜)※								Gage insert	Spare Parts	
													Clamp Screw	Wrench
R		R		ϕD_s	h	b	L_1	f	L_2	g	α			
5853247	**C06J-STUCR-06-N**	●	**8.0**	6.0	5.2		110	4.0			−10°	TC○○0601 **E46**	LR-S-2∗3.7	CLR-13S
5853262	**C08K-STUPR-08-N**	●	**10.0**	8.0	7.0	—	125	5.0	—	—	−10°	TP○○0802 **E47**	LR-S-2∗5.5	
5853270	**C10M-STUPR-09-N**	●	**12.0**	10.0	9.0		150	6.0			−7°	TP○○0902 **E32~33・47**	LR-S-2.5∗6	CLR-15S

※ Std. corner radius r_ε =0.2mm

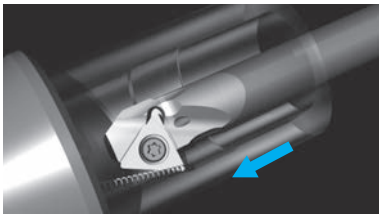
Anti-vibration boring bar for internal backturning "C-STZP" type

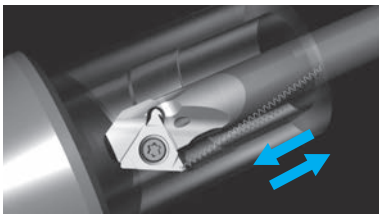
Prevent chattering with higher rigidity toolholder design

Higher rigidity toolholder offers max. machining length L/D ≦ 7



Both machining directions are available



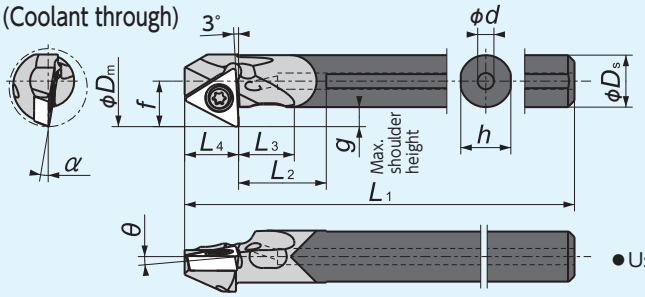


Mogul Bar for 60° Triangle (TC/TP style) Minimum Bore Diameter 10.0mm

C-STZP(C)

(Coolant through)

Carbide shank



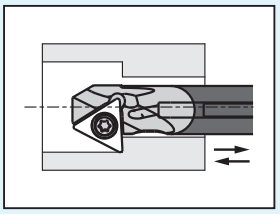


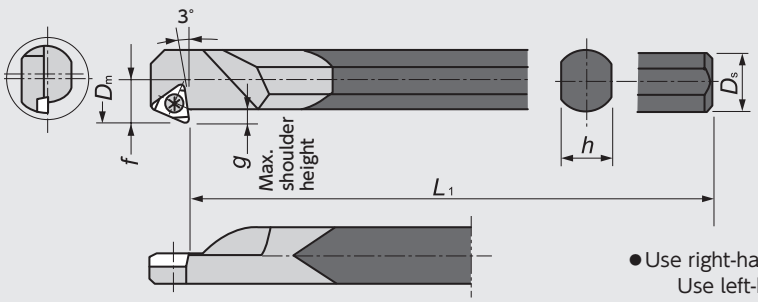
Figure-1

- Right-Hand style shown
- Use right-hand inserts for machining backward
  Use left-hand inserts for machining forward

Standard Bar for 60° Triangle (TC/TP style) Minimum Bore Diameter 10.0mm

B-STZ

Carbide shank



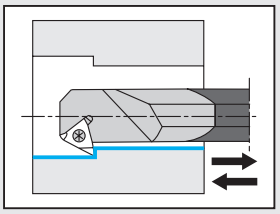


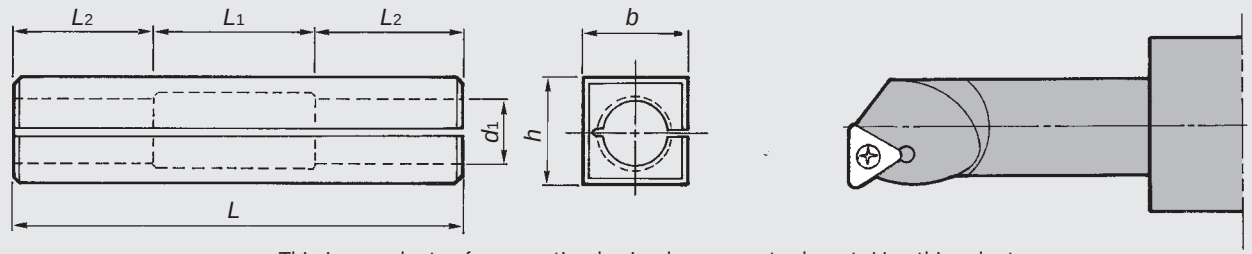
Figure-2

- Right-Hand style shown
- Use right-hand inserts for machining backward
  Use left-hand inserts for machining forward

TC/TP style - Toolholders

Figure	Code No. R	Item Number	Stock R	Min Bore Dia. (mm) φDm	Max. shoulder height (mm) g	Dimensions (mm) φDs	h	L1	f	L2	L3	L4	φd	θ	α	Std. corner radius (mm)	Gage insert	Spare Parts: Clamp Screw	Spare Parts: Wrench
1	5842851	C06H-STZCR06D10-0H	●	10.0	2.5	6.0	5.8	100	5.5	10.5	6	6	2.0	0°	−10°	0.2	TC○○0601 **E46**	LR-S-2*4.4	CLR-13S
	5842869	C08K-STZPR09D12-0H	●	12.0	3.0	8.0	7.7	125	7.0	13.5	8.5	8.3	2.5	+5°	−10°	0.4	TP○○0902 **E32~33•47**	LR-S-2.5*4.8	CLR-15S
	5842877	C10M-STZPR09D14-0H	●	14.0		10.0	9.6	150	8.0	18.5	12	8.3	2.5		−7°				
	5842885	C12M-STZPR11D175-0H	●	17.5	4.5	12.0	11.5	150	10.5	22	14.5	9.6	3.0		−5°		TP○○1103 **E32~33•47**	LR-S-3*5.8	RLR-20S
2	5852819	B06J-STZCR-06-N	●	10.0	2.5	6.0	5.2	110	5.5	—	—	—	—	—	—	0.2	TC○○0601 **E46**	LR-S-2*4.4	CLR-13S
	5852801	B12Q-STZPR-09-N	●	16.0	3.0	12.0	11.0	180	9.0							0.2	TP○○0902 **E32~33•47**	LR-S-2.5*6.8	CLR-15S

Boring bar adaptors.



This is an adaptor for mounting boring bars on a tool post. Use this adaptor especially for carbide shank bars to eliminate any possibility of breakage.

Code No.	Adaptor P/N	Stock	Dimensions (mm)						Applicable holder
			h_1	b	L	L_1	L_2	d_1	
5764204	**S06-H**	●	20	20	60	20	20	6	For shank of ϕ6
5580717	**S08-H**	●	20	20	60	20	20	8	For shank of ϕ8
5632286	**S10-H**	●	20	20	60	20	20	10	For shank of ϕ10
5758198	**S12-H**	●	25	25	70	20	25	12	For shank of ϕ12

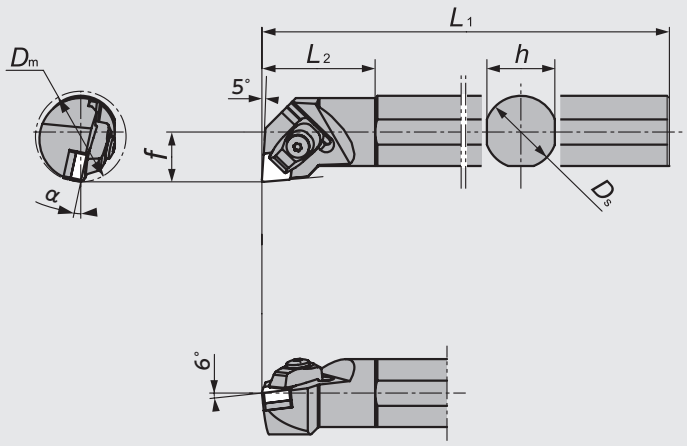
Multi-Clamp Toolholders for CN..Inserts

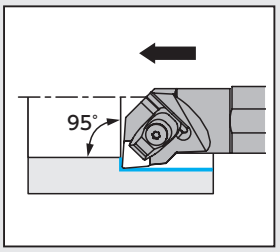
Minimum Bore Diameter 33.0㎜

S-TCLN
Clamp-on

S-WCLN
Double-Clamp

S-HCLN
Dimple-Clamp





●Right-Hand style shown

CN..Inserts - Toolholders

Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (㎜) D_m	Dimensions (㎜)※ D_s	h	L_1	f	L_2	α	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
5701685	5701693	**S25R-TCLN□12**	●	●	**33**	25	24	200	17	40	14	TC6CN Clamp-on	ACN423	AOS-6＊26W	FSS16-3.0＊8	LLR-T20	LLR-T10	ASGL6-D
5701701	5701719	**S32S-TCLN□12**	●	●	**40**	32	30	250	22	50	12			AOS-6＊30W				
5701727	5701735	**S40T-TCLN□12**	●	●	**50**	40	38	300	27	60	10							
5701743	5701750	**S50U-TCLN□12**	●	●	**63**	50	47	350	35	65	8							
5682646	5682653	**S25R-WCLN□12**	●	●	**33**	25	24	200	17	40	14	DC6CN Double-Clamp	ACN423	AOS-6＊26W	FSS16-3.0＊8	LLR-T20	LLR-T10	ASGL6-D
5682661	5682679	**S32S-WCLN□12**	●	●	**40**	32	30	250	22	50	12			AOS-6＊30W				
5682687	5682695	**S40T-WCLN□12**	●	●	**50**	40	38	300	27	60	10							
5682703	5682711	**S50U-WCLN□12**	●	●	**63**	50	47	350	35	65	8							
5701180	5701198	**S25R-HCLN□12**	●	●	**33**	25	24	200	17	40	14	HC6CN Dimple-Clamp	—	AOS-6＊26W	—	LLR-T20	—	ASGL6-D
5701206	5701214	**S32S-HCLN□12**	●	●	**40**	32	30	250	22	50	12			AOS-6＊30W				
5701222	5701230	**S40T-HCLN□12**	●	●	**50**	40	38	300	27	60	10							
5701248	5701255	**S50U-HCLN□12**	●	●	**63**	50	47	350	35	65	8							

※ Std. corner radius r_ε=0.8mm

CN..Inserts

Item Number	Inserts		Listed on pages
S-TCKLN□…	CN○N1204		**E7**
S-WCLN□…	CN○A1204		**E6 • 20 • 21 • 36**
S-HCLN□…	CN○X1207		**E7**

Multi Clamp Toolholders
Three clamping configurations available with one toolholder just by changing a clamp

Multi Clamp Toolholders for DN..Inserts

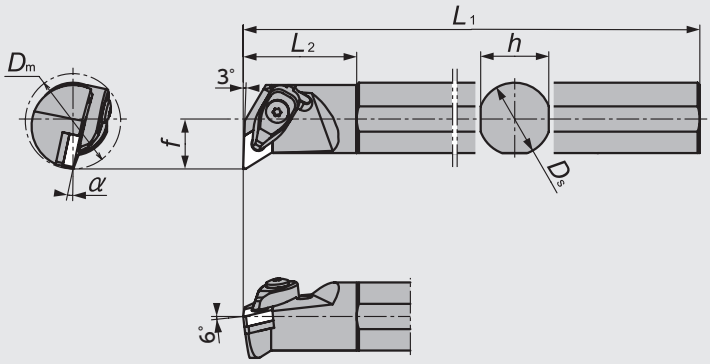
Minimum Bore Diameter 42.0㎜

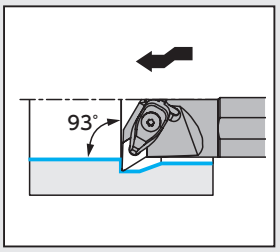
S-WDUN

Double-Clamp

S-HDUN

Dimple-Clamp





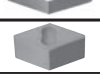
●Right-Hand style shown

DN..Inserts - Toolholders

Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. D_m (㎜)	Dimensions (㎜)※ D_s	h	L_1	f	L_2	α	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
5682794	5682802	S32S-WDUNR/L15	●	●	42	32	30	250	22	50	12	DC6DN Double-Clamp	ADN423	AOS-6＊26W	FSS16-3.0＊8	LLR-T20	LLR-T10	ASGL6-D
5701545	5701560	S40T-WDUNR/L15	●	●	50	40	38	300	27	60	10			AOS-6＊30W				
5701354	5701362	S32S-HDUNR/L15	●	●	42	32	30	250	22	50	12	HC6DN Dimple-Clamp	—	AOS-6＊26W	—	LLR-T20	—	ASGL6-D
5701370	5701388	S40T-HDUNR/L15	●	●	50	40	38	300	27	60	10			AOS-6＊30W				

※ Std. corner radius r_ε=0.8mm

DN..Inserts

Item Number	Inserts		Listed on pages
S-WDUNR/L…	DN○A1504		E8 • 22 • 23 • 36
S-HDUNR/L…	DN○X1507		E8

Multi Clamp Toolholders

Three clamping configurations available with one toolholder just by changing a clamp

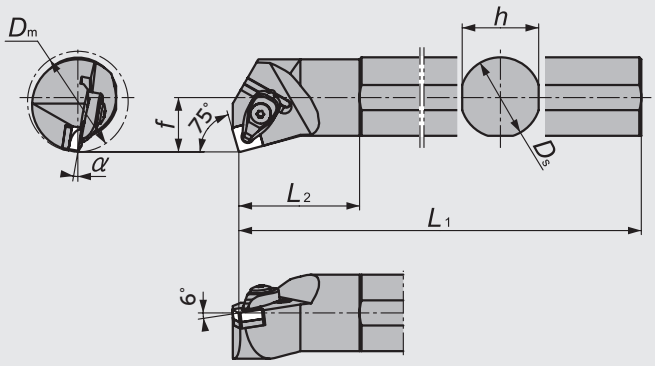
Multi Clamp Toolholders for SN..Inserts

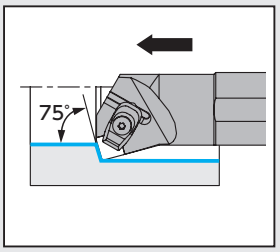
Minimum Bore Diameter 50.0mm

S-TSKN
Clamp-on

S-WSKN
Double-Clamp

S-HSKN
Dimple-Clamp





●Right-Hand style shown

SN..Inserts - Toolholders

Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (mm) Dm	Dimensions (mm) Ds	h	L1	f	L2	α	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
5701800	5701818	**S40T-TSKN R/L 12**	●	●	50	40	38	300	27	60	10	TC6CN Clamp-on	ASN423	AOS-6＊30W	FSS16-3.0＊8	LLR-T20	LLR-T10	ASGL6-D
5682950	5682968	**S40T-WSKN R/L 12**	●	●	50	40	38	300	27	60	10	DC6CN Double-Clamp	ASN423	AOS-6＊30W	FSS16-3.0＊8	LLR-T20	LLR-T10	ASGL6-D
5701529	5701537	**S40T-HSKN R/L 12**	●	●	50	40	38	300	27	60	10	HC6CN Dimple-Clamp	—	AOS-6＊30W	—	LLR-T20	—	ASGL6-D

※ Std. corner radius r_ε=0.8mm

SN..Inserts

Item Number	Inserts		Listed on pages
S-TSKN R/L…	SN○N1204		**E10 • 11 • 24 • 37**
S-WSKN R/L…	SN○A1204		**E10 • 11 • 24 • 37**
S-HSKN R/L…	SN○X1207		**E11**

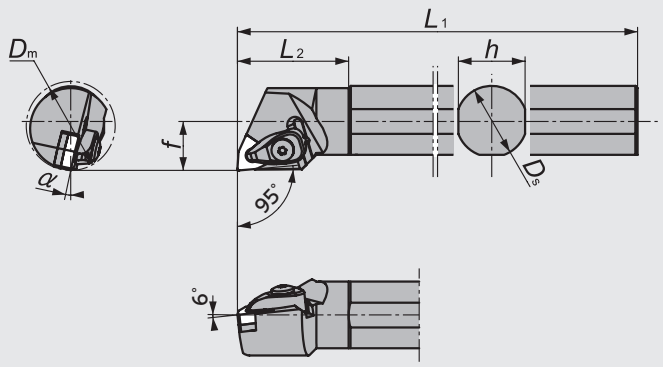
Multi Clamp Toolholders
Three clamping configurations available with one toolholder just by changing a clamp

Multi Clamp Toolholders for WN..Inserts

Minimum Bore Diameter 33.0㎜

S-WWLN

Double-Clamp



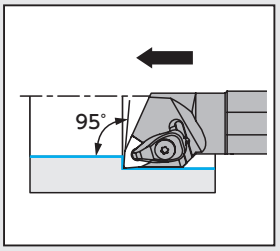
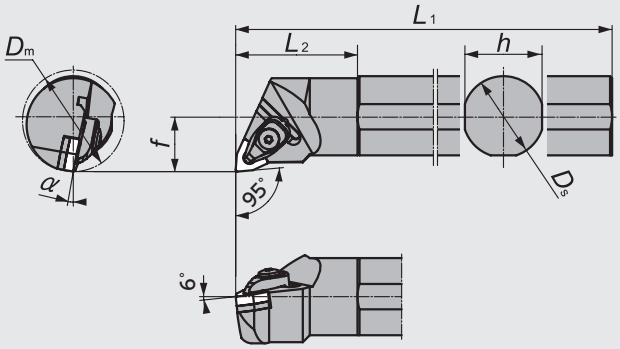


Figure-1

●Right-Hand style shown

S-WWLN-2

Double-Clamp



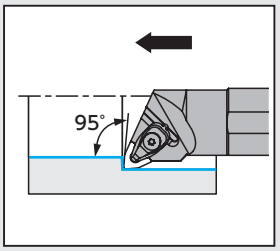


Figure-2

●Right-Hand style shown

WN..Inserts - Toolholders

Figure	Code No. R	Code No. L	Item Number	Stock R	Stock L	Min Bore Dia. (㎜) Dm	Ds	h	L1	f	L2	α	Clamp	Shim	Clamp Screw	Shim Screw	Wrench (for Clamp Screw)	Wrench (for Shim Screw)	Spring
1	5683032	5683040	S25R-WWLNR/L08	●	●	33	25	24	200	17	40	14	DC6CN Double-Clamp	AWN423-W	A0S-6＊26W	FSS16-3.0＊8	LLR-T20	LLR-T10	ASGL6-D
1	5683057	5683065	S32S-WWLNR/L08	●	●	40	32	30	250	22	50	12			A0S-6＊30W				
1	5683073	5683081	S40T-WWLNR/L08	●	●	50	40	38	300	27	60	10							
2	5701594	5701602	S40T-WWLNR/L08-2	●	●	50	40	38	300	27	60	10							

※ Std. corner radius r_ε=0.8mm

SN..Inserts

Item Number	Inserts		Listed on pages
S-WWLNR/L…	WN○A0804		E14・38

MEMO

L

Application Introduction

- Machining HRSA Materials with BIDEMICS and Ceramics L2
  Guidelines for Machining HRSA Materials L4
- Machining Mill Rolls with NTK Ceramics and CBNs L24
- Machining Poly-V Pulley Profiles L32
- Machining Tube Scarfing L34

Machining HRSA Materials with BIDEMICS and Ceramics

Solutions for the Aerospace & Energy Industries

BIDEMICS - Game Changer

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

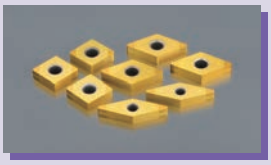
JX1

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

■Work Materials
- Inco 718 • 718 Plus
- Powdered metal
- Inco 625 • Rene

➡C2

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

➡C2

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

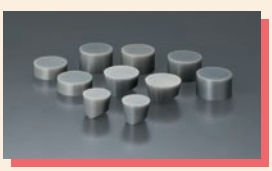
➡C15

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

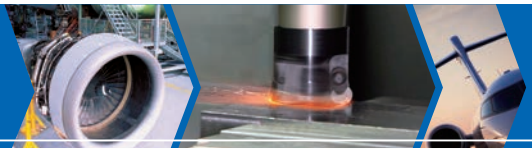
➡C14



SiAlON - Workhorse

- Durable for scale to semi-finish machining

WATCH ON YouTube



Application Guidance ➡L4
Milling Guidance ➡N4
Turning Guidance ➡L6
Grooving Guidance ➡A17

JX3

■Features
- Added toughness in BIDEMICS
- Same speed capability as JX1

■Work Materials
- Inco 718
- 718 Plus
- Powdered metal
- Inco 625
- Rene

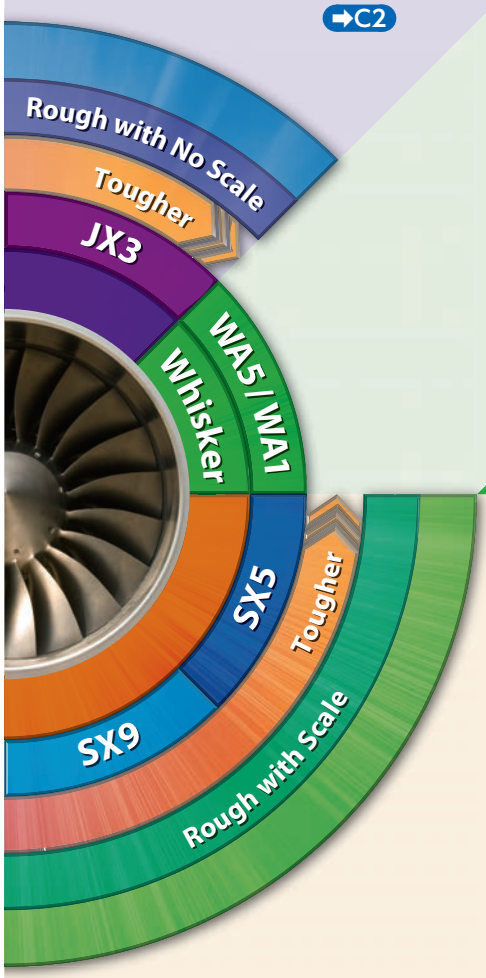
➡C2

WA5 / 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

➡C16



Whisker - Versatile Player

● Productivity and reliability

SX5

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

■Work Materials
- Waspaloy
- Udimet 720
- 718 Plus
- Rene 41

※ Production by order.

SX9

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

➡C15

■Work Materials
- Inco 718
- Inco 706
- Inco 713
- Rene

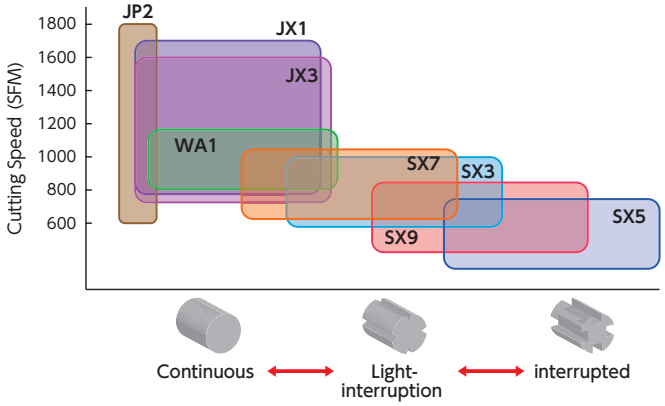
Guidelines for Machining HRSA Materials

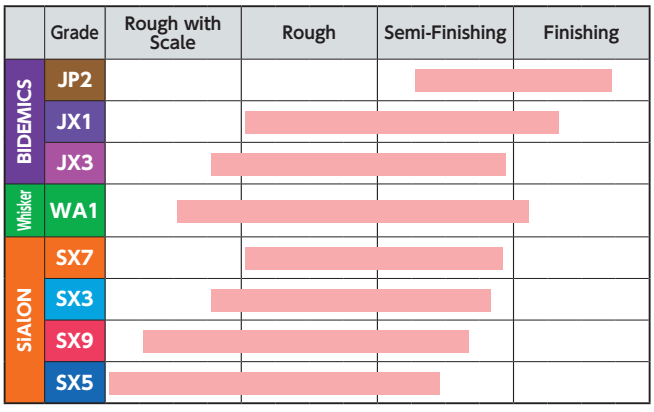
Insert Grade

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		●	●	○	●		
BIDEMICS	JP2	Special grade for finish turning				●			
BIDEMICS	JX3	Added toughness in BIDEMICS		●	●	○	●		
Whisker	WA1	General versatile grade for turning		○	○		○		
SiAlON	SX3	Best balance of toughness and hardness	○	●	●		●	●	
SiAlON	SX5	Best grade for Waspaloy with scale	●				○		
SiAlON	SX7	Versatile grade for turning and milling	○	○	○		●	●	
SiAlON	SX9	Best grade for scale of Inco718	●	○	○			○	●

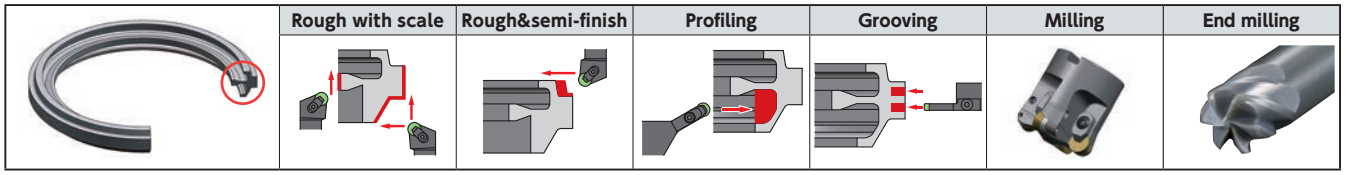
● 1st Choice ○ 2nd Choice

Grade Map





Applications



Applications

Application	Grade	Work material	Cutting speed (m/min) 180 240 300 360 420 480	Feed (mm/rev) 0.1 0.2 0.3 0.4 0.5	Depth of cut (mm) 0.5 1.0 1.5 2.0 2.5	Coolant
Rough with Scale	SX5	Waspaloy	200(180-240)	0.3(0.2-0.35)	2.0(1.0-5.0)	WET
	SX9	Inco718	200(180-240)	0.3(0.2-0.35)	2.0(1.0-5.0)	
	SX3	Overall	240(180-270)	0.2(0.1-0.22)	2.0(1.0-5.0)	
Rough no Scale	JX1 JX3	Overall	210-390(180-480)	0.2(0.13-0.28)	1.7(1.0-2.5)	WET
	SX9 SX3 SX7	Overall	210(180-270)	0.2(0.15-0.3)	2.0(1.0-2.5)	
	WA1	Overall	240(180-300)	0.2(0.12-0.25)	1.7(1.0-2.5)	
Profiling & Semi-Finish	JX1 JX3	Overall	210-450(180-480)	0.2(0.1-0.25)	1.5(1.0-2.0)	WET
	SX3 SX7	Overall	240(180-270)	0.2(0.12-0.25)	1.5(1.0-2.0)	
	WA1	Overall	240(180-330)	0.2(0.1-0.25)	1.5(1.0-2.0)	
Finishing	JP2	Overall	210-480(180-510)	0.1(0.05-0.18)	0.25(0.13-0.76)	WET
Grooving	JX1 JX3	Overall	360(180-480)	0.07(0.05-0.1)	When using SX7/SX3/SX5, increase feed rates 100% vs. Whisker Ceramics	WET
	SX5	Waspaloy	210(180-240)	0.15(0.07-0.17)		
	SX3 SX7	Overall	230(180-270)	1.1(0.07-0.15)		
	WA1	Overall	240(180-330)	0.07(0.05-0.1)		

Application	Grade	Work material	Cutting speed (m/min) 450 600 750 900 1000 1200	Feed (mm/t) 0.05 0.07 0.1 0.12 0.15	Depth of cut (mm) 0.5 1.0 1.5 2.0 2.5	Coolant
Milling	SX3 SX7	Overall	810(600-1200)	0.1(0.07-0.12)	1.7(1.0-2.5)	DRY
	SX9	Overall	750(450-1000)	0.12(0.1-0.15)	2.0(1.0-2.5)	
End milling	SX9	Overall	600(300-1000)	0.02-0.03		DRY

Guidelines for Machining HRSA Materials

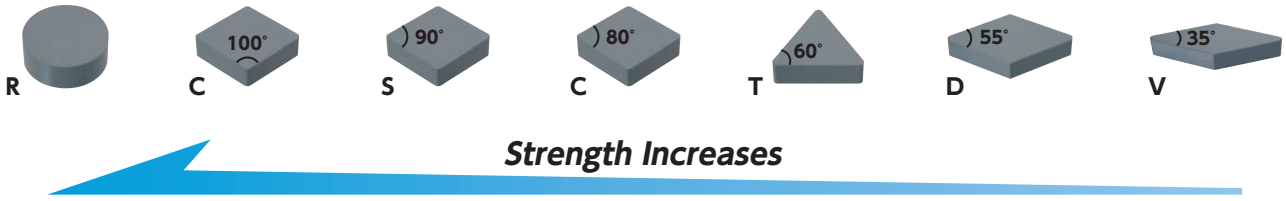
Guidelines For Success

Keys to successful machining of HRSA Materials

- NTK's BIDEMICS and ceramics deliver extremely high productivity to heat resistant alloy machining
- BIDEMICS offer excellent flank wear resistance and SiAlON ceramics provide exceptional notch wear resistance
- BIDEMICS 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.

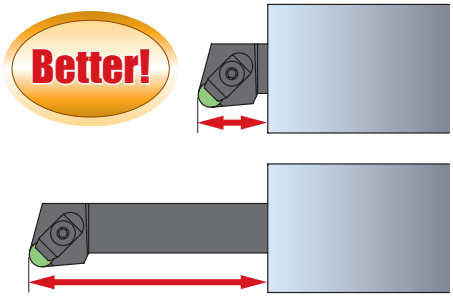


Use largest nose radius

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 RNGN1207 insert for roughing and CNGA1204 style for finishing.

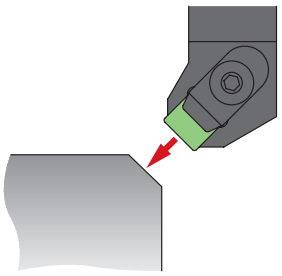
Minimize overhang

Too much overhang may cause chatter or insert breakage.



Pre-chamfering

Pre-chamferring 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 BIDEMICS, 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

Insert Breakage

- Cutting Condition ➡ 1 ➡ L8
- Programming at Scale ➡ 2 ➡ L9
- Insert Grade ➡ Choose tougher grade
- Insert Shape ➡ 6 ➡L11
- Edge Preparation ➡ 7 ➡L11

Notching

- Cutting Condition ➡ 1 ➡ L8
- Depth of Cut ➡ 3 ➡ L9
- Lead Angle ➡ 4 ➡ L9
- Programming ➡ 5 ➡L10
- Insert Grade ➡ Choose SiAlON ceramic

Flank Wear

- Cutting Condition ➡ 1 ➡ L8
- Insert Grade ➡ Choose harder grade

Flaking

- Cutting Condition ➡ 1 ➡ L8
- Programming ➡ 5 ➡L10
- Edge Preparation ➡ 7 ➡L11

Heat

- Cutting Condition ➡ 1 ➡ L8
- Insert Shape ➡ 6 ➡L11
- Edge Preparation ➡ 7 ➡L11

Chatter

- Cutting Condition ➡ 1 ➡ L8
- Others ➡ 1 ➡L11

- Grooving information ➡ ➡L12

Troubleshooting (continued)

1 Cutting Conditions & Parameters Adjustment

	Cutting speed (m/min)		Feed rate (mm/rev)		Grade attribute		
	SiAlON	BIDEMICS	SiAlON	BIDEMICS	BIDEMICS	SiAlON	Whisker
Notching		↗ [a]	↗ [b]		●	●	
Flank wear	↘ [c]		↗ [d]		●	● SX3 SX7	●
Breakage			↘	↘	●	●	
Heat	↘	↘	↘	↘	—	—	—
Chatter	↗	↗	↘	↘	—	—	—

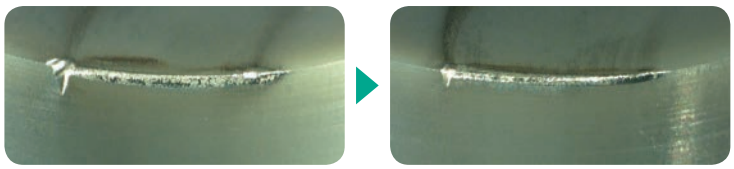
● 1st Choice ● 2nd Choice

Test Results

[a] WA1 : Increase cutting speed

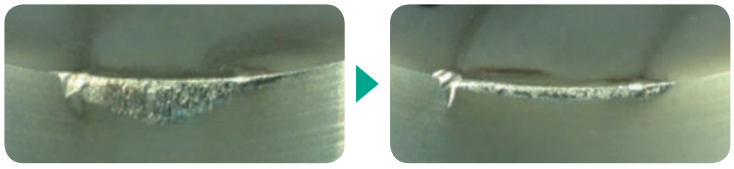
100m/min → 500m/min

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



0.2mm/rev → 0.4mm/rev

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

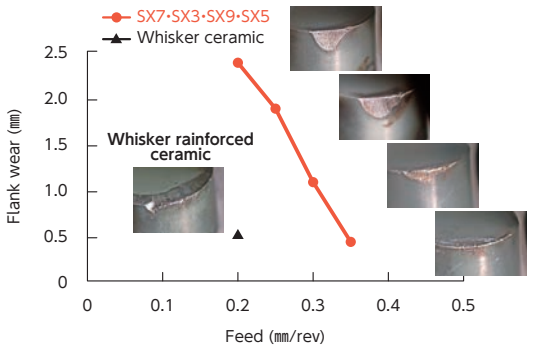


400m/min → 100m/min

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
Insert shape : RNGN120700
Cutting Speed : 250m/min
Depth of Cut : 2.0mm
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.

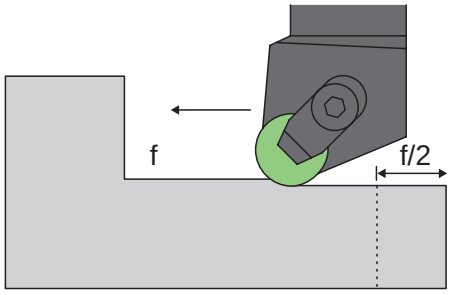
Note : Be careful to reduce the feed rate by 25%, when going into a corner.

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.



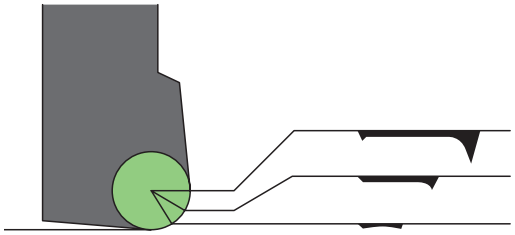
3 Depth of Cut

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 probrem.

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 (mm)

Round insert	Maximum DOC	*Insert radius	Maximum DOC
ϕ 6.35	1.5...Less	0.8	0.2...Less
ϕ 9.525	2.3...Less	1.2	0.3...Less
ϕ 12.70	3.2...Less	1.6	0.4...Less
ϕ 25.40	6.4...Less	2.4	0.6...Less
*OPTIMUM DOC. IS 5-15% OF THE INSERT DIAMETER *BASED ON 0° LEAD ANGLE			

4 Lead Angle

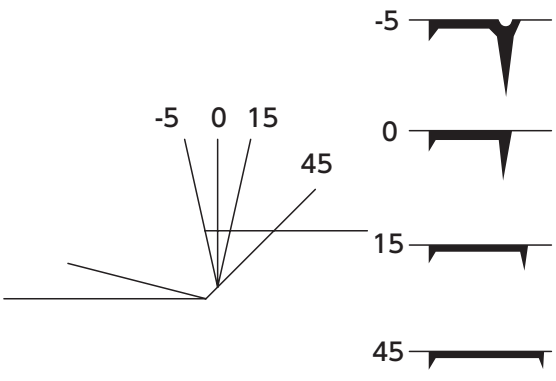
Lead Angles

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**

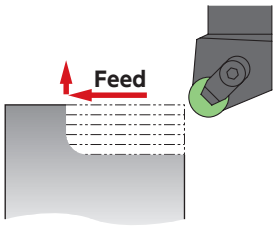


Troubleshooting (continued)

5 Programming

● Rough

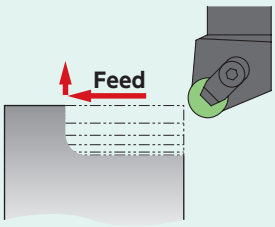
Same Depth of Cut



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

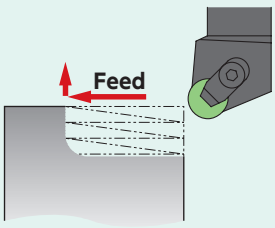
change to

Varying Depth of Cut



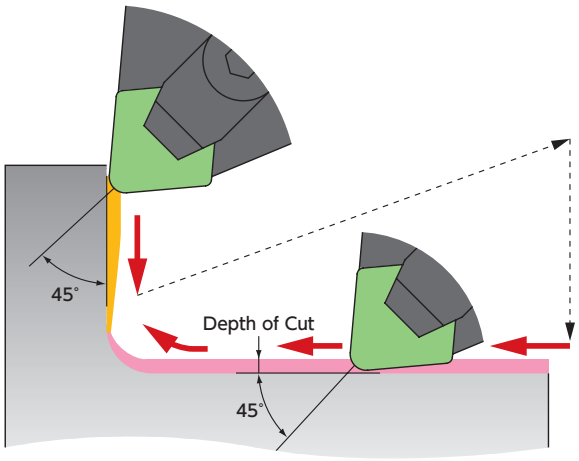
Note) Another programming change that may help to reduce notching is by varying the depth of cut. Again, the same principle applies, notching takes place at various points on the cutting edge rather than concentrated at one point.

Ramping



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

● Finish



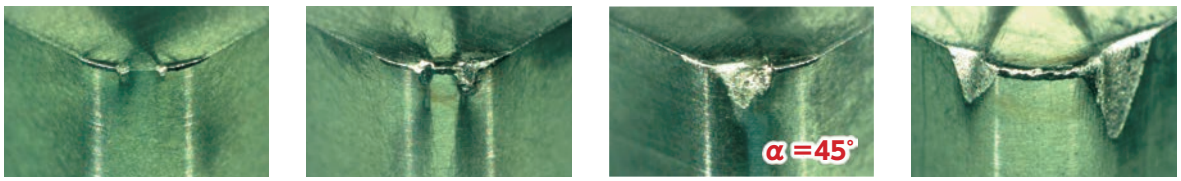
• $\alpha = 45°$

(mm)

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

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

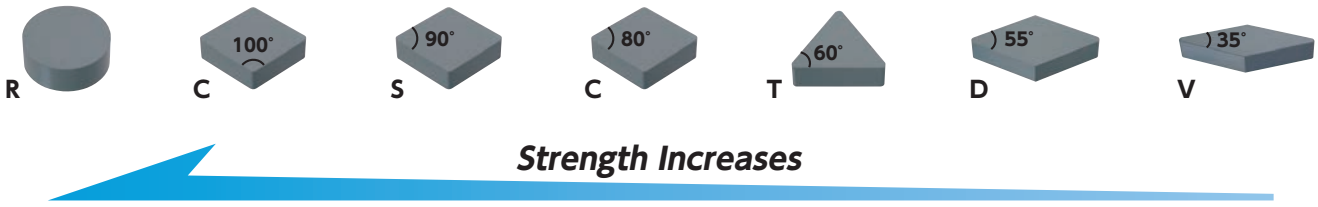
Depth of Cut



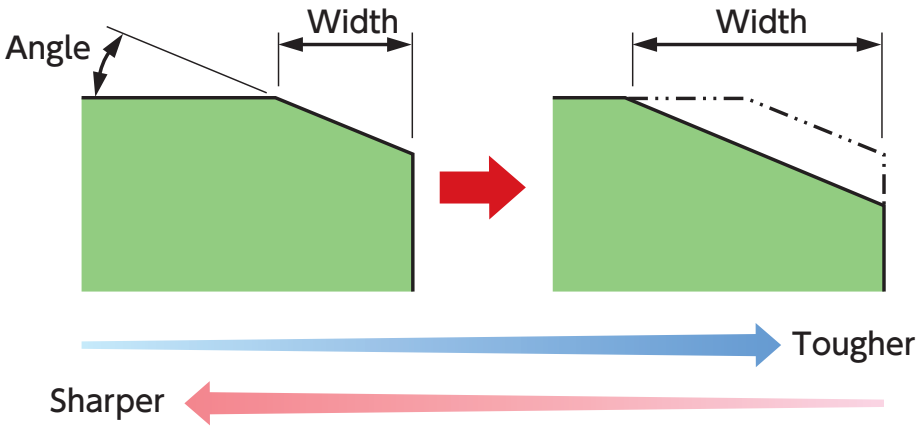
Better

Troubleshooting (continued)

6 Insert shape



7 Edge preparation



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

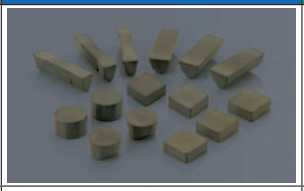
8 Eliminate chatter

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.

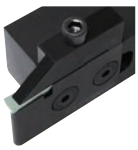
- Increase speeds and decrease feeds
- Use harder grade with higher speed
- Use smaller I.C round insert, or smaller nose radius
- Reduce insert nose radius
- Use positive insert
- Reduce lead angle
- Reduce edge preparation or use sharp edge
- Minimize overhang
- Try a heavy metal boring bar

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.

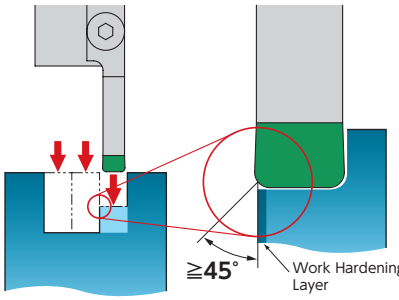
	JX1	JX3	SX3	SX7	SX5	WA1 / WA5
						
Speed	●		●		●	●
Feed			●		●	
Versatility	●		●			●
Toughness			●		●	
	Can run at up to 480m/min Double the speed of whisker		Double the feed of whisker		Best for Scale and interruption	Versatile grade

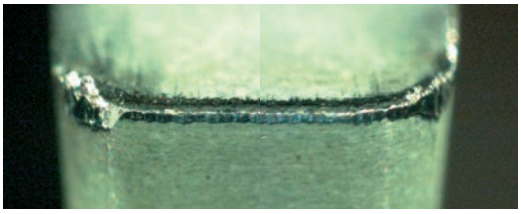
● : 1st choice ● : 2nd choice

Application	Grade	Work material	Cutting speed (m/min) 180 240 300 360 420 480	Feed (mm/rev) 0.1 0.2 0.3 0.4 0.5	Depth of cut (mm) 0.5 1.0 1.5 2.0 2.5	Coolant
Grooving 	JX1 JX3	Overall	360(180-480)	0.07(0.05-0.1)	When using SX7 / SX5, increase feed rates 100% vs. Whisker Ceramics	WET
	SX5	Waspaloy	210(180-240)	0.15(0.07-0.17)		
	SX3 SX7	Overall	230(180-270)	1.1(0.07-0.15)		
	WA1	Overall	240(180-330)	0.07(0.05-0.1)		

When applying JX1 / JX3, increase speed to over 300 m/min
When applying SX3 / SX7 / SX5, increase feed rates 100% vs. Whisker Ceramics

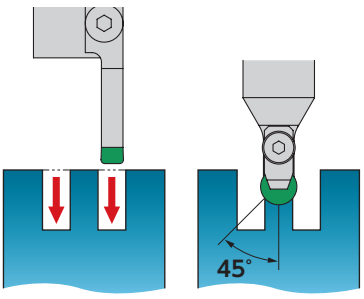
Application Information

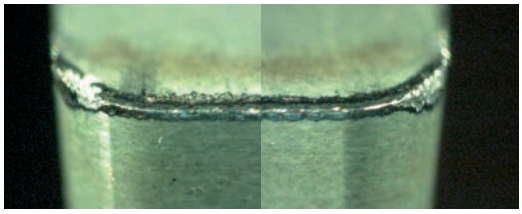




When machining a grooved area with multiple passes, the insert radius engages a potentially work hardened area during the last remaining plunge. This programming procedure sets up the potential of corner radius chipping or notching.

Change to

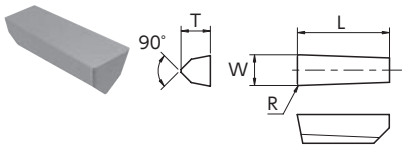




The grooving insert is plunged down both outside walls thus maintaining a good finish. The remaining material can be removed by using a stronger insert shape such as a RCGX style.

VGW..Series - Inserts

VGW

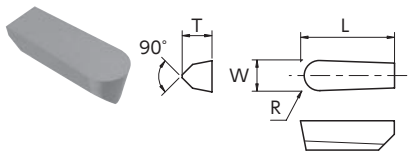


● : 1st Choice ● : 2nd choice

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

Item Number	Dimensions(mm)				Stock			
					BIDEMICS		Whisker ceramics	
	W	*R*	*T*	*L*	JX1	JX3	WA1	WA5
VGW 4125-1 E004	3.18	0.4	4.75	12.7	●	●		
4125-2 E004	3.18	0.8	4.75	12.7	●	●		
4125-2 EX0001	3.18	0.8	4.75	12.7			●	●
4156-1 E004	3.96	0.4	4.75	12.7	●	●		
4156-2 E004	3.96	0.8	4.75	12.7	●	●		
4156-2 EX0001	3.96	0.8	4.75	12.7			●	●
4187-1 E004	4.75	0.4	4.75	12.7	●	●		
4187-2 E004	4.75	0.8	4.75	12.7	●	●		
4187-2 EX0001	4.75	0.8	4.75	12.7			●	●
6250-1 E004	6.35	0.4	6.35	19.05	●	●		
6250-2 E004	6.35	0.8	6.35	19.05	●	●		
6250-2 EX001	6.35	0.8	6.35	19.05			●	●
6250-3 E004	6.35	1.2	6.35	19.05	●	●		
8375-2 EX0001	9.525	0.8	8.56	25.4			●	●

VGW..R



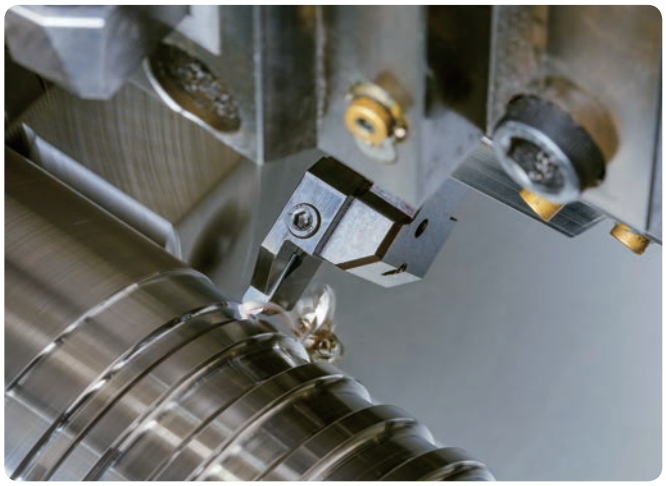
● : 1st Choice ● : 2nd choice

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

Item Number	Dimensions(mm)				Stock			
					BIDEMICS		Whisker ceramics	
	W	*R*	*T*	*L*	JX1	JX3	WA1	WA5
VGW 4125-R E004	3.18	1.59	4.75	12.7	●	●		
4125-R EX0001	3.18	1.59	4.75	12.7			●	●
4156-R E004	3.96	1.98	4.75	12.7	●	●		
4156-R EX0001	3.96	1.98	4.75	12.7			●	●
4187-R E004	4.75	2.38	4.75	12.7	●	●		
4187-R EX0001	4.75	2.38	4.75	12.7			●	●
6250-R EX0001	6.35	3.18	6.35	19.05			●	●
8375-R EX0001	9.525	4.76	8.56	25.4				●

New Modular Tooling !

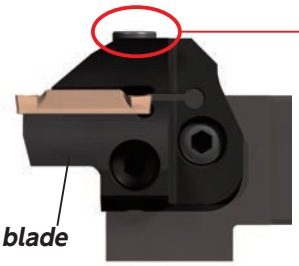
Available in 3 different styles



Features

- *The best rigidity*
- *Available in 3 different styles*

Most rigid blade type system

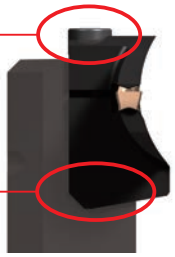


Position clamp bolt to the front side
Strong clamping prevents movement of insert

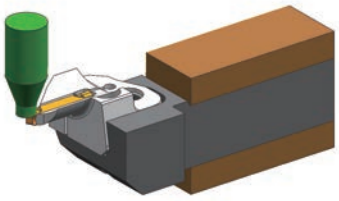
blade

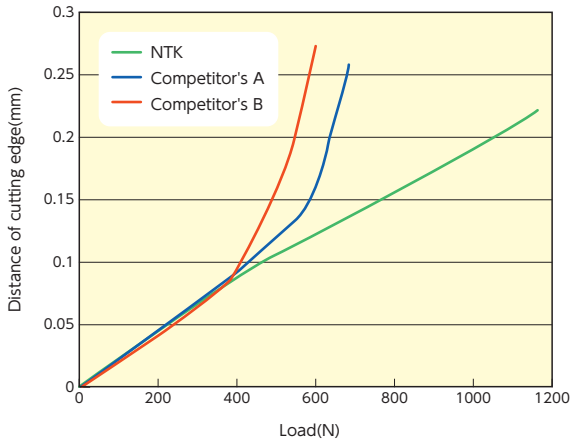
Strong clamping by directly fastening the blades

Wedge style design



Tool rigidity comparision





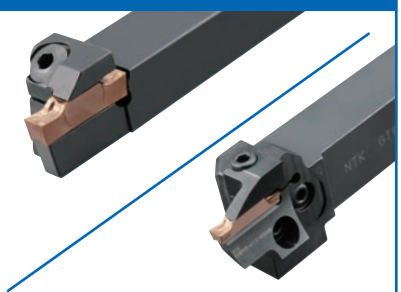
VGW Style

➡L16

RCGX Style RPGX Style

➡L20

Grooving/Face grooving
for PVD coated carbide insert

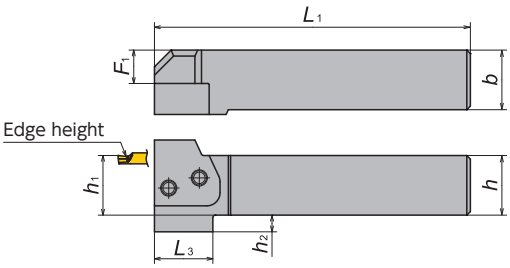


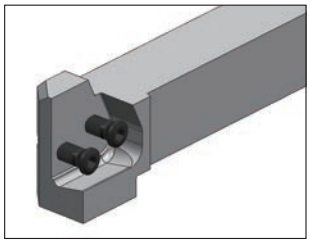
➡H40

Modular Holdet Body

GTWP-H

Straight style toolholders



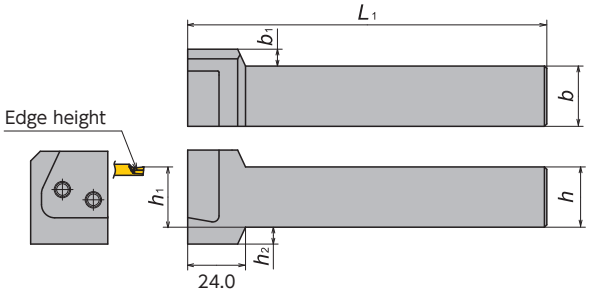


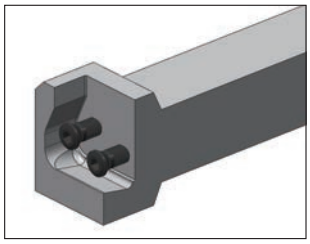
Right-Hand style shown

Toolholder	Stock		Dimensions(mm)							Parts	
	R	L	h	b	h_1	L_1	F_1	h_2	L_3	Screw	Wrench
GTWP[R/L] 2020-H	●	●	20.0	20.0	20.0	107.5	9	8	28.5	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	132.5	14	7	24.5	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	152.5	21	—	—	FSI28-6.0×18	LW-4

GKWP-H

L-style toolholders





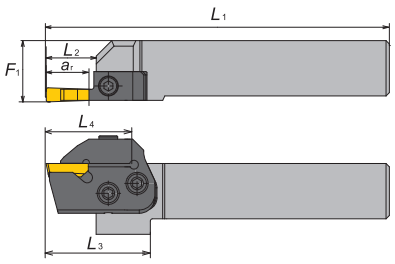
Right-Hand style shown
＊Use oppsoite hand blade

Toolholder	Stock		Dimensions(mm)						Parts	
	R	L	h	b	h_1	L_1	b_1	h_2	Screw	Wrench
GKWP[R/L] 2020-H	●	●	20.0	20.0	20.0	124	12	8	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	149	7	7	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	169	—	—	FSI28-6.0×18	LW-4

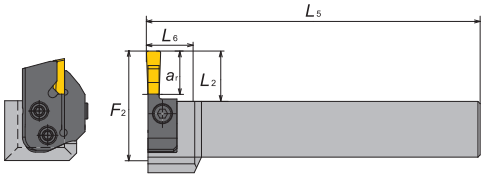
VGW..Series - Blades

GBVR

For GTWP-H



For GKWP-H



● Right hand

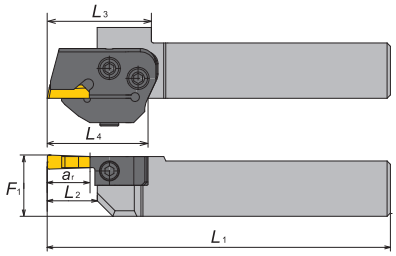
Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Right	GBVR-VGW4-3T09	●	GTWPR2020-H	VGW4125	118.7	11.2	39.7	34.1	124.3	24.3	22.3	31.2	9.5
			GKWPL2020-H	VGW4156	118.7	11.2	39.7	34.1	124.7	24.7	22.7	31.2	9.5
			GTWPR2525-H	VGW4125	143.7	11.2	35.7	34.1	149.3	24.3	27.3	36.2	9.5
			GKWPL2525-H	VGW4156	143.7	11.2	35.7	34.1	149.7	24.7	27.7	36.2	9.5
			GTWPR3232-H	VGW4125	163.7	11.2	—	34.1	169.3	24.3	34.3	43.2	9.5
			GKWPL3232-H	VGW4156	163.7	11.2	—	34.1	169.7	24.7	34.7	43.2	9.5
	GBVR-VGW4-4T14	●	GTWPR2020-H	VGW4156	125.0	17.5	46.0	40.5	124.4	24.4	22.4	37.5	14.2
			GKWPL2020-H	VGW4187	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GTWPR2525-H	VGW4156	150.0	17.5	42.0	40.5	149.4	24.4	27.4	42.5	14.2
			GKWPL2525-H	VGW4187	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GTWPR3232-H	VGW4156	170.0	17.5	—	40.5	169.4	24.4	34.4	49.5	14.2
			GKWPL3232-H	VGW4187	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
	GBVR-VGW6-6T14	●	GTWPR2020-H	VGW6218	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GKWPL2020-H	VGW6250	125.0	17.5	46.0	40.5	125.2	25.2	23.2	37.5	14.2
			GTWPR2525-H	VGW6218	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GKWPL2525-H	VGW6250	150.0	17.5	42.0	40.5	150.2	25.2	28.2	42.5	14.2
			GTWPR3232-H	VGW6218	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
			GKWPL3232-H	VGW6250	170.0	17.5	—	40.5	170.2	25.2	35.2	49.5	14.2
	GBVR-VGW6-6T19	●	GTWPR2020-H	VGW6250	130.1	22.6	51.1	45.6	124.7	24.7	22.7	42.6	19.0
			GKWPL2020-H	VGW6281	130.1	22.6	51.1	45.6	125.1	25.1	23.1	42.6	19.0
			GTWPR2525-H	VGW6250	155.1	22.6	47.1	45.6	149.7	24.7	27.7	47.6	19.0
			GKWPL2525-H	VGW6281	155.1	22.6	47.1	45.6	150.1	25.1	28.1	47.6	19.0
			GTWPR3232-H	VGW6250	175.1	22.6	—	45.6	169.7	24.7	34.7	54.6	19.0
			GKWPL3232-H	VGW6281	175.1	22.6	—	45.6	170.1	25.1	35.1	54.6	19.0
	GBVR-VGW8-8T19		GTWPR2020-H	VGW8312	135.2	27.7	56.2	50.7	125.5	25.5	23.5	47.7	19.0
			GKWPL2020-H	VGW8344	135.2	27.7	56.2	50.7	125.9	25.9	23.9	47.7	19.0
			GTWPR2525-H	VGW8312	160.2	27.7	52.2	50.7	150.5	25.5	28.5	52.7	19.0
			GKWPL2525-H	VGW8344	160.2	27.7	52.2	50.7	150.9	25.9	28.9	52.7	19.0
			GTWPR3232-H	VGW8312	180.2	27.7	—	50.7	170.5	25.5	35.5	59.7	19.0
			GKWPL3232-H	VGW8344	180.2	27.7	—	50.7	170.9	25.9	35.9	59.7	19.0
	GBVR-VGW8-8T28	●	GTWPR2020-H	VGW8344	137.7	30.2	58.7	53.2	125.3	25.3	23.3	50.2	28.5
			GKWPL2020-H	VGW8375	137.7	30.2	58.7	53.2	125.8	25.8	23.8	50.2	28.5
			GTWPR2525-H	VGW8344	162.7	30.2	54.7	53.2	150.3	25.3	28.3	55.2	28.5
			GKWPL2525-H	VGW8375	162.7	30.2	54.7	53.2	150.8	25.8	28.8	55.2	28.5
			GTWPR3232-H	VGW8344	182.7	30.2	—	53.2	170.3	25.3	35.3	62.2	28.5
			GKWPL3232-H	VGW8375	182.7	30.2	—	53.2	170.8	25.8	35.8	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

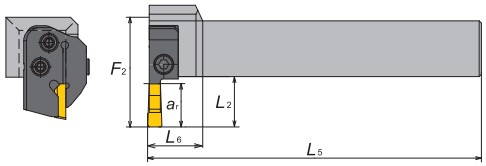
VGW..Series - Blades

GBVL

For GTWP-H



For GKWP-H



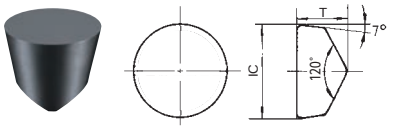
● Left hand

Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Left	GBVL-VGW4-3T09	●	GTWPL2020-H	VGW4125	118.7	11.2	39.7	34.1	124.3	24.3	22.3	31.2	9.5
			GKWPR2020-H	VGW4156	118.7	11.2	39.7	34.1	124.7	24.7	22.7	31.2	9.5
			GTWPL2525-H	VGW4125	143.7	11.2	35.7	34.1	149.3	24.3	27.3	36.2	9.5
			GKWPR2525-H	VGW4156	143.7	11.2	35.7	34.1	149.7	24.7	27.7	36.2	9.5
			GTWPL3232-H	VGW4125	163.7	11.2	—	34.1	169.3	24.3	34.3	43.2	9.5
			GKWPR3232-H	VGW4156	163.7	11.2	—	34.1	169.7	24.7	34.7	43.2	9.5
	GBVL-VGW4-4T14	●	GTWPL2020-H	VGW4156	125.0	17.5	46.0	40.5	124.4	24.4	22.4	37.5	14.2
			GKWPR2020-H	VGW4187	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GTWPL2525-H	VGW4156	150.0	17.5	42.0	40.5	149.4	24.4	27.4	42.5	14.2
			GKWPR2525-H	VGW4187	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GTWPL3232-H	VGW4156	170.0	17.5	—	40.5	169.4	24.4	34.4	49.5	14.2
			GKWPR3232-H	VGW4187	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
	GBVL-VGW6-6T14	●	GTWPL2020-H	VGW6218	125.0	17.5	46.0	40.5	124.8	24.8	22.8	37.5	14.2
			GKWPR2020-H	VGW6250	125.0	17.5	46.0	40.5	125.2	25.2	23.2	37.5	14.2
			GTWPL2525-H	VGW6218	150.0	17.5	42.0	40.5	149.8	24.8	27.8	42.5	14.2
			GKWPR2525-H	VGW6250	150.0	17.5	42.0	40.5	150.2	25.2	28.2	42.5	14.2
			GTWPL3232-H	VGW6218	170.0	17.5	—	40.5	169.8	24.8	34.8	49.5	14.2
			GKWPR3232-H	VGW6250	170.0	17.5	—	40.5	170.2	25.2	35.2	49.5	14.2
	GBVL-VGW6-6T19	●	GTWPL2020-H	VGW6250	130.1	22.6	51.1	45.6	124.7	24.7	22.7	42.6	19.0
			GKWPR2020-H	VGW6281	130.1	22.6	51.1	45.6	125.1	25.1	23.1	42.6	19.0
			GTWPL2525-H	VGW6250	155.1	22.6	47.1	45.6	149.7	24.7	27.1	47.6	19.0
			GKWPR2525-H	VGW6281	155.1	22.6	47.1	45.6	150.1	25.1	28.1	47.6	19.0
			GTWPL3232-H	VGW6250	175.1	22.6	—	45.6	169.7	24.7	34.7	54.6	19.0
			GKWPR3232-H	VGW6281	175.1	22.6	—	45.6	170.1	25.1	35.1	54.6	19.0
	GBVL-VGW8-8T19		GTWPL2020-H	VGW8312	135.2	27.7	56.2	50.7	125.5	25.5	23.5	47.7	19.0
			GKWPR2020-H	VGW8344	135.2	27.7	56.2	50.7	125.9	25.9	23.9	47.7	19.0
			GTWPL2525-H	VGW8312	160.2	27.7	52.2	50.7	150.5	25.5	28.5	52.7	19.0
			GKWPR2525-H	VGW8344	160.2	27.7	52.2	50.7	150.9	25.9	28.9	52.7	19.0
			GTWPL3232-H	VGW8312	180.2	27.7	—	50.7	170.5	25.5	35.5	59.7	19.0
			GKWPR3232-H	VGW8344	180.2	27.7	—	50.7	170.9	25.9	35.9	59.7	19.0
	GBVL-VGW8-8T28	●	GTWPL2020-H	VGW8344	137.7	30.2	58.7	53.2	125.3	25.3	23.3	50.2	28.5
			GKWPR2020-H	VGW8375	137.7	30.2	58.7	53.2	125.8	25.8	23.8	50.2	28.5
			GTWPL2525-H	VGW8344	162.7	30.2	54.7	53.2	150.3	25.3	23.3	55.2	28.5
			GKWPR2525-H	VGW8375	162.7	30.2	54.7	53.2	150.8	25.8	28.8	55.2	28.5
			GTWPL3232-H	VGW8344	182.7	30.2	—	53.2	170.3	25.3	35.3	62.2	28.5
			GKWPR3232-H	VGW8375	182.7	30.2	—	53.2	170.8	25.8	35.8	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

RCGX/RPGX..Series - Inserts

RCGX

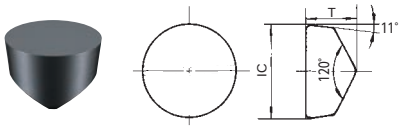


● : 1st Choice ● : 2nd Choice

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

Item Number	Dimensions(mm)		Stock						
			BIDEMICS		SiAlON ceramics			Whisker ceramics	
	IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
RCGX 060400 T00520	6.35	4.76						●	●
060400 T00820	6.35	4.76	●	●					
060700 T00520	6.35	7.94						●	
090700 E004	9.525	7.94	●	●					
090700 T00520	9.525	7.94				●	●	●	
090700 T01020	9.525	7.94						●	
090700 T00820	9.525	7.94	●	●					●
0908 TNB	9.525	7.86					●	●	
120700 E004	9.525	7.94	●	●					
120700 T00520	12.70	7.94				●	●	●	
120700 T00820	12.70	7.94	●	●					●
120700 T01020	12.70	7.94						●	
120700 Z01520	12.70	7.94						●	
1208 TNB	12.70	7.86					●		

RPGX



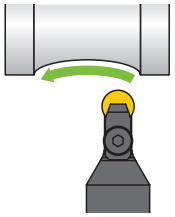
● : 1st Choice ● : 2nd Choice

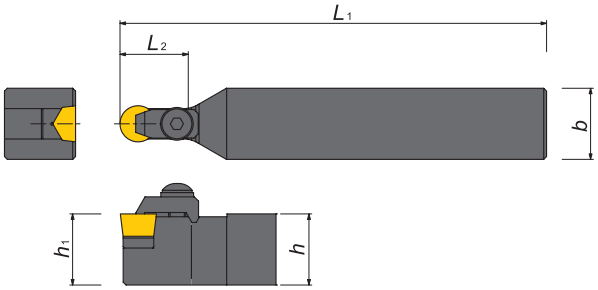
		BIDEMICS		SiAlON ceramics			Whisker ceramics	
Steel	P							
Stainless Steel	M							
Cast Iron	K			●	●	●	●	●
Non-Ferrous Material	N							
Heat Resistant Alloy	S	●	●	●	●	●	●	●
Hardened Material	H						●	●

Item Number	Dimensions(mm)		Stock						
			BIDEMICS		SiAlON ceramics			Whisker ceramics	
	IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
RPGX 060400 T00520	6.35	4.76						●	
090700 E004	6.35	7.94	●	●					
090700 T00520	9.525	7.94				●	●	●	
090700 T00820	9.525	7.94	●	●	●				●
0908 TNB	9.525	7.86					●		
120700 E004	9.525	7.94	●	●					
120700 T00520	12.70	7.94				●	●	●	
120700 T01020	12.70	7.94						●	
120700 T00820	12.70	7.94	●	●	●				●
1208 TNB	12.70	7.86					●		

RCGX/RPGX..Series - Toolholders

CRDCN





● Holders

Item Number	Stock	Dimensions(mm)					Gage insert
		h	b	L_1	h_1	L_2	
CRDCN3225P06	●	32	25	170	32	20	RCGX/RPGX0607(08)
3225P09	●	32	25	170	32	20	RCGX/RPGX0907(08)
3225P12	●	32	25	170	32	25	RCGX/RPGX1207(08)

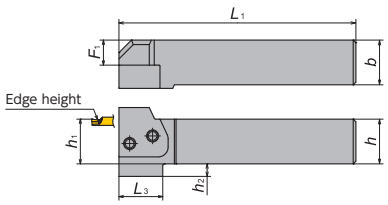
● Spare Parts

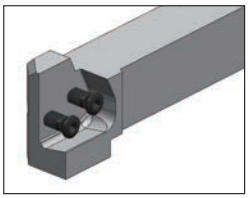
Item Number	Clamp Screw	Washer	Shim	Clamp	Spring pin	Wrench
CRDCN3225P06	BS0520	WS-5	HARCGX06	HC35KR-4099	—	LW-3
3225P09	BS0625	WS-6	HARCGX0908V	HC35KR-6075	2＊8AW	LW-4
3225P12	BS0625	WS-6	HARCGX1208V	HC35KR-6076	2.5＊8AW	LW-4

Modular Holder Body

GTWP-H

Straight style toolholder

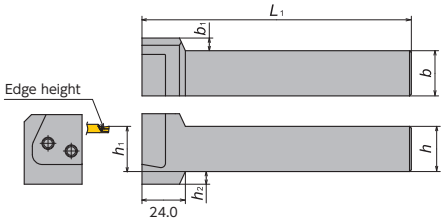


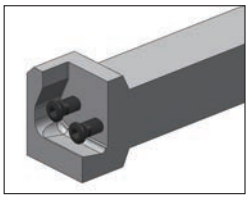


Right-Hand style shown

GKWP-H

L-style toolholder





Right-Hand style shown
＊Use opposite hand blade

● Toolholder Body

Toolholder	Stock		Dimensions(mm)							Parts	
	R	L	h	b	h_1	L_1	F_1	h_2	L_3	Screw	Wrench
GTWPR/L 2020-H	●	●	20.0	20.0	20.0	107.5	9	8	28.5	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	132.5	14	7	24.5	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	152.5	21	—	—	FSI28-6.0×18	LW-4

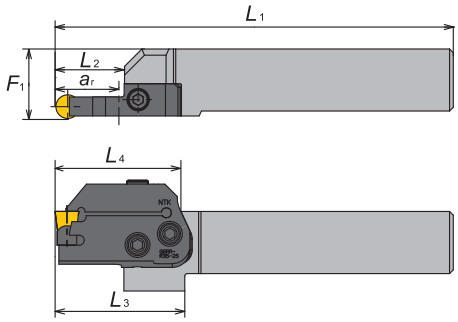
● Toolholder Body

Toolholder	Stock		Dimensions(mm)						Parts	
	R	L	h	b	h_1	L_1	b_1	h_2	Screw	Wrench
GKWPR/L 2020-H	●	●	20.0	20.0	20.0	124	12	8	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	149	7	7	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	169	—	—	FSI28-6.0×18	LW-4

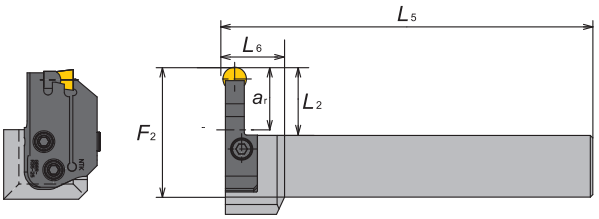
RCGX/RPGX..Series - Blades

GBRR

For GTWP-H



For GKWP-H



● Right hand

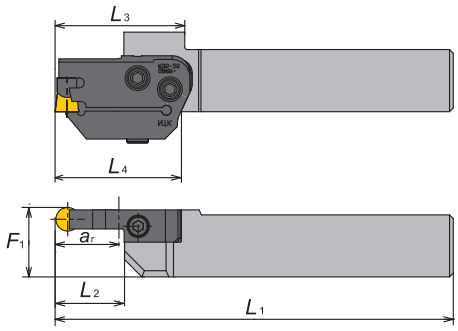
Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Right	**GBRR-R23-19**	●	GTWPR2020-H	RCGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GKWPL2020-H	RPGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GTWPR2525-H	RCGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GKWPL2525-H	RPGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GTWPR3232-H	RCGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
			GKWPL3232-H	RPGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
	GBRR-R35-25	●	GTWPR2020-H	RCGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GKWPL2020-H	RPGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GTWPR2525-H	RCGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GKWPL2525-H	RPGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GTWPR3232-H	RCGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
			GKWPL3232-H	RPGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
	GBRR-R45-28	●	GTWPR2020-H	RCGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GKWPL2020-H	RPGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GTWPR2525-H	RCGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GKWPL2525-H	RPGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GTWPR3232-H	RCGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5
			GKWPL3232-H	RPGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

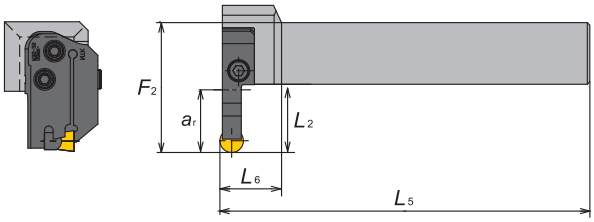
RCGX/RPGX..Series - Blades

GBRL

For GTWP-H



For GKWP-H



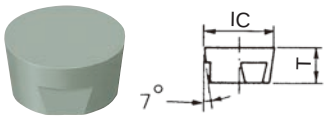
● Left hand

Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Left	GBRL-R23-19	●	GTWPL2020-H	RCGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GKWPR2020-H	RPGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GTWPL2525-H	RCGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GKWPR2525-H	RPGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GTWPL3232-H	RCGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
			GKWPR3232-H	RPGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
	GBRL-R35-25	●	GTWPL2020-H	RCGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GKWPR2020-H	RPGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GTWPL2525-H	RCGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GKWPR2525-H	RPGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GTWPL3232-H	RCGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
			GKWPR3232-H	RPGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
	GBRL-R45-28	●	GTWPL2020-H	RCGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GKWPR2020-H	RPGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GTWPL2525-H	RCGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GKWPR2525-H	RPGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GTWPL3232-H	RCGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5
			GKWPR3232-H	RPGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

Guidelines for Machining HRSA Materials

RCGY..Series - Inserts



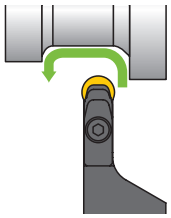
● : 1st Choice ● : 2nd choice

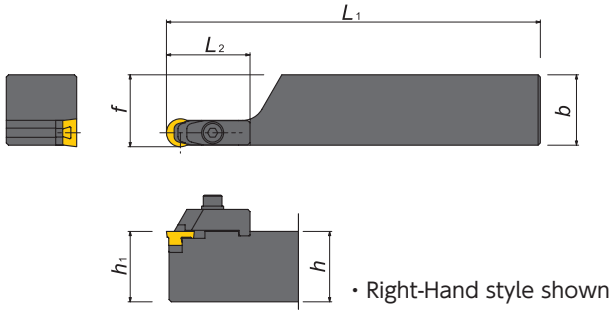
Steel	P							
Stainless Steel	M							
Cast Iron	K			●	●	●	●	●
Non-Ferrous Material	N							
Heat Resistant Alloy	S	●	●	●	●	●	●	●
Hardened Material	H						●	●

Item Number	Dimensions(mm)		Stock						
			BIDEMICS		SiAlON ceramics			Whisker ceramics	
	IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
RCGY 090603 TNB	6.35	4.76						●	
120603 TNB	6.35	7.94						●	

RCGY..Series - Toolholders

CRDCN





・Right-Hand style shown

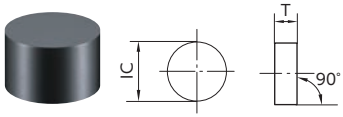
● Holders

Item Number	Stock		Dimensions(mm)						Gage insert
	R	L	h	b	L_1	h_1	f	L_2	
CRXCR3232P09Y	●		32	32	170	32	32.7	28	RCGY090603
3232P12Y	●		32	32	170	32	32.7	38	RCGY120603

● Spare Parts

Item Number	Clamp Screw	Washer	Shim	Shim Screw	Spring	Clamp	Wrench
CRXCR3232P09Y	CS0425	WS-4	HAR09Y	M2*8	ASGL4	CRN4	LW-3
3232P12Y	CS0525	WS-5	HAR12Y	M3*8	ASGL5	CRN5	LW-4

RNGN..Series - Inserts

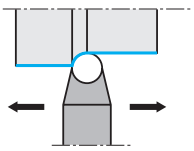


● : 1st Choice ● : 2nd choice

		Item Number	Dimensions(mm)		Stock						
					BIDEMICS		SiAlON ceramics			Whisker ceramics	
			IC	T	JX1	JX3	SX7	SX3	SX9	WA1	WA5
Steel	P	RNGN 120400 T00520	12.70	4.76				●		●	
Stainless Steel	M	120400 T00820	12.70	4.76							●
Cast Iron	K	120400 T00525	12.70	4.76					●	●	
Non-Ferrous Material	N	120400 T01020	12.70	4.76					●	●	
Heat Resistant Alloy	S	120400 T02025	12.70	4.76					●		
Hardened Material	H	120700 E002	12.70	7.94					●		
		120700 E004	12.70	7.94	●	●	●	●			
		120700 T00520	12.70	7.94				●	●	●	
		120700 T00525	12.70	7.94					●	●	
		120700 T00820	12.70	7.94	●	●	●				●
		120700 T01020	12.70	7.94						●	
		120700 Z01520	12.70	7.94						●	
		120700 K20015	12.70	7.94							★
		150700 T00520	15.875	7.94					●		
		150700 T00525	15.875	7.94					●	●	
		150700 T00820	15.875	7.94							●
		190700 T00520	19.05	7.94					●		
		190700 T00525	19.05	7.94					●		
		190700 T00820	19.05	7.94							●
		190700 T01020	19.05	7.94						●	
		190700 K20015	19.05	7.94							●
		250700 T00520	25.4	7.94					●	●	
		250700 T00820	25.4	7.94							●

RNGN..Series - Toolholders

C54/CRDNN



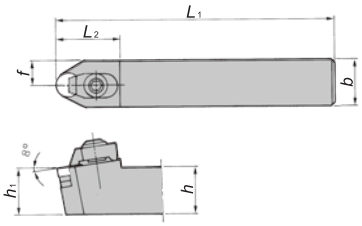
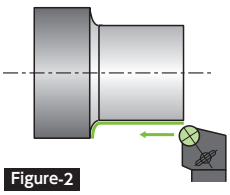


Figure-1

C55/CRGNR



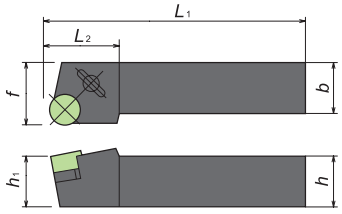


Figure-2

Right-Hand style shown

● Holders

Figure	Item Number	Stock			Dimensions(mm)						Gage insert
		R	N	L	h	b	L_1	h_1	f	L_2	
1	C54M-44		●		25	25	160	25	12.5	33	RN□N1204(1207)
	CRDNN2525M12		●		25	25	150	25	12.5	34	
	3225P12		●		32	25	170	32	12.5	34	
2	C55M-33	●			19	19	140	19	28	30	RNGN1204
	-44	●		●	25	25	160	25	30	30	RN□N1204(1207)
	-45	●			32	25	160	32	30	30	
	CRGN3225P12	●			32	25	170	32	32	30	

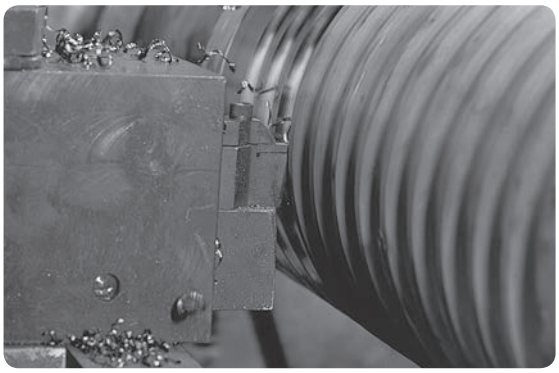
● Spare Parts

Figure	Item Number	Clamp	Shim	Clamp Screw	Shim Screw	Wrench	Snap ring
1	C54M-44	CC08M	ARN42	BS0835W	M3*12	LW-4	SR08
	CRDNN2525M12						
	3225P12						
2	C55M-33	CC08M	ARN42	BS0829W	M3*12	LW-4	SR08
	-44			BS0835W			
	-45						
	CRGN3225P12						

Machining Mill Rolls with NTK Ceramics and CBNs

Features

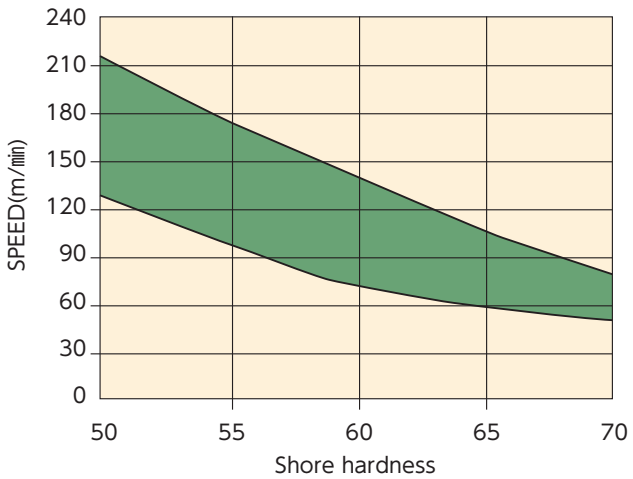
- *In addition to our general purpose ceramic HC2 grade, NTK offers HC7 for higher productivity*
- *WA1's wear resistance is an advantage when roughing carbide and hardened rolls*
- *ZC7 covers a wide range of applications such as carburized or induction hardened steels.*



Recommended Cutting Conditions

Roll Material	Grade		Cutting speed (m/min)				Feed (mm/rev)	Depth of cut (mm)	DRY	WET
				Shore Hardness Scale						
				55-65	65-72	72-				
Steel *ex. D2*	Ceramic	HC7	140-180	100%	80%	60%	0.1-0.3	0.6-1.9	●	
	Ceramic	HC2	100-140	100%	80%	60%	0.1-0.3	0.6-1.9	●	
Chilled Cast Iron	Ceramic	HC7	140-180	100%	80%	60%	0.1-0.3	0.6-1.9	●	
	Ceramic	HC2	100-140	100%	80%	60%	0.1-0.3	0.6-1.9	●	
Ductile Cast iron	Ceramic	HC7	90-180	100%	80%	60%	0.1-0.3	0.6-1.9	●	
	Ceramic	HC2	80-140				0.1-0.3	0.6-1.9	●	
Carbide	CBN	B22	30-60				0.1-0.3	0.25	●	
	Whisker	WA1/WA5	50-150				0.1-0.3	0.25-2.0	●	
CPM Rolls *ex. Powdered Metal*	Ceramic	HC7	120-150				0.1-0.3	0.6-1.9	●	
Continuous cuts 42-97 Shore hardness	Ceramic	ZC7	40-200	Finish			0.08-0.2	0.1-0.8	●	●

Recommended Speed Chart

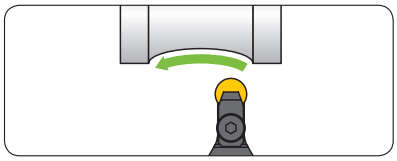


Recommended Feed Chart

Nose radius	Depth of cut (mm)	Feed (mm/rev)	
		30 micro	60 micro
0.4	0.2	0.05-0.08	0.08-0.1
0.8	0.4	0.08-0.1	0.1-0.12
1.2	0.5	0.1-0.12	0.12-0.16
1.6	0.8	0.1-0.14	0.15-0.19
6.35	2.0	0.18-0.25	0.25-0.35

U.S. rebar size chart		
Imperial bar size	Metric size	Nominal diameter (mm)
#2	#6	6.35
#3	#10	9.525
#4	#13	12.7
#5	#16	15.875
#6	#19	19.05
#8	#25	25.4

CRDCN for RCGX inserts



Key Points for Machining Mill Rolls

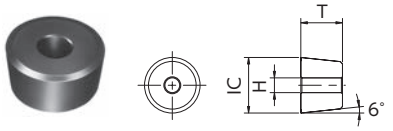
- ***Hardness of the roll is an important factor. As the roll gets harder the Cutting speed should be reduced.***
- ***RCGX style inserts are the preferred insert for rigidity and cost savings.***
- ***If making multiple passes with one edge, vary your DOC to move the wear on the insert edge and reduce 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.***
- ***RCGX0907 & 1207 feed rate runs best at 0.15 ㎜/rev.***

Types, Applications and Features of Rolls

Mill Rolls	Applications	Features
Forged rolls ●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 ●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 ●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	●Pinch mills ●Wire rod ●Wire flattering or forming ●ERW tube mills ●Turks heads ●Hot & Cold rolls ●Work reducing rolls	Preferred in abrasive operations. High wear capabilities.

Machining Mill Rolls with NTK Ceramics and CBNs

CDH..Series - Inserts



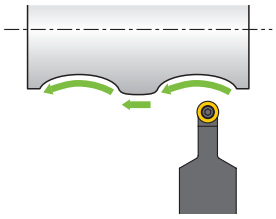
● : 1st Choice ● : 2nd choice

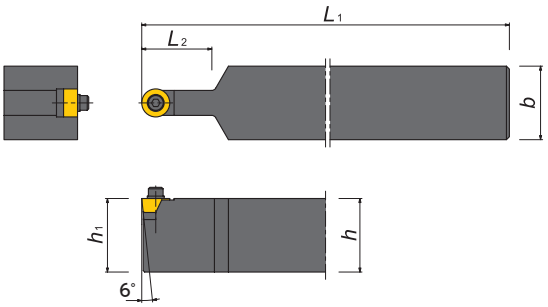
Steel	P						
Stainless Steel	M						
Cast Iron	K	●	●	●	●	●	●
Non-Ferrous Material	N						
Heat Resistant Alloy	S			●	●	●	
Hardened Material	H	●	●	●	●	●	●

Item Number	Dimensions(㎜)			Ceramics					CBN
				Alumina - TiC		SiAlON	Whisker		
	IC	T	H	HC2	HC7	SX9	WA1	WA5	B22
CDH22PN	12.70	6.35	3.18	●					
33PN	19.05	9.52	6.35	●					
42PN	25.40	12.70	6.75						
43PN	25.40	19.05	6.75						
53PN	31.75	19.05	9.92						

CDH..Series - Toolholders

HRCD





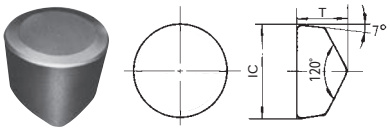
● Holders

Item Number	Stock			Dimensions(㎜)					Gage insert
	R	N	L	*h*	*b*	L_1	h_1	L_2	
HRCD-22		●		50	50	300	50	30	CDH22
-33		●		50	50	300	50	50	CDH33
-42				50	50	300	50	80	CDH42
-43				50	50	300	50	80	CDH43
-53				50	50	300	50	100	CDH53

● Spare Parts

Item Number	Clamp Screw	Washer	Shim	Wrench
HRCD-22	CS0316	W120	HACDH22	LW-2.5
HRCD-33	CS0625	W110	HACDH33	LW-5
HRCD-42	1/4-20UNC＊11/4	W106	HACDH42	LWU-4
HRCD-43	1/4-20UNC＊11/2	W106	HACDH43	LWU-4
HRCD-53	3/8-16UNC＊11/2	W107	HACDH53	LWU-5

RCGX..Series - Inserts



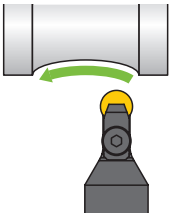
● : 1st Choice ● : 2nd choice

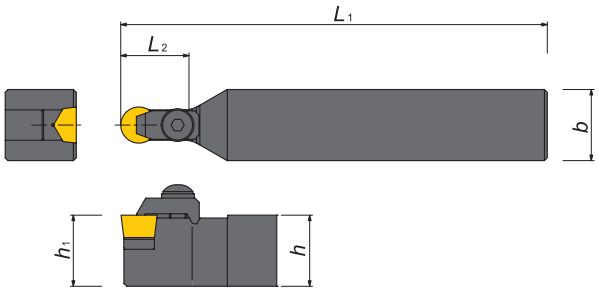
Steel	P						
Stainless Steel	M						
Cast Iron	K	●	●	●	●	●	●
Non-Ferrous Material	N						
Heat Resistant Alloy	S			●	●	●	
Hardened Material	H	●	●	●	●	●	●

Item Number	Dimensions(mm)		Ceramics					CBN
			Alumina - TiC		SiAlON	Whisker		
	IC	T	HC2	HC7	SX9	WA1	WA5	B22
RCGX 060400 T00520	6.35	4.76				●	●	
060400 T02020	6.35	4.76		★			★	
060600 P07015	6.35	6.21					★	
060700 T00520	6.35	7.94				●		
090700 T00520	9.525	7.94			●	●		
090700 T00820	9.525	7.94					●	
090700 T01020	9.525	7.94				●		
090700 K20015	9.525	7.94		★			★	
0908 PN	9.525	7.86	●					
0908 TNB	9.525	7.86			●	●		
120700 T00520	12.70	7.94			●	●		
120700 T00820	12.70	7.94					●	
120700 T01020	12.70	7.94				●		
120700 Z01520	12.70	7.94				●		
120700 K20015	12.70	7.94		★			★	
1208 PN	12.70	7.86	●					
1208 TBN	12.70	7.86			●			

RCGX..Series - Toolholders

CRDCN





● Holders

Item Number	Stock	Dimensions(mm)						Gage insert
	R N L	*h*	*b*	L_1	h_1	*f*	L_2	
CRDCN2525M06		25	25	150	25	—	20	RCGX0607(08)
2525M09		25	25	150	25	—	20	RCGX0907(08)
2525M12		25	25	150	25	—	20	RCGX1207(08)

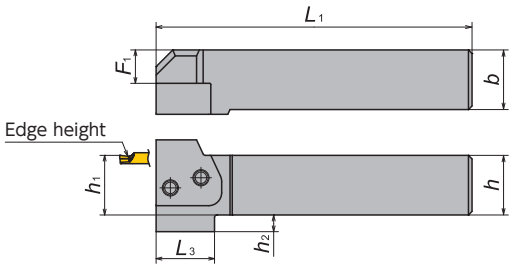
● Spare Parts

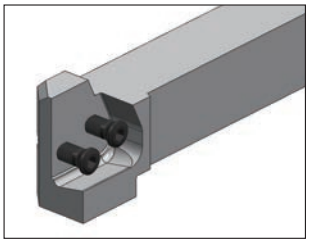
Item Number	Clamp Screw	Washer	Shim	Clamp	Spring pin	Wrench
CRDCN3225P06	BS0520	WS-5	HARCGX06	HC35KR-4099	—	LW-3
3225P09	BS0625	WS-6	HARCGX0908V	HC35KR-6075	2＊8AW	LW-4
3225P12	BS0625	WS-6	HARCGX1208V	HC35KR-6076	2.5＊8AW	LW-4

Modular Holder Body

GTWP-H

Straight style toolholders



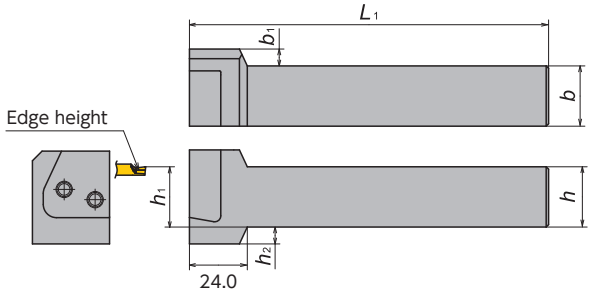


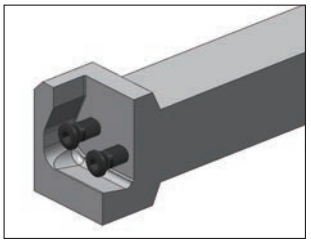
Right-Hand style shown

Toolholder	Stock		Dimensions(mm)							Parts	
	R	L	h	b	h_1	L_1	F_1	h_2	L_3	Screw	Wrench
GTWP$^{R}_{L}$ 2020-H	●	●	20.0	20.0	20.0	107.5	9	8	28.5	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	132.5	14	7	24.5	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	152.5	21	—	—	FSI28-6.0×18	LW-4

GKWP-H

L-style toolholders





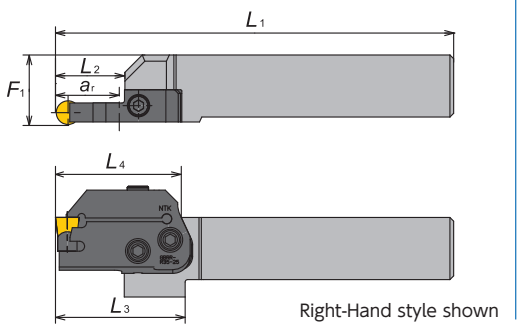
Right-Hand style shown
＊Use oppsoite hand blade

Toolholder	Stock		Dimensions(mm)						Parts	
	R	L	h	b	h_1	L_1	b_1	h_2	Screw	Wrench
GKWP$^{R}_{L}$ 2020-H	●	●	20.0	20.0	20.0	124	12	8	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	149	7	7	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	169	—	—	FSI28-6.0×18	LW-4

RCGX/RPGX..Series - Blade

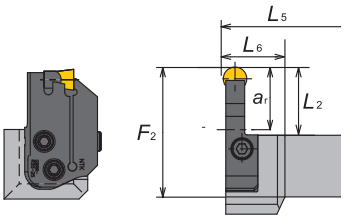
GBRR/L

For GTWP-H

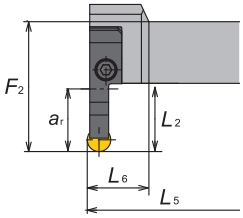


Right-Hand style shown

For GKWPL-H



For GKWPR-H



● Right hand

Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Right	GBRR-R23-19	●	GTWPR2020-H	RCGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GKWPL2020-H	RPGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GTWPR2525-H	RCGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GKWPL2525-H	RPGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GTWPR3232-H	RCGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
			GKWPL3232-H	RPGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
	GBRR-R35-25	●	GTWPR2020-H	RCGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GKWPL2020-H	RPGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GTWPR2525-H	RCGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GKWPL2525-H	RPGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GTWPR3232-H	RCGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
			GKWPL3232-H	RPGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
	GBRR-R45-28	●	GTWPR2020-H	RCGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GKWPL2020-H	RPGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GTWPR2525-H	RCGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GKWPL2525-H	RPGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GTWPR3232-H	RCGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5
			GKWPL3232-H	RPGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

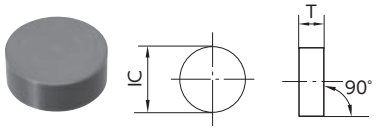
● Left hand

Hand	Blade number	Stock	Holder	Insert	Dimensions(mm)								
					L_1	L_2	L_3	L_4	L_5	L_6	F_1	F_2	a_r
Left	GBRL-R23-19	●	GTWPL2020-H	RCGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GKWPR2020-H	RPGX0604	130.1	22.6	51.1	45.6	125.0	25.0	23.0	42.6	19.0
			GTWPL2525-H	RCGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GKWPR2525-H	RPGX0604	155.1	22.6	47.1	50.7	150.0	25.0	28.0	47.6	19.0
			GTWPL3232-H	RCGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
			GKWPR3232-H	RPGX0604	175.1	22.6	—	53.2	170.0	25.0	35.0	54.6	19.0
	GBRL-R35-25	●	GTWPL2020-H	RCGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GKWPR2020-H	RPGX0907(08)	135.2	27.7	56.2	45.6	125.0	25.0	23.0	47.7	25.4
			GTWPL2525-H	RCGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GKWPR2525-H	RPGX0907(08)	160.2	27.7	52.2	50.7	150.0	25.0	28.0	52.7	25.4
			GTWPL3232-H	RCGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
			GKWPR3232-H	RPGX0907(08)	180.2	27.7	—	53.2	170.0	25.0	35.0	59.7	25.4
	GBRL-R45-28	●	GTWPL2020-H	RCGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GKWPR2020-H	RPGX1207(08)	137.7	30.2	58.7	45.6	125.0	25.0	23.0	50.2	28.5
			GTWPL2525-H	RCGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GKWPR2525-H	RPGX1207(08)	162.7	30.2	54.7	50.7	150.0	25.0	28.0	55.2	28.5
			GTWPL3232-H	RCGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5
			GKWPR3232-H	RPGX1207(08)	182.7	30.2	—	53.2	170.0	25.0	35.0	62.2	28.5

Note : All dimensions shown are obtained when blade is set in the holder.

Machining Mill Rolls with NTK Ceramics and CBNs

RNGN..Series - Inserts



● : 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	Dimensions(mm)		Ceramics					CBN
			Alumina - TiC		SiAlON	Whisker		
	IC	T	HC2	HC7	SX9	WA1	WA5	B22
RNGN120400T00520	12.7	4.76				●		
120400T00820	12.7	4.76					●	
120400T00525	12.7	4.76			●	●		
120400T01020	12.7	4.76			●	●		
120400T01025	12.7	4.76	●					
120400T02025	12.7	4.76			●			
RNGN120700E002	12.7	7.94			●			
120700E007	12.7	7.94	●					
120700T00520	12.7	7.94			●	●		
120700T00525	12.7	7.94			●	●		
120700T00820	12.7	7.94					●	
120700T01020	12.7	7.94				●		
120700T02025	12.7	7.94	●					
120700Z01520	12.7	7.94				●		
120700K20015	12.7	7.94		★			★	
RNGN150700T00520	15.875	7.94			●			
150700T00525	15.875	7.94			●	●		
150700T00820	15.875	7.94					●	
RNGN190700T00520	19.05	7.94			●			
190700T00525	19.05	7.94			●			
190700T00820	19.05	7.94					●	
190700T01020	19.05	7.94				●		
190700K20015	19.05	7.94					●	
RNGN250700T00520	25.4	7.94			●	●		
250700T00820	25.4	7.94					●	
RNGN120400S Top full-face CBN	12.70	4.76						●

RNGN..Series - Toolholders

C54/CRDNN

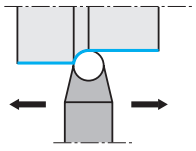
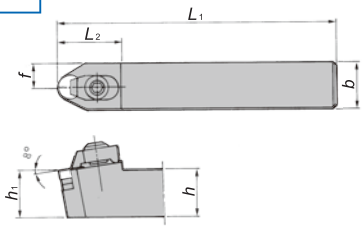


Figure-1



C55/CRGNR

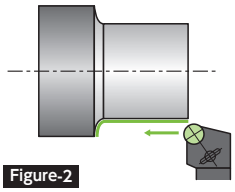
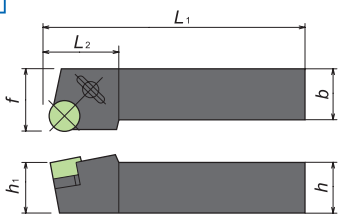


Figure-2



Right-Hand style shown

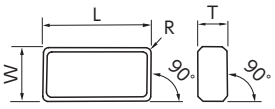
● Holders

Figure	Item Number	Stock			Dimensions(mm)						Gage insert
		R	N	L	h	b	L_1	h_1	f	L_2	
1	C54M-44		●		25	25	160	25	12.5	33	RN□N1204(1207)
	CRDNN2525M12		●		25	25	150	25	12.5	34	
	3225P12		●		32	25	170	32	12.5	34	
2	C55※-33	●			19	19	140	19	28	30	RNGN1204
	-44	●		●	25	25	160	25	30	30	RN□N1204(1207)
	-45	●			32	25	160	32	30	30	
	CRGN※3225P12	●			32	25	170	32	32	30	

● Spare Parts

Figure	Item Number	Clamp	Shim	Clamp Screw	Shim Screw	Wrench	Snap ring
1	C54M-44	CC08M	ARN42	BS0835W	M3＊12	LW-4	SR08
	CRDNN2525M12						
	3225P12						
2	C55※-33	CC08M	ARN42	BS0829W	M3＊12	LW-4	SR08
	-44			BS0835W			
	-45						
	CRGN※3225P12						

LNM..Series - Inserts



● : 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	Dimensions(mm)				Ceramics					CBN
					Alumina - TiC		SiAlON	Whisker		
	w	*L*	*s*	R	HC2	HC7	SX9	WA1	WA5	B22
LNM6688PNX8	19.05	38.10	12.70	3.2					●	
6688SN2	19.05	38.10	12.70	3.2				●		
6688SNX6	19.05	38.10	12.70	3.2		●				

RBGX..Series - Inserts

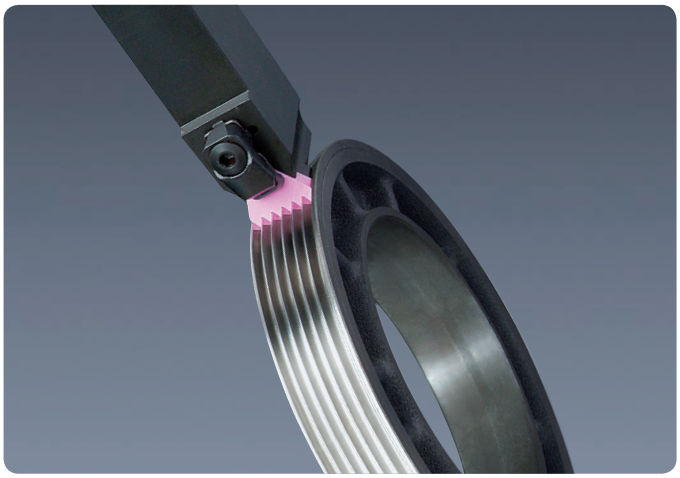
● : 1st Choice ● : 2nd choice

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

Item Number	Dimensions(mm)				Ceramics					CBN
					Alumina - TiC		SiAlON	Whisker		
	IC	IC_1	T_1	T	HC2	HC7	SX9	WA1	WA5	B22
RBGX16SPN	16	8	8	13	●					
16SSN2	16	8	8	13				●		
16S	16	8	8	13						●
20SPN	20	10	10	15	●					
20S	20	10	10	15						●
26SPN	26	14	10	15	●					
26SSN3	26	14	10	15				●		

Machining Poly-V Pulley Profiles

Grooving With Ceramics

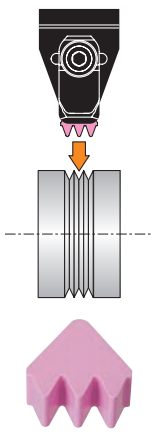
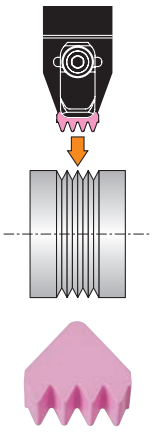
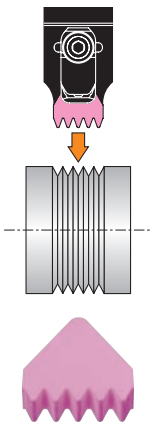
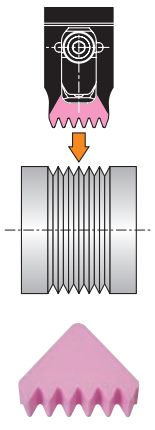


Features

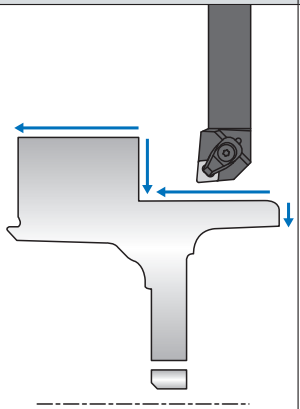
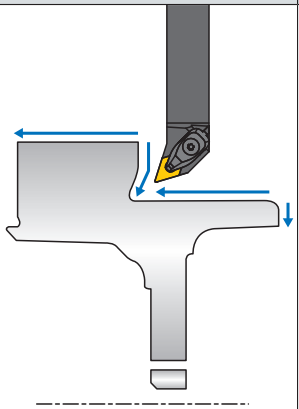
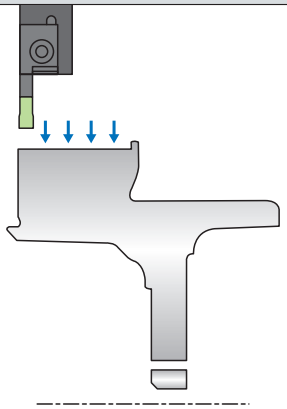
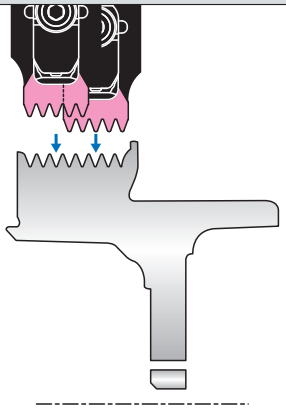
- ***High speed machining for Poly-V pulleys***
- ***Up to 6-V grooving with single pass***
- ***Precision inserts for plunging profiles***

Recommended Cutting Conditions

Material	Grade	Cutting speed (m/min)	Feed (mm/rev)	DRY	WET
Gray cast iron	**HW2**	300–600	0.05–0.15	●	

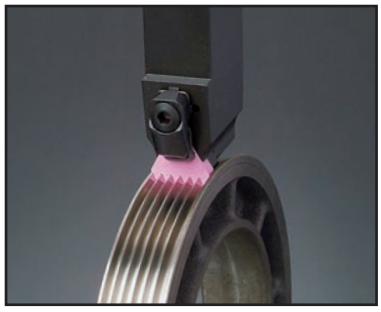
3V	4V	5V	6V
			
15 kw needed Insert : PTM33K30504ENB HW2	**21 kw needed** Insert : PTM43K40504ENB HW2	**26 kw needed** Insert : PTM53K50504ENB HW2	**31 kw needed** Insert : PTM53K60504ENB HW2

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	CNGA120412T02020 SX6	DNGA150408T01025 HC6 DNGA150408T01020 SP9	GVGN20600N08 WA1	PTM 53 K50504 ENB HW2*
Cutting Speed (m/min)	600–840	450–600 (HC6) 540–720 (SP9)	300–420	360–450 (420 recommended)
Feed (mm/rev)	0.45–0.6	0.3–0.45 (HC6) 0.45–0.6 (SP9)	0.2–0.25	0.05–0.15
DOC (mm)	2.0–3.0	Process dependent (0.5)	—	—
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 Cutting Power	15kw	21kw	26kw	26kw

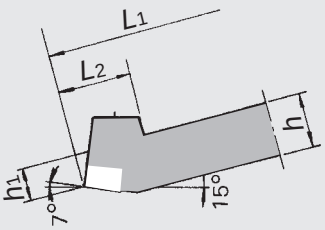


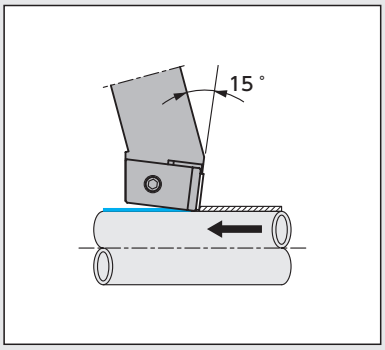
- ***NTK's Ceramic Inserts ensure in higher productivity and stable tool life for Damper-Pulley machining.***

TSN..Series

HN-ATS

HN59ATS (Right-hand)
HN60ATS (Left-hand)





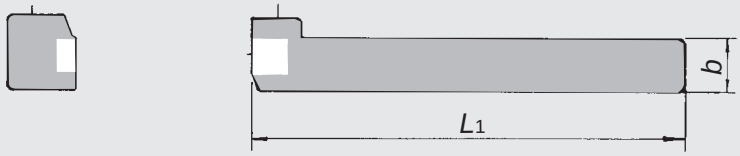
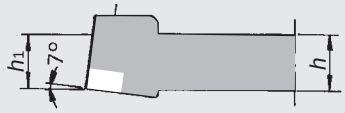


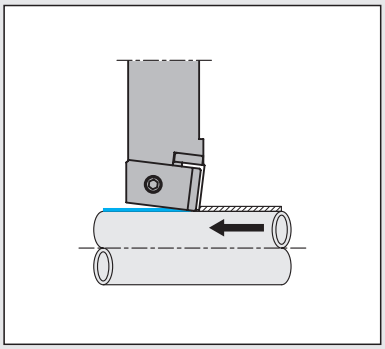
Figure-1

●Left-Hand style shown

HN-BTS

HN59BTS (Right-hand)
HN60BTS (Left-hand)





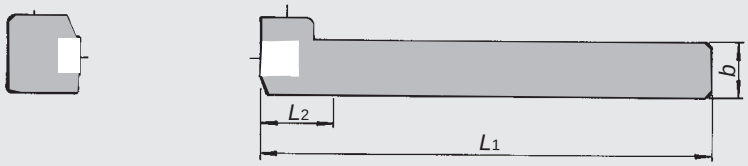


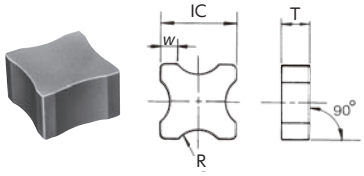
Figure-2

●Left-Hand style shown

TSN..Series - Toolholders

Shape	Code No. 59	Code No. 60	Item Number	Stock 59	Stock 60	h	b	L_1	h_1	L_2	Gage insert	Shim	Shim Screw	Clamp	Clamp Screw	Wrench
1	5350574		HN59/60ATS-33E			19	19	160	12.5	26	TSN45-□□	ASN423 AZT659D	M3＊5.5 M3＊8	HC59/60TS-4	WS0620	LW-3
			-44E	●		25	25	160	18.5	26						
			-44E-5			25	25	160	18.5	26	TSN55-□□	ASN522 HAZT1255A	M3＊8 M4＊5.5			
2			HN59/60BTS-33E			19	19	160	19	25	TSN45-□□	ASN423 AZT659D	M3＊5.5 M3＊8	HC59/60TS-4	WS0620	LW-3
			-44E			25	25	160	25	25						
			-44E-5			25	25	160	25	25	TSN55-□□	ASN522 HAZT1255A	M3＊8 M4＊5.5			

TSN..Series - Inserts

Shape	Item Number	Dimensions (mm)				Ceramics	
		R	w	IC	T	CX3※	Stock
	**TSN45-10**	10	2.10	12.70	7.94	5125323	●
	-12	12	2.10	12.70	7.94	5119987	●
	-14	14	2.10	12.70	7.94	5123914	●
	-16	16	2.10	12.70	7.94	5119995	●
	-18	18	2.10	12.70	7.94	5124839	●
	-20	20	2.10	12.70	7.94	5120001	●
	-25	25	2.10	12.70	7.94	5120027	●
	-30	30	2.10	12.70	7.94	5120019	●
	-35	35	2.10	12.70	7.94	5123922	●
	-40	40	2.10	12.70	7.94	5123948	●
	-50	50	2.10	12.70	7.94	5123906	●
	-60	60	2.10	12.70	7.94		
	-70	70	2.10	12.70	7.94		
	TSN55-15	15	3.20	15.875	7.94		
	-20	20	3.20	15.875	7.94	5270244	●
	-25	25	3.20	15.875	7.94	5270251	●
	-30	30	3.20	15.875	7.94	5270269	●
	-35	35	3.20	15.875	7.94	5144936	●
	-40	40	3.20	15.875	7.94	5271218	●
	-45	45	3.20	15.875	7.94	5144944	●
	-70	70	3.20	15.875	7.94		

※CX3 is an alumina-based ceramic similar to HC1.

Field Result

Tube scarfing

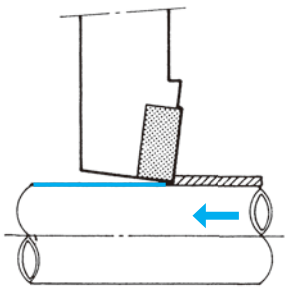
Work material : SPHT4

Cutting speed (m/min) = 70

Depth of cut (mm) = 3.0

Width of cutting (mm) = 5.0

Cutting oil : DRY



NTK : **CX3**	70 min./corner
Competitor's black ceramic grade	30 min./corner

CX3 exhibited a tool life more than double that of the competitor's black ceramic tool.

MEMO

M

Endmills

- CERAMATIC / Solid Ceramic EndMills ·· M2
- S-MILL / Solid Carbide EndMills ····· M6
- Small Diameter Indexable Endmills ···· M8

CERAMATIC / Solid Ceramic EndMill

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

➡M4

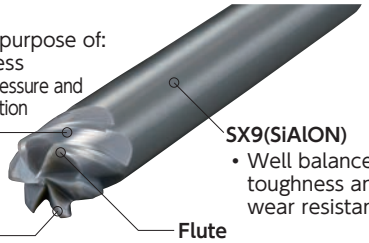
Ceramic specialist's design

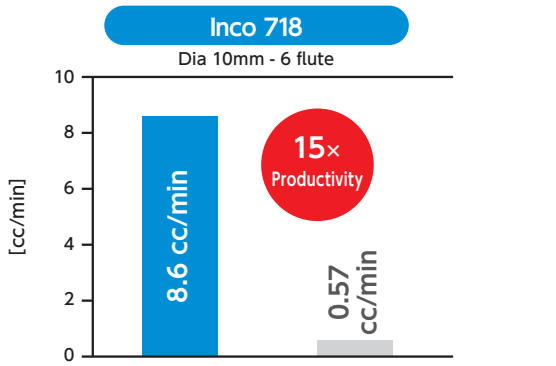
Helix angle
- Designed for the purpose of:
  - 4-flute: toughness
  - 6-flute: less tool pressure and better chip evacuation

SX9(SiAlON)
- Well balanced for toughness and wear resistance

Bottom edge
- Unique shape provides toughness

Flute
- Optimized for HRSA materials
- Excellent toughness

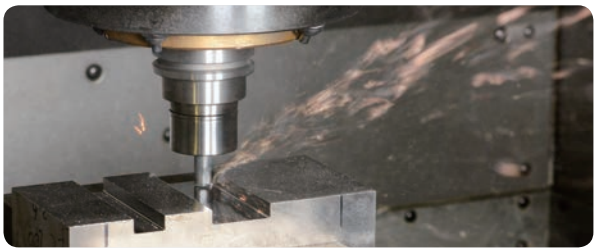




	SX9	Carbide
Cutting Speed (m/min)	600	40
Feed (mm/t)	0.03	⬅
DOC (mm)	3.0	⬅

RCS for Cast iron / HRSA materials

➡M5

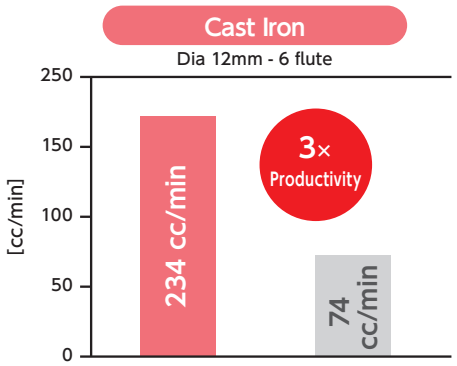


Helix angle
- Designed for the purpose of:
  - 4-flute: toughness
  - 6/8-flute: less tool pressure and better chip evacuation

Flute
- Three flute options up to 8 flute

End Gash
- Bigger end gash brings toughness

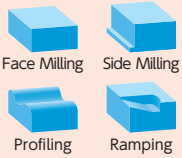
Edge
- Added chamfer provides toughness for cast iron machining



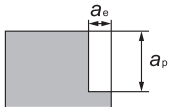
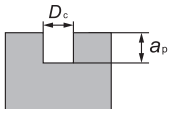
	SX9	Carbide
Cutting Speed (m/min)	700	110
Feed (mm/t)	0.05	⬅
DOC (mm)	3.5	7.0

4-flute

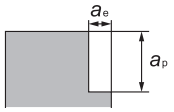
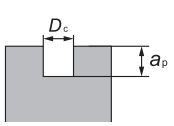
6-flute **8-flute**



Recommend Cutting Conditions for HRSA material

Application	Grade	ϕD_c	Flute	Cutting Speed (m/min) 150 600 1000	Feed (mm/t)	Depth of cut a_p (mm)	Width of cut a_e (mm)	Coolant
Face Milling	SX9	3/8"	4/6/8		0.03	1.4	—	DRY
		1/2"				1.9		
		5/8"				2.4		
		3/4"				2.9		
		8mm				1.2		
		10mm				1.5		
		12mm				1.8		
		16mm				2.4		
		20mm				3.0		
Side Milling 	SX9	3/8"	4/6/8		0.03	4.8	0.9	DRY
		1/2"				6.4	1.3	
		5/8"				8.0	1.6	
		3/4"				9.5	1.9	
		8mm				4.0	0.8	
		10mm				5.0	1.0	
		12mm				6.0	1.2	
		16mm				8.0	1.6	
		20mm				10.0	2.0	
Slotting 	SX9	3/8"	4		0.03	2.4	—	DRY
		1/2"				3.2		
		5/8"				4.0		
		8mm				2.0		
		10mm				2.5		
		12mm				3.0		
		16mm				4.0		
		3/8"	6			1.4		DRY
		1/2"				1.9		
		5/8"				2.4		
		8mm				1.2		
		10mm				1.5		
		12mm				1.8		
		16mm				2.4		
		3/4"	8		0.03	2.9	—	
		16mm				3.0		

Recommended cutting conditions for Cast Iron

Application	Grade	ϕD_c	Flute	Cutting Speed (m/min) 150 600 1000	Feed (mm/t)	Depth of cut a_p (mm)	Width of cut a_e (mm)	Coolant
Face Milling	SX9	1/2"	4/6/8		0.1	2.4	—	DRY
		5/8"				5.0		
		3/4"				4.8		
		12mm				3.0		
		16mm				4.0		
		20mm				5.0		
Side Milling 	SX9	1/2"	4/6/8		0.1	9.5	2.1	DRY
		5/8"				11.9	2.6	
		3/4"				14.3	3.2	
		12mm				9.0	2.0	
		16mm				12.0	2.5	
		20mm				15.0	3.3	
Slotting 	SX9	1/2"	4/6/8		0.1	2.4	—	DRY
		5/8"				4.0		
		3/4"				4.8		
		12mm				3.0		
		16mm				4.0		
		20mm				5.0		

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 300m/min 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.*

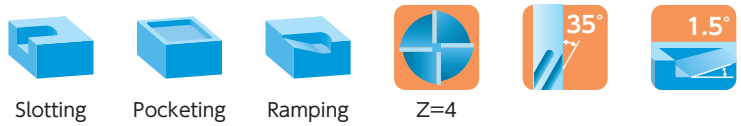
When cutting HRSA materials

- 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.

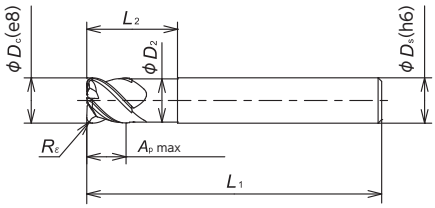
RCE for HRSA Materials

RCE-H4 (4-flute with Neck)

○No center cutting edge



Slotting　Pocketing　Ramping　Z=4



Tolerances

φDc / φDs	e8	h6
8mm, 10mm, 3/8"	-0.024/-0.047	+0/-0.009
12mm, 1/2"	-0.032/-0.059	+0/-0.011

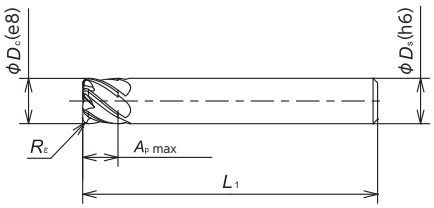
Heat Resistant Alloy　S　●　● : 1st Choice　● : 2nd choice

Item Number	Grade SX9	Flute	φDc (mm)	φDc (Inch)	φDs (mm)	φDs (Inch)	φD2 (mm)	φD2 (Inch)	Rε (mm)	Rε (Inch)	Ap max (mm)	Ap max (Inch)	L1 (mm)	L1 (Inch)	L2 (mm)	L2 (Inch)
RCEM 080H4R100S	●	4	**8.0**	—	8.0	—	7.6	—	1.0	—	6.0	—	60	—	16	—
100H4R125S	●		**10.0**	—	10.0	—	9.6	—	1.25	—	7.5	—	65	—	20	—
120H4R150S	●		**12.0**	—	12.0	—	11.6	—	1.5	—	9.0	—	70	—	24	—
RCEI 375H4R047S	●		**9.525**	3/8	9.525	3/8	9.125	.359	1.19	.047	7.14	9/32	63.5	2.5	19.05	3/4
500H4R068S	●		**12.7**	1/2	12.7	1/2	12.3	.484	1.73	.068	9.525	3/8	69.9	2.75	25.4	1

RCE-J6 (6-flute)

○No center cutting edge

Face Milling　Side Milling　Profiling　Ramping　Z=6



Tolerances

φDc / φDs	e8	h6
8mm, 10mm, 3/8"	-0.024/-0.047	+0/-0.009
12mm, 1/2"	-0.032/-0.059	+0/-0.011

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

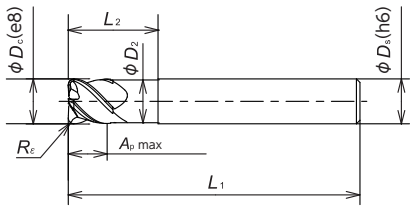
Item Number	Grade SX9	Flute	φDc (mm)	φDc (Inch)	φDs (mm)	φDs (Inch)	φD2 (mm)	φD2 (Inch)	Rε (mm)	Rε (Inch)	Ap max (mm)	Ap max (Inch)	L1 (mm)	L1 (Inch)	L2 (mm)	L2 (Inch)
RCEM 080J6R100S	●	6	**8.0**	—	8.0	—	—	—	1.0	—	6	—	60	—	—	—
100J6R125S	●		**10.0**	—	10.0	—	—	—	1.25	—	7.5	—	65	—	—	—
120J6R150S	●		**12.0**	—	12.0	—	—	—	1.5	—	9	—	70	—	—	—
RCEI 375J6R047S	●		**9.525**	3/8	9.525	3/8	—	—	1.19	.047	7.14	9/32	63.5	2.5	—	—
500J6R068S	●		**12.7**	1/2	12.7	1/2	—	—	1.73	.068	9.525	3/8	69.9	2.75	—	—

RCS for Cast Iron / HRSA Materials

RCS-H4

○No center cutting edge

Slotting　Pocketing　Ramping　Z=4



Tolerances

ϕDc / ϕDs	e8	h6
12mm, 16mm, 1/2", 5/8"	-0.032/-0.059	+0/-0.011

Cast Iron	K	●
Heat Resistant Alloy	S	●

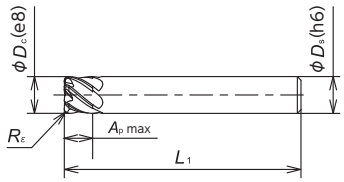
● : 1st Choice　● : 2nd choice

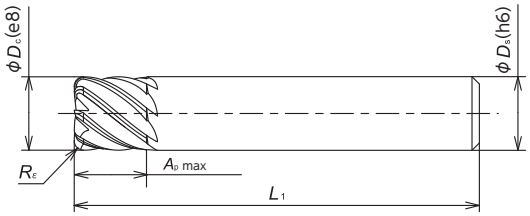
Item Number	Grade SX9	Flute	ϕDc (mm)	ϕDc (Inch)	ϕDs (mm)	ϕDs (Inch)	ϕD2 (mm)	ϕD2 (Inch)	Re (mm)	Re (Inch)	Ap max (mm)	Ap max (Inch)	L1 (mm)	L1 (Inch)	L2 (mm)	L2 (Inch)
RCSM 120H4R150S	●	4	**12.0**	—	12.0	—	11.6	—	1.5	—	9.0	—	70	—	24	—
160H4R200S	●		**16.0**	—	16.0	—	15.5	—	2.0	—	12.0	—	75	—	32	—
RCSI 500H4R068S	●		**12.7**	1/2	12.7	1/2	12.3	.484	1.73	.068	9.525	3/8	69.85	2.75	25.4	1
625H4R078S	●		**15.875**	5/8	15.875	5/8	15.375	.609	1.98	.078	11.91	.469	76.2	3	31.75	1.25

RCS-J6 / RCS-J8

○No center cutting edge

Face Milling　Side Milling　Profiling　Ramping　Z=6　Z=8





Tolerances

ϕDc / ϕDs	e8	h6
12mm, 16mm, 1/2", 5/8"	-0.032/-0.059	+0/-0.011
20mm, 3/4"	-0.040/-0.073	+0/-0.013

Cast Iron	K	●
Heat Resistant Alloy	S	●

● : 1st Choice　● : 2nd choice

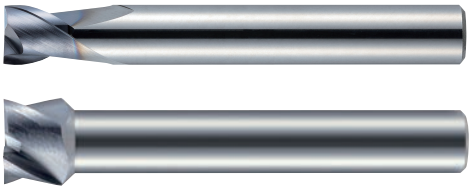
Item Number	Grade SX9	Flute	ϕDc (mm)	ϕDc (Inch)	ϕDs (mm)	ϕDs (Inch)	ϕD2 (mm)	ϕD2 (Inch)	Re (mm)	Re (Inch)	Ap max (mm)	Ap max (Inch)	L1 (mm)	L1 (Inch)	L2 (mm)	L2 (Inch)
RCSM 120J6R150S	●	6	**12.0**	—	12.0	—	—	—	1.5	—	9.0	—	70	—	—	—
160J6R200S	●		**16.0**	—	16.0	—	—	—	2.0	—	12.0	—	75	—	—	—
RCSI 500J6R068S	●		**12.7**	1/2	12.7	1/2	—	—	1.73	.068	9.525	3/8	69.85	2.75	—	—
625J6R078S	●		**15.875**	5/8	15.875	5/8	—	—	1.98	.078	11.91	.469	76.2	3	—	—
RCSM 200J8R250S	●	8	**20.0**	—	20.0	—	—	—	2.5	—	15.0	—	110	—	—	—
RCSI 750J8R094S	●		**19.05**	3/4	19.05	3/4	—	—	2.38	.094	14.29	.562	107.95	4.25	—	—

S-MILL / Solid Carbide Endmill

Features

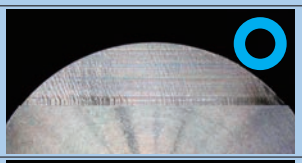
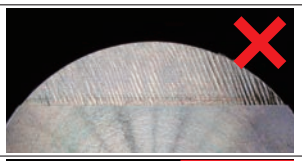
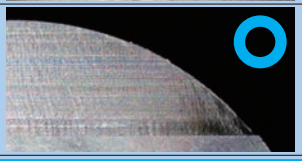
- The tools sharpness creates a remarkable finish on machined surface.
- 2, 3, and 4 flute designs with a selection of diameters to cover a variety of applications. (2 flute available in 2mmϕ)
- 40, 45, and 50mm lengths ideal for automatic lathes.

Two style



Three flute options

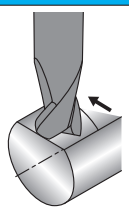
Surface finish

	NTK (S-MILL)	Competitor A	Competitor B
Magnified work material (side face)			
Magnified work material			
	Excellent surface finish	Bad surface finish	

Material: SUS304 (ϕ16mm) ϕ6mm −2 flute 3,000 rpm, F=300mm/min, a_p=3.0mm, a_e=1.2mm

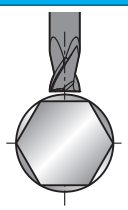
Field Result

SUS416F (D-cut)
ϕ6mm-2 flute

3,200 rpm	
Feed : 140 mm/min	
DOC : 0.6 mm	
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.

S45C (AF 8mm HEX)
ϕ6mm-2 flute

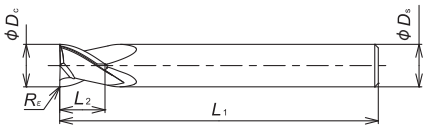
2,600 rpm	
Feed : 480 mm/min	
DOC : 1.0 mm	
WET	
NTK : **S-MILL**	70 pcs/corner+α
Competitor's solid endmill	50 pcs/corner

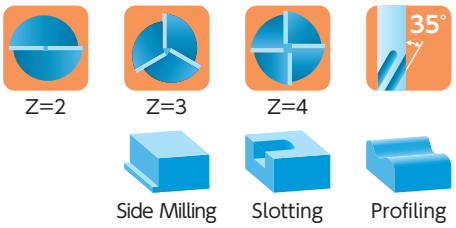
The S-MILL sharpness reduces the occurance of burrs and tool life is increased; clear improvements over the competitor's tool. The sharp cutting edge also produces noticeably less sound than the current tooling.

RWEM

○No center cutting edge

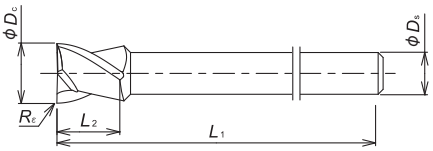
Figure-1





○No center cutting edge

Figure-2



Steel	P	●
Stainless steel	M	●

● : 1st Choice ● : 2nd choice

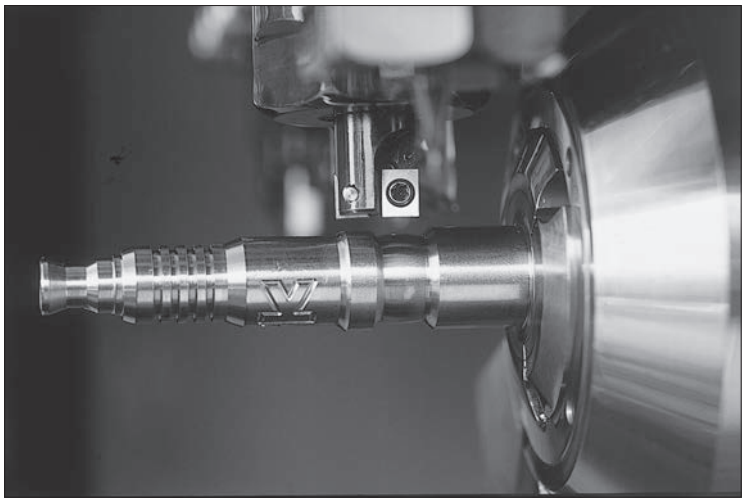
Item Number	Figure	Grade AC3	Flute	φDc (mm)	φDc (Inch)	φDs (mm)	φDs (Inch)	L1 (mm)	L1 (Inch)	L2 (mm)	L2 (Inch)	Rε (mm)	Rε (Inch)
RWEM020H2R00S04	1	●	2	2.0	.080	4.0	.158	40.0	1.575	2.0	.080	0.0	0.0
RWEM030H2R00S04	1	●		3.0	.118	4.0	.158	40.0	1.575	3.0	.118	0.0	0.0
RWEM040H2R00S04	1	●		4.0	.158	4.0	.158	40.0	1.575	4.0	.158	0.0	0.0
RWEM050H2R00S06	1	●		5.0	.197	6.0	.236	45.0	1.772	5.0	.197	0.0	0.0
RWEM060H2R00S06	1	●		6.0	.236	6.0	.236	45.0	1.772	6.0	.236	0.0	0.0
RWEM070H2R00S08	1	●		7.0	.276	8.0	.315	50.0	1.969	6.0	.236	0.0	0.0
RWEM080H2R00S07	2	●		8.0	.315	7.0	.276	50.0	1.969	6.0	.236	0.0	0.0
RWEM080H2R00S08	1	●		8.0	.315	8.0	.315	50.0	1.969	6.0	.236	0.0	0.0
RWEM100H2R00S07	2	●		10.0	.394	7.0	.276	50.0	1.969	6.0	.236	0.0	0.0
RWEM100H2R00S10	1	●		10.0	.394	10.0	.394	50.0	1.969	6.0	.236	0.0	0.0
RWEM030H3R00S04	1	●	3	3.0	.118	4.0	.158	40.0	1.575	3.0	.118	0.0	0.0
RWEM040H3R00S04	1	●		4.0	.158	4.0	.158	40.0	1.575	4.0	.158	0.0	0.0
RWEM050H3R00S06	1	●		5.0	.197	6.0	.236	45.0	1.772	5.0	.197	0.0	0.0
RWEM060H3R00S06	1	●		6.0	.236	6.0	.236	45.0	1.772	6.0	.236	0.0	0.0
RWEM070H3R00S08	1	●		7.0	.276	8.0	.315	50.0	1.969	6.0	.236	0.0	0.0
RWEM080H3R00S07	2	●		8.0	.315	7.0	.276	50.0	1.969	6.0	.236	0.0	0.0
RWEM080H3R00S08	1	●		8.0	.315	8.0	.315	50.0	1.969	6.0	.236	0.0	0.0
RWEM100H3R00S07	2	●		10.0	.394	7.0	.276	50.0	1.969	6.0	.236	0.0	0.0
RWEM100H3R00S10	1	●		10.0	.394	10.0	.394	50.0	1.969	6.0	.236	0.0	0.0
RWEM030H4R00S04	1	●	4	3.0	.118	4.0	.158	40.0	1.575	3.0	.118	0.0	0.0
RWEM040H4R00S04	1	●		4.0	.158	4.0	.158	40.0	1.575	4.0	.158	0.0	0.0
RWEM050H4R00S06	1	●		5.0	.197	6.0	.236	45.0	1.772	5.0	.197	0.0	0.0
RWEM060H4R00S06	1	●		6.0	.236	6.0	.236	45.0	1.772	6.0	.236	0.0	0.0
RWEM070H4R00S08	1	●		7.0	.276	8.0	.315	50.0	1.969	6.0	.236	0.0	0.0
RWEM080H4R00S07	2	●		8.0	.315	7.0	.276	50.0	1.969	6.0	.236	0.0	0.0
RWEM080H4R00S08	1	●		8.0	.315	8.0	.315	50.0	1.969	6.0	.236	0.0	0.0
RWEM100H4R00S07	2	●		10.0	.394	7.0	.276	50.0	1.969	6.0	.236	0.0	0.0
RWEM100H4R00S10	1	●		10.0	.394	10.0	.394	50.0	1.969	6.0	.236	0.0	0.0

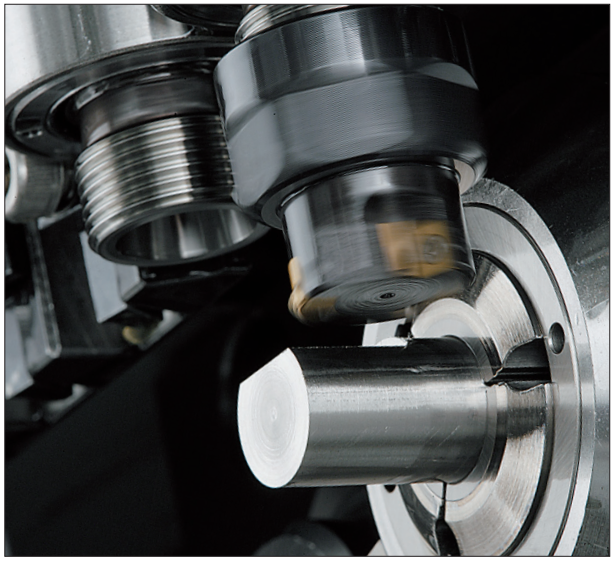
【Recommend Cutting Conditions】

Flute	Cutting diameter φDc (mm)	Carbon steel S45C		Alloy steel SCM435		Stainless steel SUS304		ae=φDc×0.2		ae=φDc×0.5		ae=φDc×0.75		ae=φDc×0.9		ae=φDc
		RPM (min-1)	Feed (mm/min)	RPM (min-1)	Feed (mm/min)	RPM (min-1)	Feed (mm/min)	ap (mm)	ae (mm)	ap (mm)	ae (mm)	ap (mm)	ae (mm)	ap (mm)	ae (mm)	ap (mm)
2 flutes	2.0	6,000	100	6,000	100	6,000	90	≦2.0	0.4	≦0.8	1.0	≦0.6	1.5	≦0.5	1.8	≦0.4
	3.0	6,000	210	6,000	240	6,000	180	≦3.0	0.6	≦1.2	1.5	≦0.9	2.3	≦0.7	2.7	≦0.6
	4.0	6,000	320	5,600	300	5,200	240	≦4.0	0.8	≦1.6	2.0	≦1.2	3.0	≦1.0	3.6	≦0.8
	5.0	5,000	370	4,500	330	4,100	260	≦5.0	1.0	≦2.0	2.5	≦1.5	3.8	≦1.2	4.5	≦1.0
	6.0	4,200	380	3,700	340	3,400	270	≦6.0	1.2	≦2.4	3.0	≦1.8	4.5	≦1.5	5.4	≦1.2
	7.0	3,600	370	3,200	330	3,000	270	≦6.0	1.4	≦2.8	3.5	≦2.1	5.3	≦1.7	6.3	≦1.4
	8.0	3,200	360	2,800	320	2,600	250	≦6.0	1.6	≦3.2	4.0	≦2.4	6.0	≦2.0	7.2	≦1.6
	10.0	2,500	320	2,200	280	2,100	230	≦6.0	2.0	≦4.0	5.0	≦3.0	7.5	≦2.5	9.0	≦2.0
3 flutes	3.0	6,000	250	6,000	250	6,000	220	≦3.0	0.6	≦1.2	1.5	≦0.9	2.3	≦0.7	2.7	≦0.6
	4.0	6,000	390	5,600	360	5,200	290	≦4.0	0.8	≦1.6	2.0	≦1.2	3.0	≦1.0	3.6	≦0.8
	5.0	5,000	440	4,500	400	4,100	310	≦5.0	1.0	≦2.0	2.5	≦1.5	3.8	≦1.2	4.5	≦1.0
	6.0	4,200	460	3,700	410	3,400	330	≦6.0	1.2	≦2.4	3.0	≦1.8	4.5	≦1.5	5.4	≦1.2
	7.0	3,600	450	3,200	400	3,000	320	≦6.0	1.4	≦2.8	3.5	≦2.1	5.3	≦1.7	6.3	≦1.4
	8.0	3,200	430	2,800	380	2,600	310	≦6.0	1.6	≦3.2	4.0	≦2.4	6.0	≦2.0	7.2	≦1.6
	10.0	2,500	380	2,200	330	2,100	280	≦6.0	2.0	≦4.0	5.0	≦3.0	7.5	≦2.5	9.0	≦2.0
4 flutes	3.0	6,000	290	6,000	290	6,000	250	≦3.0	0.6	≦1.2	1.5	≦0.9	2.3	≦0.7	2.7	≦0.6
	4.0	6,000	450	5,500	410	5,200	340	≦4.0	0.8	≦1.6	2.0	≦1.2	3.0	≦1.0	3.6	≦0.8
	5.0	5,000	520	4,500	460	4,100	370	≦5.0	1.0	≦2.0	2.5	≦1.5	3.8	≦1.2	4.5	≦1.0
	6.0	4,200	540	3,700	480	3,400	380	≦6.0	1.2	≦2.4	3.0	≦1.8	4.5	≦1.5	5.4	≦1.2
	7.0	3,600	520	3,200	460	3,000	380	≦6.0	1.4	≦2.8	3.5	≦2.1	5.3	≦1.7	6.3	≦1.4
	8.0	3,200	500	2,800	440	2,600	360	≦6.0	1.6	≦3.2	4.0	≦2.4	6.0	≦2.0	7.2	≦1.6
	10.0	2,500	440	2,200	390	2,100	320	≦6.0	2.0	≦4.0	5.0	≦3.0	7.5	≦2.5	9.0	≦2.0

・Cutting conditions (machine, work material...) affects surface finish and burr generation.
If cutting performance is not good with above cutting conditions, please adjust speed and feed by same ratio.

Small Diameter Indexable Endmills





Features

- **Attach 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 0.05mm
- In addition to D cut, ramp machining can be performed*

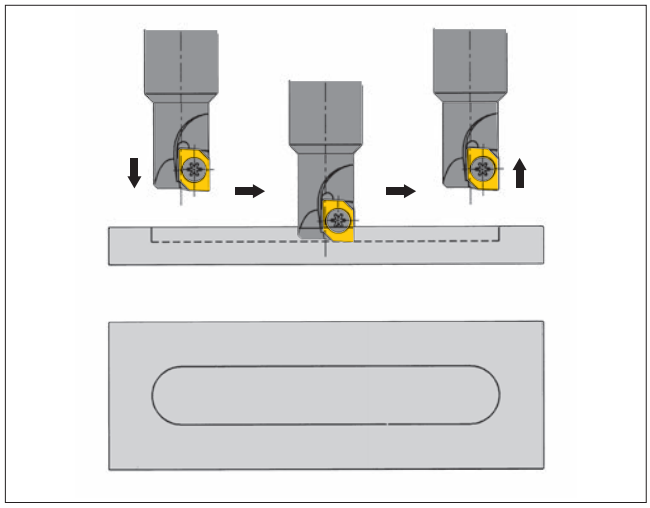
*A combination of single-blade type endmills and inserts with center blade is required

【Recommended Cutting Conditions】

Work Material	Speed (m/min)	Axial feed (mm/t)	Traverse feed (mm/t)	Depth of cut (mm)	Width of cut
Steel	80 - 120	~0.03	~0.05	~3.0	~50% of cutter diameter
Stainless Steel	40 - 60	~0.02	~0.04	~2.0	~50% of cutter diameter

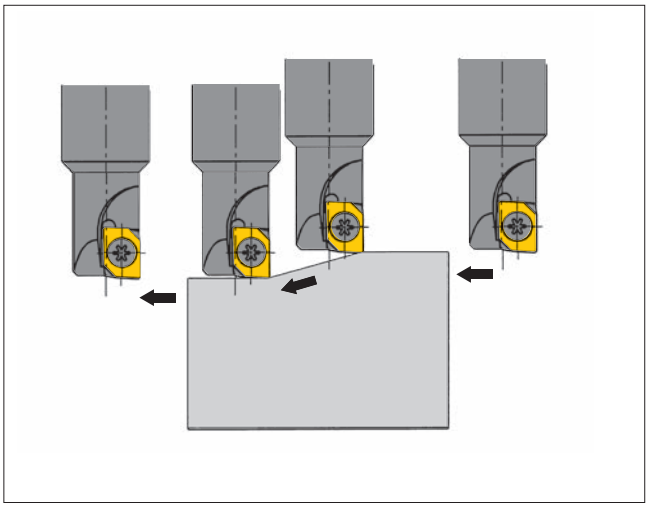
Application Example

Application Example-1



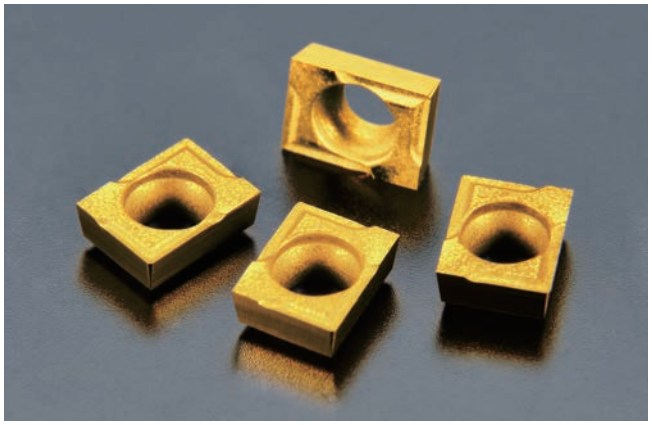
- A single tooth endmill equipped with a center cutting edge insert can be used for both plunge and side cut operations.

Application Example-2



- A single tooth endmill equipped with a center cutting edge insert can be used for slope milling operations.

Insert



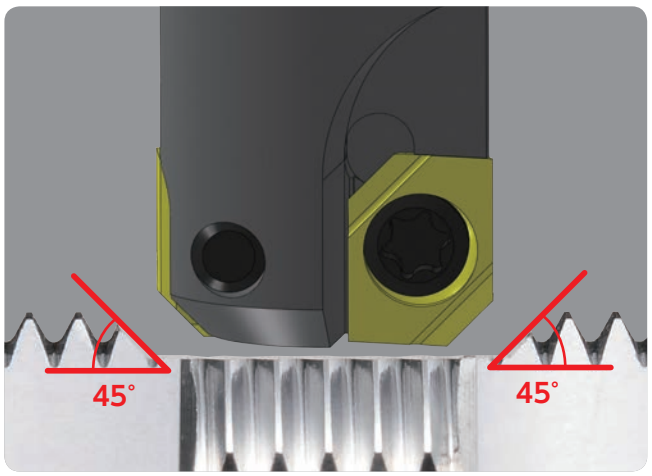
Wiper

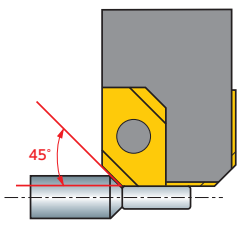
- Excellent surface finish obtained with new wiper insert

Chipbreaker

- Less tool pressure with chipbreaker

45°



Chamfered surface finish insert	
S45C	
Speed : 95 m/min	
Feed : 0.14 mm/rev	
DOC : 1.0 mm	
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〉

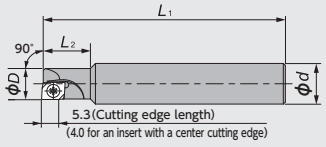


Figure-1

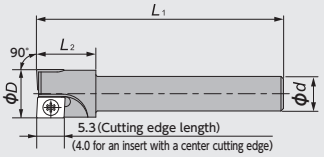


Figure-2

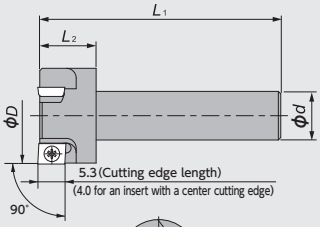


Figure-3 ●Right-Hand style shown

〈D cutting = lead angle 45 type end milling tool〉

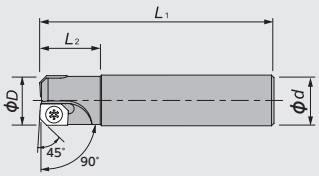
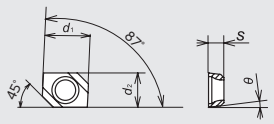


Figure-4

REZ Series - Toolholders

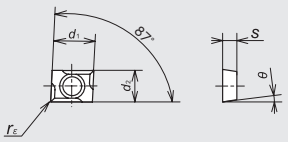
Figure	Code No.	Item Number	Stock R	Stock L	No. of teeth	Dimensions (mm) ϕD	ϕd	L1	L2	Gage insert	Spare Parts: Clamp screw	Spare Parts: Wrench
1	5276498	**REZ080C1R212**	●		1	8	10	60	12	CZH04□□CFR□□□	FS102-2.2×4.0	T-07
	5285812	**100C1R218**	●					75		CZH05□□CFR□□□		
2	5520317	**REZ100B2R329**	●		2	10	5	40	10	CZH04□□CFR□□□	FS102-2.2×4.3	
	5120936	**100C2R133**	●				6	50	12			
	5120951	**100C2R132**	●				7					
	5137971	**100C2R141**	●				10					
	5355458	**120C2R141**	●			12						
	5355466	**140C2R141**	●			14						
3	5520325	**REZ150B3R330**	●		3	15	5	40	10			
	5496088	**200M3R319**	●			20	7	50	12			
	5496096	**200M3R320**	●				10					
4	5880281	**REZ100C2R461**	●		2	10	10	50	12	CZH0400CFR-C45 CZH04□□CFR□□□		
	5880299	**100C2R466**	●				7					

REZ Series - Inserts



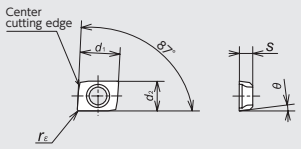
Chipbreaker without wiper

Figure-1



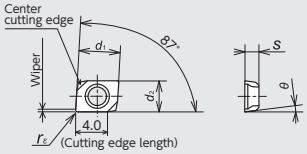
chipbreaker

Figure-2



Center cutting edge without wiper

Figure-3



Center cutting edge with wiper

Figure-4

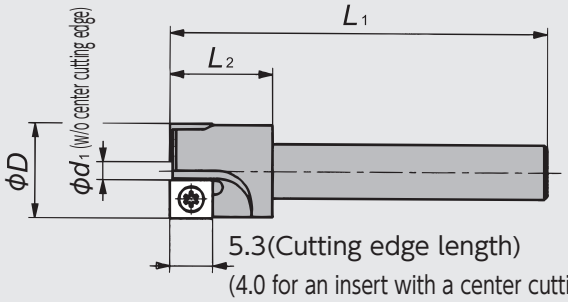
Figure	Item Number	Dimensions (mm) d1	d2	s	θ	c or rε	PVD Coated Carbide ZM3	Stock	TM4	Stock	DT4	Stock	QM3	Stock	DM4	Stock
1	**CZH0400CFR-C45** ※	5.56	4.20	1.88	7°	C1.35					5880315	●	5880307	●		
2	**CZH04005CFR-BL**	5.56	4.20	1.88	7°	0.05			5819008	●					5900907	●
	0402CFR-BL					0.2			5818984	●					5900915	●
3	**CZH04005CFR-070**	5.56	4.20	1.88	7°	0.05	5230479	●	—	—	5849815	●				
	0402CFR-070					0.2	5120944	●	—	—	5849823	●				
4	**CZH04005CFR-140**	5.56	4.20	1.88	7°	0.05	5310883	●	—	—	5849831	●				
	0402CFR-140					0.2	5310958	●	—	—	5849849	●				
	CZH05005CFR-141	5.28	5.56	2.18	10°	0.05	5310925	●	—	—						
	0502CFR-141					0.2	5310909	●	—	—						

※ Must be used with REZ100C2R461/466Cuters.

REL Series

REL

Standard type end milling tool
Cutter diameter : ϕ10

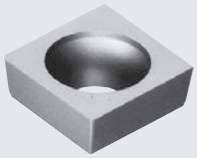


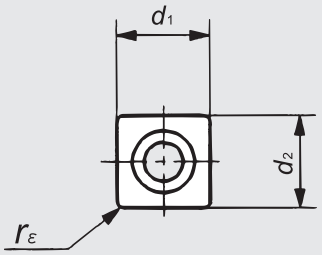
● Right-hand style shown

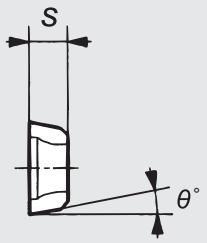
REL Series - Toolholders

Code No.	Item Number	Stock R	Stock L	No. of teeth	Dimensions (mm) ϕD	ϕd	ϕd_1	L_1	L_2	Gage insert	Spare Parts: Clamp screw	Spare Parts: Wrench
5092358	**REL100C2R107**	●		2	10	7	(1.2)	50	12	CLH04 □□ CFN-045	FS102-2.2*4.3	T-07
5092374	**100C2R106**	●				10						

REL Series - Inserts





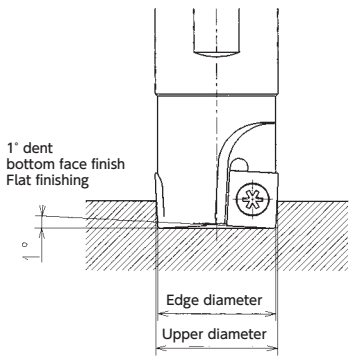


Item Number	Dimensions (mm) d_1	d_2	s	θ	r_ε	PVD coated carbide ZM3	Stock
CLH04005CFN-045	5.56	4.20	1.88	7°	0.05	5101894	●
0402CFN-045					0.2	5066535	●

Precaution for using REL type

When using the REL type end milling tool, tapering will occur on the side machined area of the work piece by the following amount:

Depth of cut (mm)	Top face machining dia – Bottom face machining dia (mm)
2	0.05
3	0.08
4	0.12
5	0.15



RCL type rectangular tooth chamfering type

Features

- Cycle time can be reduced by using micro-grain carbide grade inserts. (Compared with the high-speed steel (HSS) end milling tools).
- Improved surface finish

① Cutter diameter and machining conditions

Cutter diameter	Recommended module	Recommended feed rate
ϕ 14	2.25 or less	0.3㎜ /rev or less
ϕ 12	2.15 or less	0.3㎜ /rev or less

If the recommended module or the recommended feed rate is exceeded, the clamping screw should be re-tightened at least once or twice a day to prevent loss of secure clamping.

Precautions

① When mounting the end milling tool, ensure a minimum amount of overhang from the chuck to the tool nose in order to prevent run out during machining (Target value: approx. 20 mm)

② As is probably known, gear tooth chamfering applies shock loading due to interrupted cutting. For this reason, the holder and clamping screw may deteriorate quicker than normal. Therefore, we request that you replace the holder and clamping screw periodically with new ones for safer and more stable operation.

③ In addition, please re-tighten the clamping screw regularly to avoid loss of clamping force during machining.

【Actual examples】

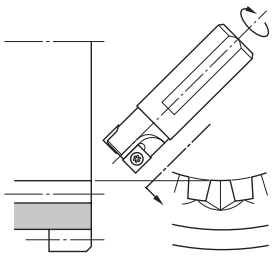
Gear tooth chamfering on sleeve

Work material : SCM415

Cutting speed (m/㎜) = 154

No. of revolutions ($㎜^{-1}$) = 3,500

Cutting oil : WET



NTK : **ZM3** 2-insert	2,000 pcs
Competitor's PVD-coated carbide Single insert	200 pcs

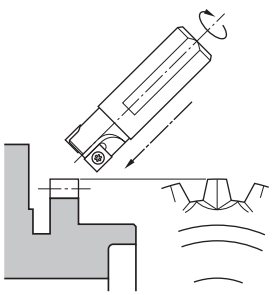
Gear chamfering on speed gear

Work material : SCr420 (HB140 ～ 230)

Cutting speed (m/㎜) = 42

No. of revolutions ($㎜^{-1}$) = 955

Cutting oil : WET



NTK : **ZM3** 2-insert	1,500 pcs
SKH55 Solid	100 pcs

RCL Series

RCL Gear tooth chamfering type

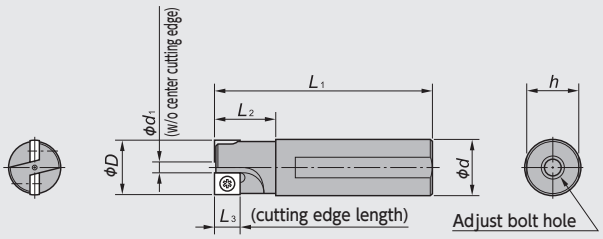


Figure-1

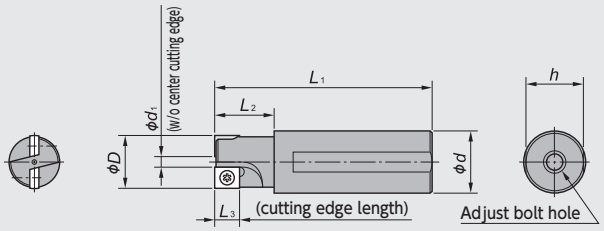


Figure-2

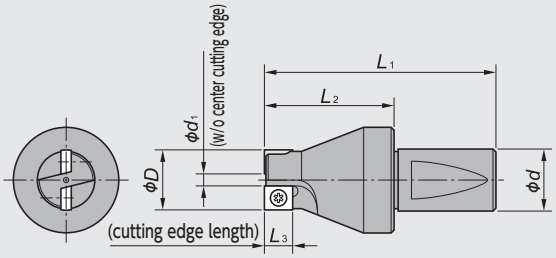


Figure-3

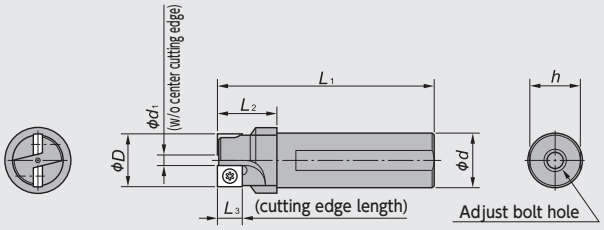


Figure-4

●Right-hand style shown

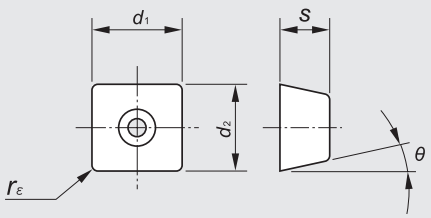
RCL Series - Toolholders

Figure	Code No.	Item Number	Stock R	Stock L	Dimensions (mm) ϕD	ϕd	ϕd1	h	L1	L2	L3	Adjust bolt hole	Gage insert	Spare Parts: Clamp screw	Spare Parts: Wrench
1	5025952	RCL120D2R050	●		12	12	(ϕ3)	11	60	15	(5)	M4＊20L	CLH0402C□□□-004	FS101-2.5＊5	CLR-15S (A)
	5025945	L050		●											
	5005046	RCL140D2R021	●		14	14	(ϕ4)	13	55		(6)	M6＊20L	CLH050□CFN		
	5005053	L021		●											
2	5034913	RCL120D2R059	●		12	14	(ϕ3)	13	55	15	(5)	M6＊20L	CLH0402C□□□-004	FS101-2.5＊5	CLR-15S (A)
	5034921	L059		●											
3	5005236	RCL140Z2R020	●		14	14	(ϕ4)	–	54	30	(6)	–	CLH050□CFN	FS101-2.5＊5	CLR-15S (A)
	5005228	L020		●											
4	5051792	RCL100D2R066	●		10	10	(ϕ3)	9.5	60	18	(5)	M4＊20L	CLH0402C□□□-035	FS104-2.0＊4.3	T-06 (B)
	5051784	L066		●											

【Cutting edge process】

FN	Sharp edge
TNB	T00525

RCL Series - Inserts



Item Number	Dimensions (mm) d1	d2	s	θ	rε	PVD Coated Carbide ZM3	Stock	DM4	Stock
CLH0402CFN-035	5.56	4.20	1.88	7°	0.2	5051750	●	5846951	●
CTNB035						5084819	●	5847744	●
CFN-004	5.56	4.76	1.88	7°	0.2	5027123	●	5847736	●
CTNB004						5019351	●	5827381	●
CLH0502CFN	6.35	5.56	2.18	11°	0.2	5992201	●	5847710	●
CLH0504CFN					0.4	5996186	●	5847702	●

MEMO

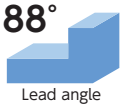
N

Rotating Tools
(Milling Cutters)

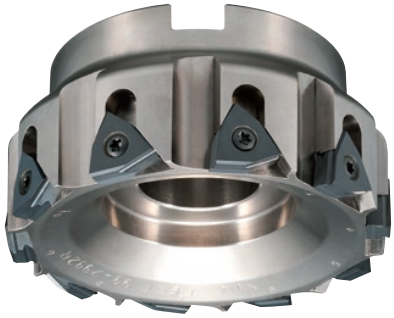
FU-HA (JWNXM)

Stable gray cast iron milling with lower cutting force

- Maximizes ceramic insert potential and can mill faster than 1,000m/min



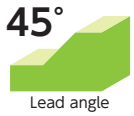
A.R. 5°
R.R. 4°, 7°, 10°

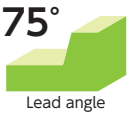


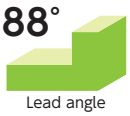
N4

FDX

- Extremely economical as SNGN1204 style inserts with 8 cutting edges can be used
- Capable of producing excellent surface finish, by utilising inserts with chipbreakers and wiper facets







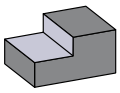
A.R.-6°
R.R.-10°

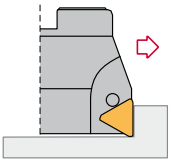
N6

NEW

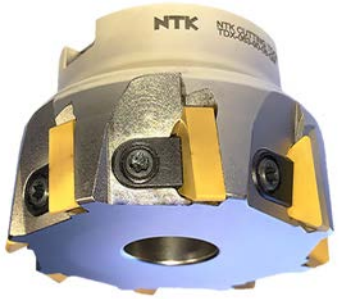
TDX

- Economical & Multi-Functional
- TNGN 1604 style inserts with 6 cutting edges
- Low Cutting Force





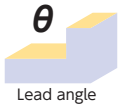
NEW



N7

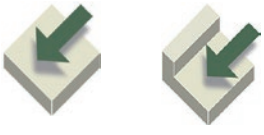
HMC

- Hybrid Milling Cutter with adjustable inserts
- Finishing Cast Iron by using SX6 & B30
- Roughing Aluminum by using SX6 & PD1

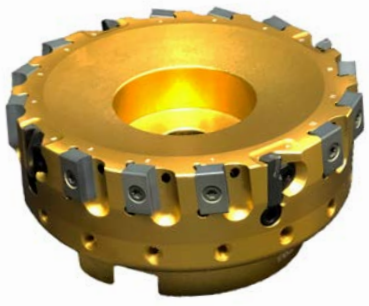


A.R.-4°
R.R.0°

θ : 88°



NEW



N8

XTM

- Offers high efficiency machining due to the multi-blade design and possibility for greater depth of cut
- Offers a reduction in cutting force via our special chipbreaker design

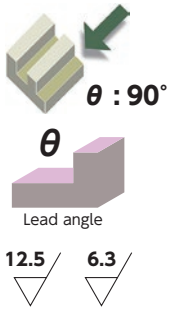
Lead angle

A.R.–4°
R.R.0°

N9

QTE / QTS

- Ceramic milling cutter capable of shoulder milling now released
- Accommodates from φ20 up to φ250 cutters



N10

N10

RNIW / RPIW

- Round insert Milling cutter for cast iron and for high-temperature resistant materials HRSA (Inconell, Rene, MAR,Waspelloy....)

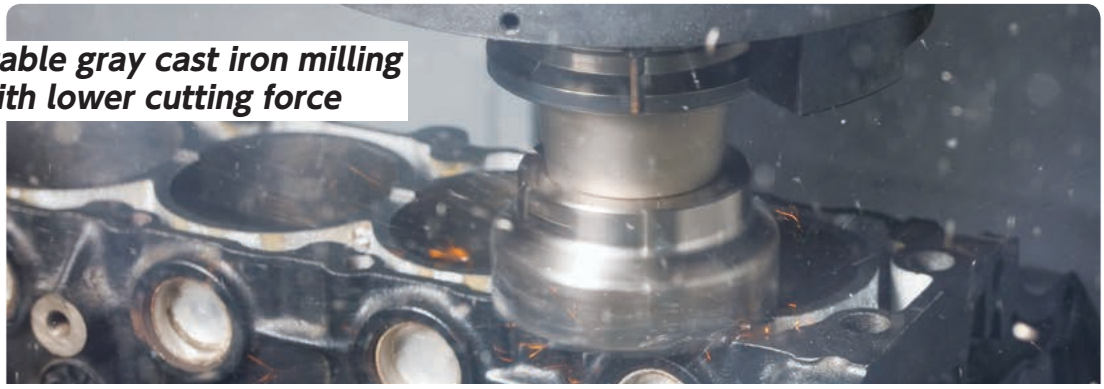
N11

N12

NEW

N13

FU-HA Cutter (JWNXM)



- *Stable gray cast iron milling with lower cutting force*

WATCH ON YouTube

- *Maximizes ceramic insert potential and can mill faster than 1000m/min*

Thanks to lower cutting forces, work piece chipping is reduced Apply up to Ap 6mm

Available cutter dia. ϕ63 - ϕ160

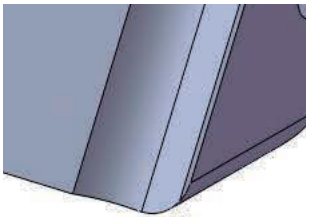
Silicon Nitride grade is the best choice for roughing cast iron with scale. Tool pressure is reduced because of the sharper cutting edge and the ground-in chipbreaker

Very cost efficient with a unique 6 cutting edge design

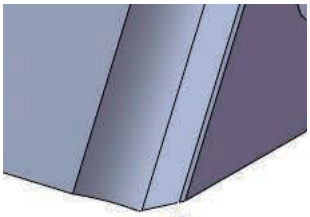
Thanks to low-cutting resistance, machine over load is avoided

Cutting condition

v_c=800m/min f_z=0.10mm/t a_p=3.0mm a_e=80.0mm



【Radius type】

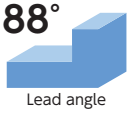


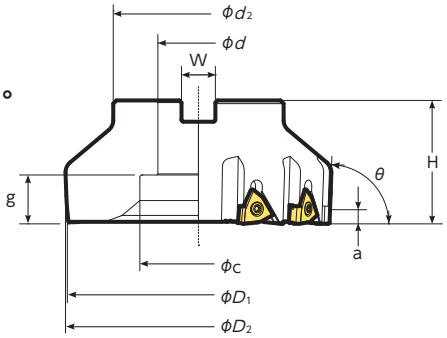
【Chamfered type】

Two edge preparation are available.
Radius type good for high feed milling.
Chamfered type with excellent edge sharpness.

Cycle time reduction with single pass and achieve longer tool life.
Lesser machine horsepower required.

A. R. +5°
R. R. +4°, +7°, +10°





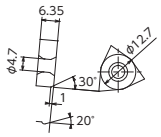
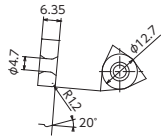
JWNXM type milling body

θ	Code No.	Part number	Stock	No. of inserts	Dimensions (mm)											Weight (kg)	Rake angle (°)		Centering location type
					ϕD1	ϕD2	H	a※1	a※2	ϕd1	W	ϕd2	ϕc	g			A.R.	R.R.	
88°	QUE002327	JWNXM063-88-06R-GM	●	6	63	63	50	5.5	4.5	22	10.4	60	18	15.5	0.9	+5	+4	FMC	
	QUE002823	JWNXM080-88-08R-GM	●	8	80	80				27	12,4		36	15	1.1		+7	FMA	
	QUE002749	JWNXM100-88-10R-GM	●	10	100	100				32	14,4	80	50	18	1.8		+10		
		JWNXM125-88-12R-GM	●	12	125	125	58			40	16,4		55	23	3				
		JWNXM160-88-16R-GM	●	16	160	160	60			40	16,4	100	72	22	4.9				

※1 Dimension when set the insert 「WNX44-C10T01020」
※2 Dimension when set the insert 「WNX44-R12T01020」

Parts	
Clamping Screw FSI 26-4.0×12-LH 5861935 Sales quantity 10pcs/case	Wrench LLR-T15 5701909 Sales quantity 5pcs/case

Insert

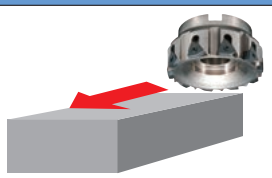
Shape	Dimensions (mm)	Part number	C or r_ε	Grade	
		WNX44-C10T01020	C1.0	SX6	●
				SP9	●
		WNX44-R12T01020	R1.2	SX6	●
				SP9	●

● : New standard stock items

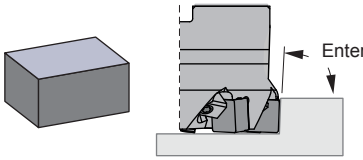
Recommended cutting conditions

Grade	Work material	Cutting speed (m/min)	Feed (mm/t)	Depth of cut (mm)
	K	400 500 600 700 800 900 1000 1100 1200 1300 1400	0.05 0.1 0.15 0.2 0.25 0.3	
SX6	Gray cast iron			~6 (mm)
SP9	Ductile cast iron			

Case study

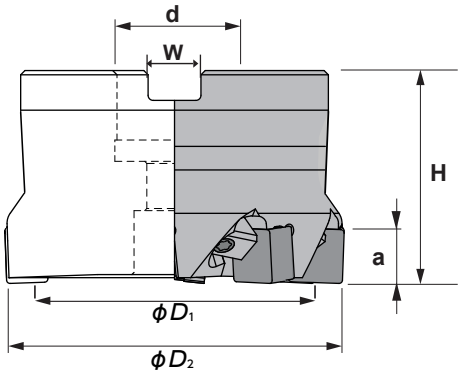
Transmission case ●Work material : FC23			
	current tool	NTK	
Holder	Competitor	JWNXM125A3810R12	
Insert	Ceramic insert	SX6 WNX44-R12T01020	
Cutting speed (m/min)	500	←	
Feed pertooth (mm/t)	0.13	←	As for competitor's milling cutter, we needed to change inserts to new ones due to the wearprogress and lower clamping force of work material after machining 60 pcs. This was caused by increasing Cutting force. NTK NEW Milling cutter "FU-HA MILL" achieved 2 times longer competitor's. Low cutting force avoided the problem occurred by competitor's milling cutter.
Depth of cut (mm)	1	←	
Coolant	DRY	←	
Tool life (pcs/coner)	60	120	

FDX Cutter



45°, 75°, 88°, 90°

Adjustable Cutter available!



Characteristics:

Negative milling cutter with 45°, 75°, 88°, 90° entering angle. Its strong inserts accept high cutting depths and high feed per teeth. First option for cast iron milling.

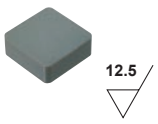
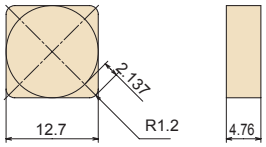
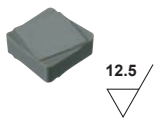
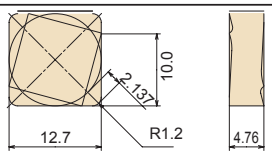
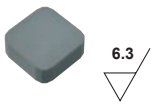
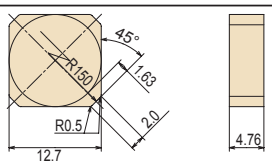
Spare parts

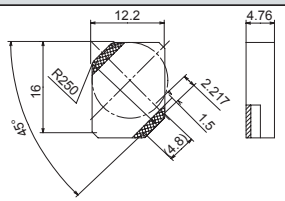
Clamp - W6226-GM

Clamping screw- AOB-6S-T30-GM
***Will be replaced from 2020:**
WS0616-T15-GM, (QEU003866)

θ	Item number	Reference	Standard		Dimensions (mm)							Weight
					ϕD1	ϕD2	H	a	ϕd	W	ϕd2	(kg)
45°	QEU003191	**FDX050-45-05R-GM**	●	5	50	58	50	8	22	10,4	45	0.78
		FDX063-45-06R-GM	●	6	63	72	50	8	22	10,4	58	0.93
	QEU003676	**FDX080-45-08R-GM**	●	8	80	95	50	8	27	12,4	62	1.21
		FDX100-45-10R-GM	●	10	100	120	50	8	32	14,7	62	1.66
	QEU002622	**FDX125-45-13R-GM**	●	13	125	146	58	8	40	16,4	83	2.80
75°	QEU000508	**FDX050-75-05R-GM**	●	5	50	57	50	12	22	10.4	45	0.65
	QEU000509	**FDX063-75-06R-GM**	●	6	63	70	50	12	22	10.4	58	0.79
	QEU000487	**FDX080-75-08R-GM**	●	8	80	87	50	12	27	12,4	62	1.06
	QEU000510	**FDX100-75-10R-GM**	●	10	100	107	50	12	32	14,7	62	1.39
	QEU000493	**FDX125-75-13R-GM**	●	13	125	132	58	12	40	16,4	83	2.56
		FDX160-75-16R-GM	●	16	160	166	60	12	40	16,4	100	4.1
88°	QEU000477	**FDX050-88-05R-GM**	●	5	50	51	50	12	22	10.4	45	0.65
	QEU000478	**FDX063-88-06R-GM**	●	6	63	64	50	12	22	10.4	58	0.79
	QEU000479	**FDX080-88-08R-GM**	●	8	80	81	50	12	27	12,4	62	1.06
	QEU000480	**FDX100-88-10R-GM**	●	10	100	101	50	12	32	14,7	62	1.39
	QEU000492	**FDX125-88-13R-GM**	●	13	125	126	58	12	40	16,4	83	2.56
	QEU000484	**FDX160-88-16R-GM**	●	16	160	156	60	12	40	16,4	100	4.1
90°	QEU002366	**FDX050-90-05R-GM**	●	5	50	50	50	12,7	22	10.4	45	0.65
	QEU000515	**FDX063-90-06R-GM**	●	6	63	63	50	12,7	22	10.4	58	0.79

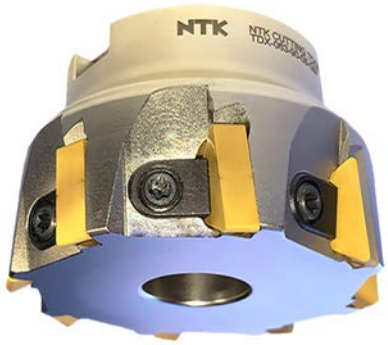
Applicable inserts

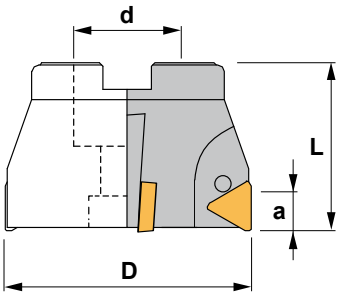
Shape	Dimensions (mm)	Reference	R	Silicon Nitride		Whisker
				SX6	SP9	WA1
		**SNGN 120408 T00520**	0.8			●
		SNGN 120408 T02020	0.8	●	●	
		SNGN 120412 T00520	1.2			●
		SNGN 120412 T02020	1.2	●	●	
		SNGN 120416 T00520	1.6			●
		SNGN 120416 T02020	1.6	●	●	
 with chipbreaker		**SNGF 120412 TRC-C**	1.2	●	●	
 with wiper		**SNGN 1204AN TW**	—	●	●	

Dimensions (mm)	Reference	R	CBN	
			B30	B52
 θ=45°	**FDX 1204-45-50R**	—	●	●

NEW

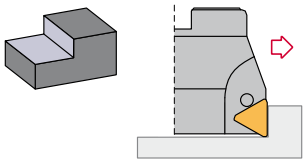
TDX Cutter





Characteristics:

Economical & Multi-Functional
TNGN 1604 style inserts with 6 cutting edges

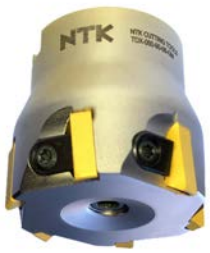


Item number	Reference		D	L	a	d	Insert	Kg
QEU003878	*TDX040-90-04-GM	04	40	50	16	22	TNGN 1604..	0,70
QEU003700	TDX050-90-06-GM	06	50	50	16	22	TNGN 1604..	0,78
QEU003678	TDX063-90-08-GM	08	63	50	16	22	TNGN 1604..	0,93
QEU003679	TDX080-90-10-GM	10	80	50	16	27	TNGN 1604..	1,21
	TDX100-90-14-GM	14	100	50	16	32	TNGN 1604..	1,66
	TDX125-90-16-GM	16	125	63	16	40	TNGN 1604..	2,80

Spare parts

Clamp - W6226-GM
*Clamp for TDX040: W6336-GM

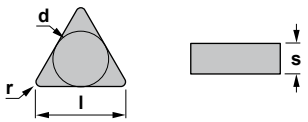
Clamping screw- WS0616-T15-GM



Applicable insert

TNGN Triangular negative insert.

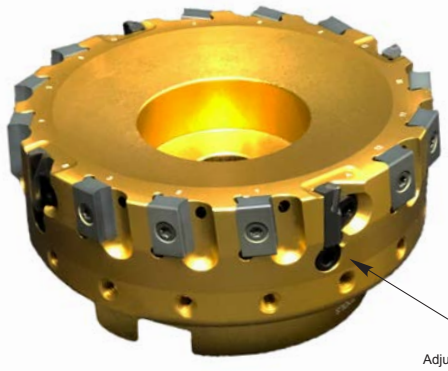
Reference	l	s	d
TNGN 1604..	16,50	4,76	9,52



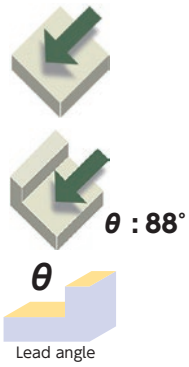
TNGN

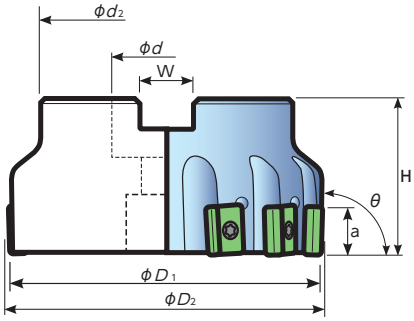
NEW

HMC Cutter



A.R.-4°
R.R.0°





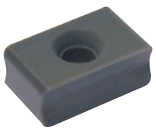
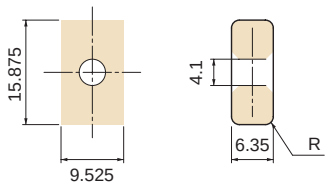
θ	Item No.	Reference	Standard		Dimensions(mm)									Weight (kg)
					ϕD1	ϕD2	H	a	ϕd	W	ϕd2	ϕc	g	
88°	QEU003684	HMC063-88-06/2-GM	●	6/2	63	66	50	14	22	10,4	58			0,76
	QEU003685	HMC080-88-08/2-GM	●	8/2	80	83	50	14	27	12,4	58			0,96
	QEU003686	HMC100-88-10/3-GM	●	10/3	100	103	50	14	32	14,7	77			1,47
	QEU003513	HMC125-88-12/4-GM	●	12/4	125	128	58	14	40	16,4	77			1,92

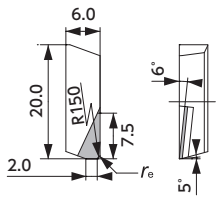
Spare parts

Parts LNX-Inserts	
Clamping screw	Wrench
LRIS-4＊12 **QEU000791** 10pcs/case	LLR-25S **5364930** 1pcs/case

Parts HFT-Inserts				
Wedge	Axial set screw		Wedge set screw	
	Screw	Screwdriver	Screw	Screwdriver
HLW179	CS0510A	LW-4	WS0512	LW-2.5

Applicable inserts

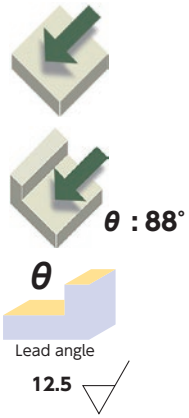
Shape	Dimensions	Part No.	R	Grade
		**LNX 324-08 FNX08** **(For Aluminum)** **LNX 324-08 T00520** **(For Cast Iron)**	0.8	**SX6** ●

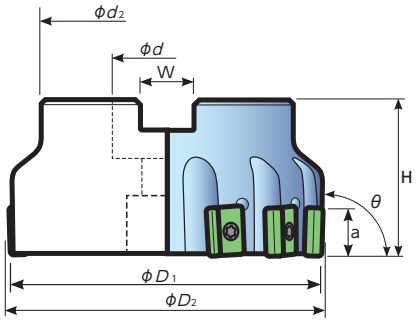
Wiper	Shape	Item Number	Corner angle	Max DOC (mm)		A.R.	r_ε (mm)	PCD / CBN	
				AL	GG			PD1	B30
Yes (Rounded)	For Standard use 	**HFT 802006 C05**	90°	7.5	0,5	6°	C0.5	●	●
Yes (Rounded)		**HFT 802006 R04**	90°	7.5	0,5	6°	R0.4	●	●

● : Standard
● : Coming Soon

XTM Cutter

A.R.−4°
R.R.0°



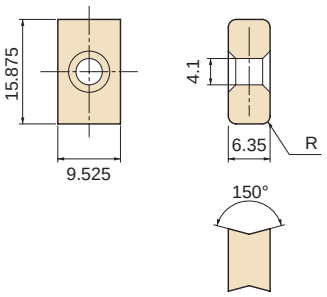


θ	Item No.	Reference	Standard		Dimensions(mm) ϕD1	ϕD2	H	a	ϕd	W	ϕd2	ϕc	g	Weight (kg)
88°	QEU000471	**XTM080-88-10R-GM**	●	10	80	83	50	14	27	12,4	58			1.1
	QEU000473	**XTM100-88-13R-GM**	●	13	100	103	50	14	32	14,7	77			1.8
	QEU000475	**XTM125-88-16R-GM**	●	16	125	128	58	14	40	16,4	77			3.1

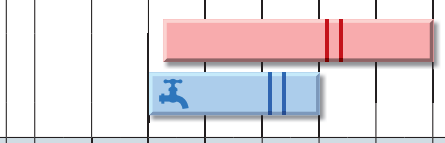
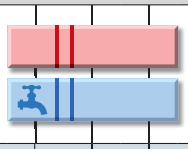
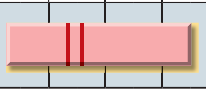
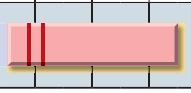
Parts	
Clamping screw	Wrench
LRIS-4＊12 **QEU000791** 10pcs/case	LLR-25S **5364930** 1pcs/case

Screwdrivers (Optional)		
HLR-25S **5485214** 1pc/case	XX2815-04 **5485172** 1pc/case	XX2815-04-25S **5485255** 1pc/case

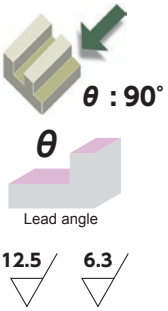
Applicable inserts

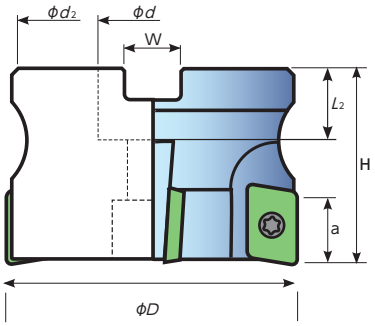
Shape	Dimensions	Part No.	R	Grade
		**LNX 324-08T01020**	0.8	**SX6** ● **SX9** ●
		LNX 324-12T01020	1.2	**SX6** ● **SX9** ●
		LNX 324-16T01020	1.6	**SX6** ● **SX9** ●

● : Standard

Recommended cutting conditions				
Grade	Work material	Cutting speed (m/min)	Feed rate (mm/tooth)	Depth of cut (mm)
	K	400 500 600 700 800 900 1000 1100	0.05 0.1 0.15 0.2 0.25 0.3	
SX6	Normal cast iron			～8 (mm)
SX9	Ductile cast iron			

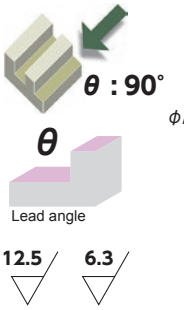
QTS Cutter

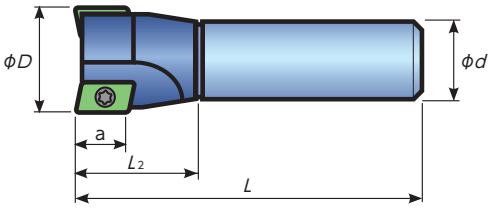




Reference	Standard		Dimensions (mm)							Item No.	Weight (kg)	A.R.	R.R.	Insert Screw	Wrench	Insert
			ϕD	H	L_2	a	ϕd	W	$ϕd_2$							
QTS040-90-4R-GM	●	4	40	40	18	14	16	8.4	35	QEU000464	0.2	+6°	−13°	521673 M4x9-GM	T-15A	APCW 1604
QTS050-90-5R-GM	●	5	50	40	22	14	22	10.4	45	QEU000465	0.3	+6°	−10°			
QTS063-90-6R-GM	●	6	63	50	22	14	22	10.4	58	QEU000466	1.4	+6°	−12°			
QTS080-90-8R-GM	●	8	80	50	25	14	27	12,4	58	QEU000467	1.9	+6°	−12°			

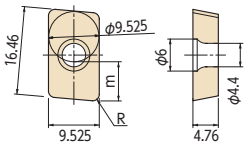
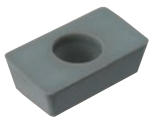
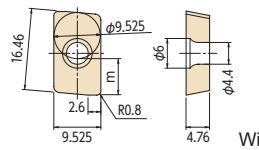
QTE Cutter





Reference	Standard		Dimensions (mm)					Item No.	Weight (kg)	A.R.	R.R.	Insert Screw	Wrench	Insert
			ϕD	L	L_2	a	ϕd							
QTE025-90-2R-GM	●	2	25	100	30	14	25	QEU000461	0.3	+6°	−13°	521673 M4x9-GM	T-15A	APCW 1604
QTE032-90-3R-GM	●	3	32	110	35	14	32	QEU000462	0.5	+6°	−13°			
QTE040-90-4R-GM	●	4	40	110	37	14	32	QEU000463	0.6	+6°	−13°			

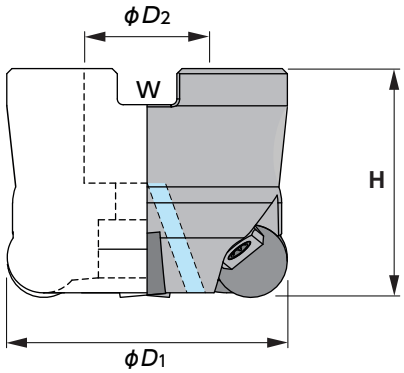
Inserts

Shape	Reference	R	m	Silicon Nitride	
				SX6	SP9
	APCW 160408 T01020	0.8	7.314	●	●
	APCW 160412 T01020	1.2	7.278	●	●
	APCW 160420 T01020	2.0	7.205	●	●
  With Wiper	APCW 1604 PDTR	—	7.163	●	●

Recommended Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (m/min) 200 350 500 650 800 950 1100 1250	Feed (mm/t) 0.05 0.1 0.15 0.2 0.25 0.3	Depth of Cut (mm)
K						
Gray Cast Iron	SX6	●	○			~ 8.0
	SP9	●	●			~ 8.0
Ductile Iron	SP9	●	○			~ 8.0

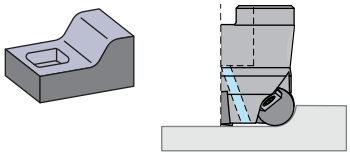
RNIW Cutter



Characteristics:

Round negative insert cutter for slot milling, peripheral milling, ramp milling and drilling, pocket milling and copy milling.

It can be used in only one pass (roughing and finishing).



Item No.	Reference	Standard		ϕD_1	Dimensions (mm)			Clamp	Clamping screw	Applicable Insert	Weight
					H	ϕD_2	W				(kg)
QEU000481	**RNIW050-05R-GM**	●	5	50	50	22	10.4	AMS-6T-GM SP2002-8	AOB-6S-T30-GM	RNGN 1207	0.42
QEU000482	**RNIW063-06R-GM**	●	6	63							0.55
QEU000459	**RNIW080-07R-GM**	●	7	80		27	12.4				0.85

● : Standard

***The table shows only a small selection of the RNIW series. For 1204 inserts are also cutters available. Please contact us**

Spare parts

Clamp - AMS-6T-GM

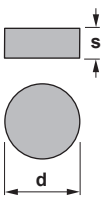
Clamping screw - AOB-6S-T30-GM
***Will be replaced from 2020:**
WS0616-T15-GM, (QEU003866)

Applicable insert

RNGN

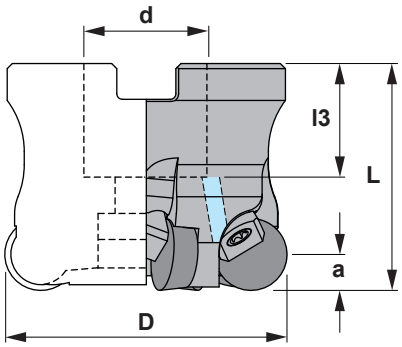
Round negative insert

Reference	s	d
RNGN 1207..	7,94	12,70

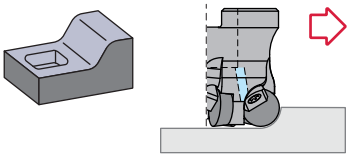


RNGN

RPIW Cutter



Characteristics:
Round insert cutter for slot milling, peripheral milling, ramp milling and drilling, pocket milling and copy milling.
It can be used in only one pass (roughing and finishing).



RPIW

Reference		D	L	l3	a	d	Insert	Kg
RPIW040-04R-C	4	40	40	18	6,35	16	RPGN 1204..	0,200
RPIW050-05R-C	5	50	40	20	6,35	22	RPGN 1204..	0,330

Spare parts

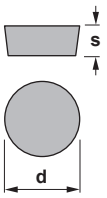
Reference					Nm
RPIW040-04R-C	1058-C	6226-C	1166-C	5515-C	3.0
RPIW050-05R-C	912,10-C	6226-C	1166-C	5515-C	3.0

Applicable insert

RPGN

Round negative insert.

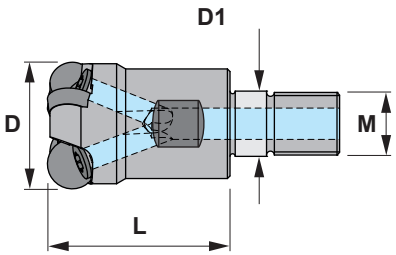
Reference	s	d
RPGN 1204..	4,76	12,70



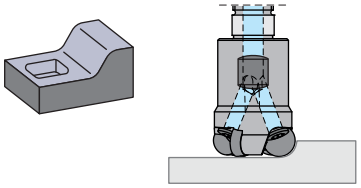
RPGN

NEW

RPIW Cutter



Characteristics:
Round insert end mill for slot milling, peripheral milling, ramp milling and drilling, pocket milling and copy milling.
It can be used in only one pass (roughing and finishing)



RPIW

Item No.	Reference		L	M	D	D1	Insert	Kg
QEU002779	RPIW016-02R-C	2	23	M8	16	8,5	RPGN 0602..	0,030
QEU002528	RPIW020-03R-C	3	30	M10	20	10,5	RPGN 0602..	0,060
QEU002527	RPIW025-03R-C	3	35	M12	25	12,5	RPGN 0903..	0,100
QEU002777	RPIW032-04R-C	4	43	M16	32	16,5	RPGN 0903..	0,210
QEU002778	RPIW032-03R-C	3	43	M16	32	16,5	RPGN 1204..	0,220

Spare parts

Reference			Nm
RPIW016-02R-C	1240-C	5515-C	3.0
RPIW020-03R-C	1240-C	5515-C	3.0
RPIW025-03R-C	1250-C	5520-C	4.0
RPIW032-04R-C	1250-C	5520-C	4.0
RPIW032-03R-C	1260-C	5525-C	5.0

Arbor

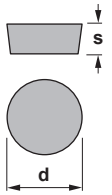
23.315.	A20.315.	13.315.	A11.315.	40.315.	40.315E.

Applicable insert

RPGN

Round negative insert.

Reference	s	d
RPGN 0602..	2,38	6,35
RPGN 0903..	3,18	9,52
RPGN 1204..	4,76	12,70

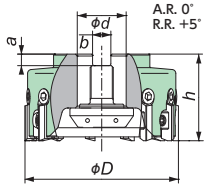


RPGN

JHF Cutter

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

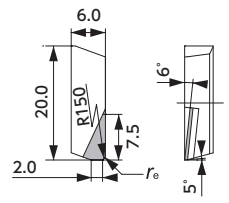
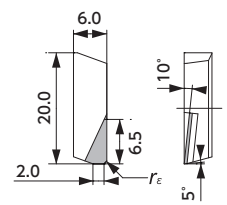
Cutter



Item Number	Stock		Weight (kg)	Dimensions (mm) φD	h	φ d	b	a	Max RPM	Arbor style mm	Arbor bolt	Recommended tightening torque N • m
JHF050C2200R07-GM	●	7	0.23	50	45	22	10.4	6.3	20,000	22	CS1040A	20
JHF063C2200R10-GM	●	10	0.38	63	45	22	10.4	6.3	20,000	22	CS1040A	20
JHF080A2700R12-GM	●	12	0.48	80	45	27	12,4	6	18,000	27	MBC-M12	40
JHF100A3200R16-GM	●	16	0.74	100	45	32	14,4	6	18,000	32	MBC-M12	60
JHF125A4000R22-GM	●	22	1.10	125	45	40	16,4	6	15,000	40	MBC-M12	80

∗ Includes inserts and parts

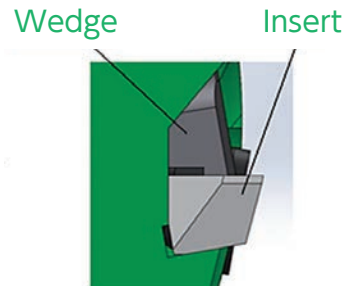
Insert

Wiper	Shape	Item Number	Corner angle	Max DOC (mm)	A.R.	r_ε (mm)	PCD PD1
Yes (Rounded)	For Standard use 	HFT 802006 C05	90°	7.5	6°	C0.5	●
Yes (Rounded)		HFT 802006 R04	90°	7.5	6°	R0.4	●
Yes (Straight)	For less tool pressure 	HFT 702010 W05	90°	6.5	10°	Double chamfer	●

Spare Parts

Item number	Arbor bolt	Wedge	Axial set screw		Wedge set screw	
			Screw	Screwdriver	Screw	Screwdriver
JHF050C2200R07-GM	CS1040A	HLW179	CS0510A	LW-4	WS0512	LW-2.5
JHF063C2200R10-GM						
JHF080A2700R12-GM	MBC-M12					
JHF100A3200R16-GM						
JHF125A4000R22-GM						

Safety clamp mechanism



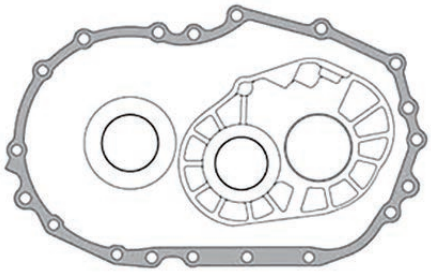
● Unique pocket prevents inserts from becoming dislodged

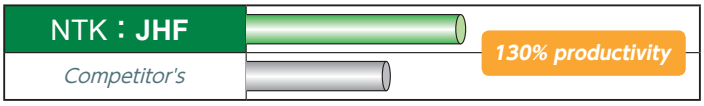
Field Result

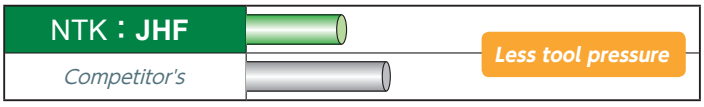
Part : Transmission Case
Material : ADC12

Cutter : JHF063C220R10
Insert : HFT802005C05 PD1

	NTK	Competitor's
Number of edges	**10**	6
Insert grade	PD1	PCD
RPM	10,000	12,000
SFM	6490	7790
IPM	**400**	312
IPT	0.004	0.004
DOC	.02"	.02"
Spindle load	**23%**	34%
Flatness	**6μm**	20μm



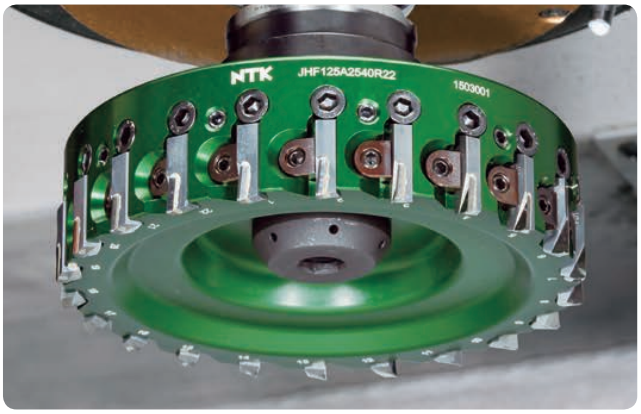




Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (m/min) 300 900 1500 2100 2700 3300 3900 4500 5100 5700	Feed (mm/t) 0.05 0.1 0.15 0.2 0.25 0.3	Depth of Cut (mm)
N						
Aluminum Alloy (Si≦13)	PD1	○	●			~ 6.35
Aluminum Alloy (Si≧13)	PD1	○	●			~ 6.35

More teeth=More productivity

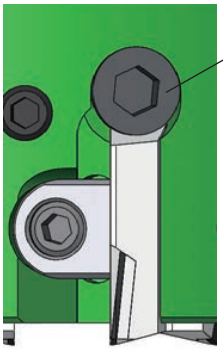


- Easy to cut cycle time

Light weight aluminum body

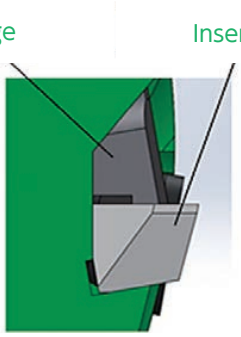
- A 25 HP machine can mount a ϕ125 mm cutter

Adjustable edge height



- Easy adjustment system for axial direction

Safety clamp mechanism



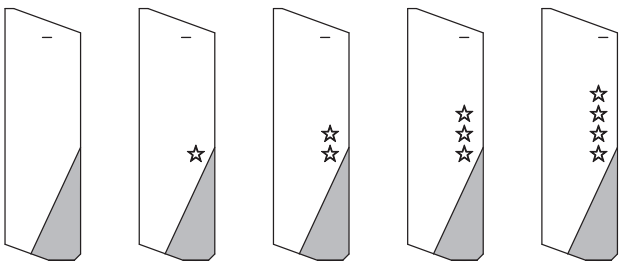
- Unique pocket prevents inserts from becoming dislodged

NTK Regrinding Program

- Inserts can be reground up to (4*) times.
- The diameter and height of the insert will change by .004" after each regrinding.
- The set of inserts placed back in to the cutter must have the same amount of stars indicating number of regrinding.

*The number of regrinding per insert may vary depending on 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 NTK Cutting Tools.
   Minimum order is 30 pcs.
   Note: Send always inserts with the same amount of regrinding stars.
   (For orders greater than 50 pcs, NTK will manage the inserts in lots for regrinding 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 regrinding stars.

Internal coolant supply

- Coolant through mounting bolt for better chip evacuation

High speed capability

- Up to 20,000 rpm capability

Produces outstanding surface finishes

- Unique cutting edge wiper produces excellent surface finishes

Less burrs

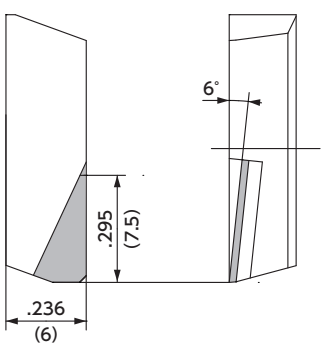
- A 45 degree chamfer on the insert reduces edge burrs

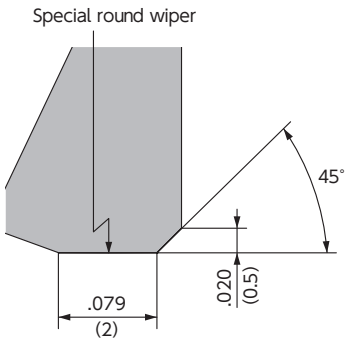
Reduced cutting forces

- Sharp multi-faceted cutting edges reduce tool pressure

Inserts can be reground up to 4 times

- Refer to back cover page for details





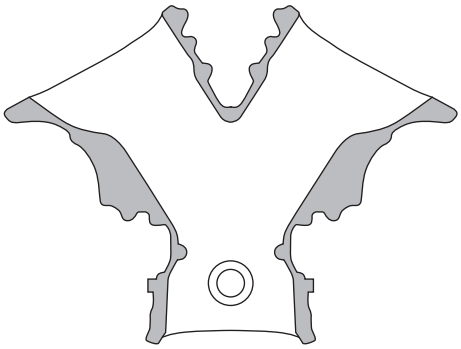
HFT802006C05 shown.

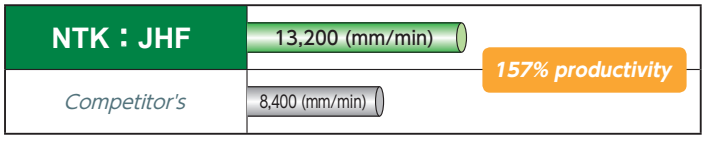
Field Result

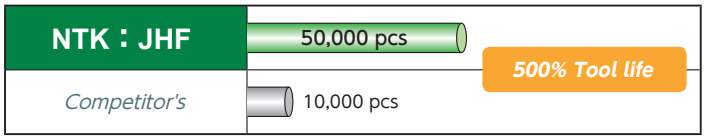
Part : Chain Cover
Material : ADC12

Cutter : JHF125A2540R22
Insert : HFT802006C05 PD1

	NTK	Competitor's
Number of edges	**22**	14
n (min-1)	10,000	←
Vc (m/min)	3,925	←
Vf (mm/min)	**13,200**	8,400
f (mm/t)	0.06	←
DOC (mm)	2.8 (1 Pass)	2.0 + 0.8 (2 Passes)
Tool life	**50,000pcs**	10,000pcs







MEMO

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NTK
CUTTING TOOLS

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- Milling Cutter Terminology ····· O5
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Grade Comparison Chart

BIDEMICS/Ceramics

	NTK	GREENLEAF	HERTEL	INDEXABLE	ISCAR	KENNAMETAL	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 HC6	GEM7	HT610CA MC2	I100	IN22 IN23	K090 KY1615	A65 A66N PT600M	NP5000	CC20 CC30	CC620 CC650 CC6050	SN60 SN80 SH2	SD200 ST100 ST300 ST500 SD200 TA300 TC300	NB90S	AB30	LX11 LX21 CX710	Q32
	SX6 SP9	CSN100 CSN200 GSN100 HSN100 HSN200		MW30 MW43	IS6 IS8 IS80	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	JX1 JX3															
	WA1 WA5	WG300 WG600 WG700			IW7	KY1525 KY4300			CC60	CC670		SW400 SW500 SW700 SW800	WX1500 WX120	TC430		
	SX3 SX7 SX9	XSYTIN-1		MW37	IS9	KY1540 KY2100 KYS25 KYS30 KYSP30 KYSM10	CF1 KS6030 KS6040		CC5477	CC6060 CC650 CC6065		SN800 SN900	WX2500 WX2000	AS20	M101S	
Hardened material H	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 WA5	WG300 WG600 WG700			IW7	KY4300 KYS25				CC670		SW400 SW500 SW700 SW800				

BIDEMICS/CBN

	NTK	DIJET	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	MITSUBISHI	SANDVIK	SECO	SPK	SSANGYONG	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Cast iron K	B23 B30 B16	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 B22	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	KENNAMETAL	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 KM3**	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 KM3**	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

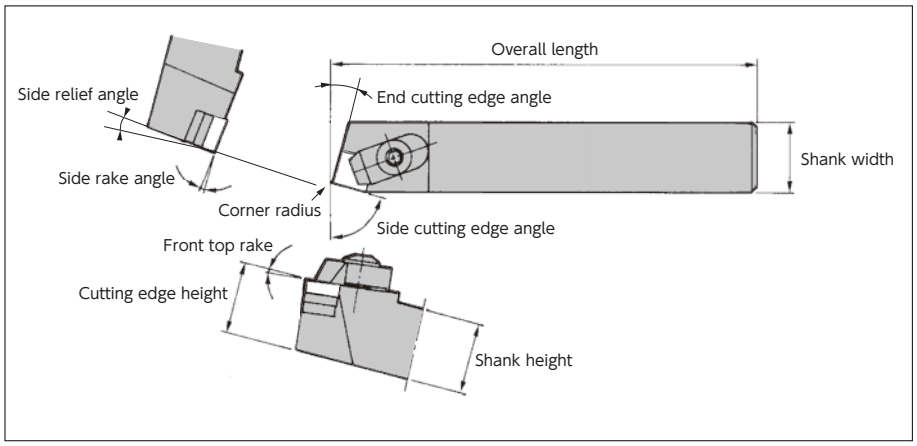
	NTK	DIJET	GREENLEAF	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	MITSUBISHI	SANDVIK	SECO	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Steel P	**VM1 ZM3 QM3 TM4 DT4 DM4**	JC5003 JC5015 JC5030 JC5040	G915 G920 G925 G935	CY15 CY150 CY250 CY9020 HC844 IP2000 IP3000	CI25A CI29	IC328 IC507 IC807 IC907 IC908 IC928 IC3028 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	**ST4 VM1 ZM3 QM3 TM4 DT4 DM4**	JC5003 JC5015 JC5030 JC5040	G915 G920 G925	CY250 CY9020 IP050S IP100S	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			

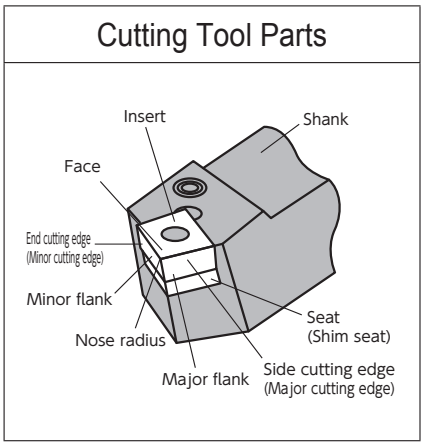
● CVD coated carbide

	NTK	DIJET	GREENLEAF	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	MITSUBISHI	ROMAY	SANDVIK	SECO	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Cast iron K	**CP1 CP7**	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

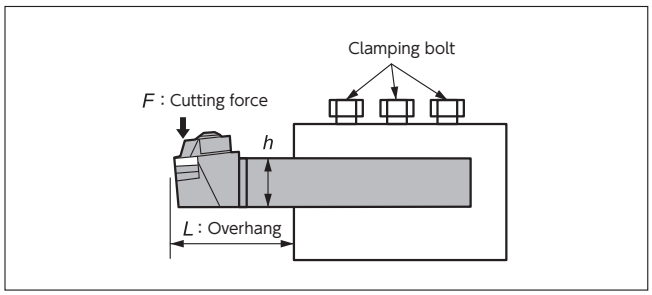




Holder rigidity

Toolholder deflection

$$\delta = \frac{4 \times F \times L^3}{E \times b \times h^3} = \frac{4 \times k_c \times f \times L^3}{E \times b \times h^3}$$

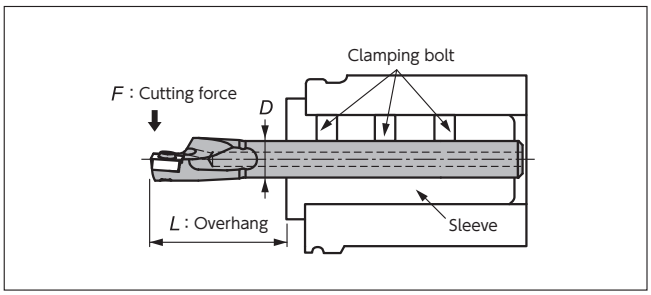


Symbol	Term	Unit
δ	Deflection amount	mm
b	Shank width	mm
h	Shank height	mm
E	Young's modulus	N/mm²
a_p	Depth of cut	mm
f	Feed amount	mm/rev
k_c	Specific cutting force	N/mm²
L	Overhang	mm
F	Cutting force	N

($F = k_c \times a_p \times f$)

Boring bar deflection

$$\delta = \frac{64 \times F \times L^3}{3 \times E \times \pi \times D^4} = \frac{64 \times k_c \times a_p \times f \times L^3}{3 \times E \times \pi \times D^4}$$



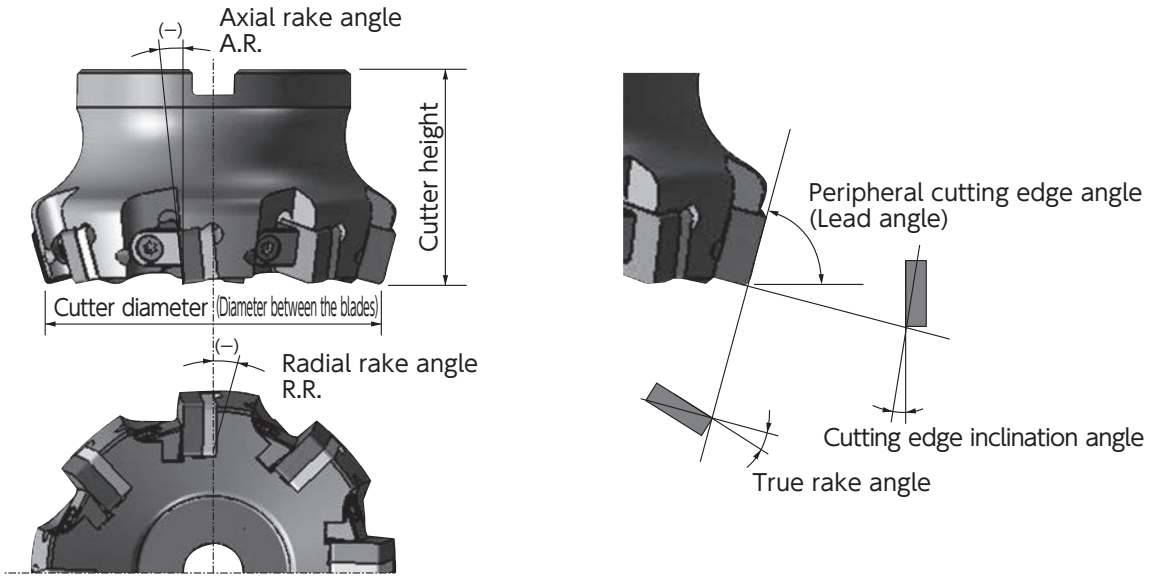
Symbol	Term	Unit
δ	Deflection amount	mm
D	Shank width	mm
E	Young's modulus	N/mm²
a_p	Depth of cut	mm
f	Feed amount	mm/rev
k_c	Specific cutting force	N/mm²
L	Overhang	mm
F	Cutting force	N

($F = k_c \times a_p \times f$)

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



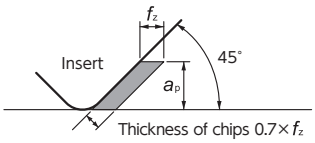
Functions of each cutting edge angle

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

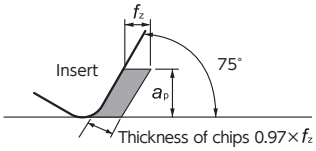
Functions of each angle

《Lead angle》: Relationship of this angle and chip thickness

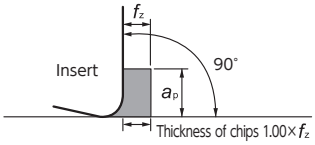
Lead angle : 45 degrees



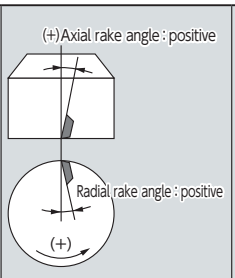
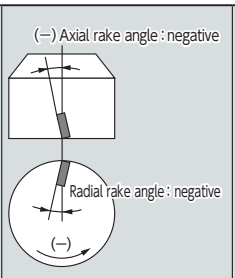
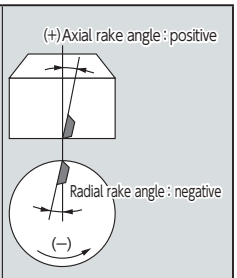
Lead angle : 75 degrees



Lead angle : 90 degrees

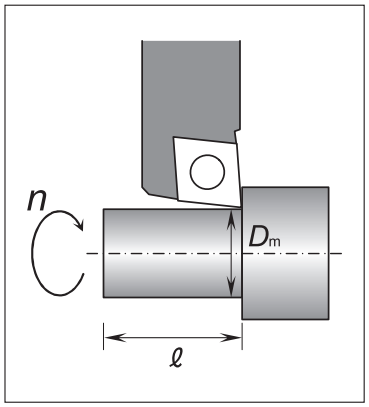


《Rake angle》: Combinations and characteristics

Combinations of the angles for basic cutting edge shapes		 Double-positive cutting edge shape(DP edge shape)	 Double-negative cutting edge shape(DN edge shape)	 Negative-positive cutting edge shape(NP edge shape)
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

$$v_c = \frac{\pi \times D_m \times n}{1000} \quad (\text{m/min})$$

Calculating the revolution speed from the cutting speed

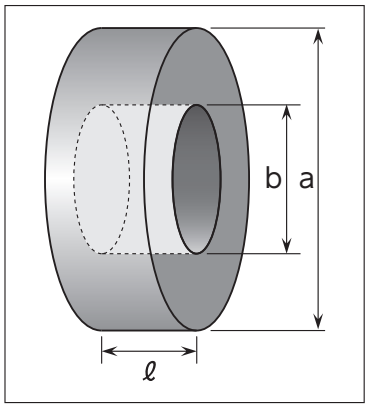
$$n = \frac{1000 \times v_c}{\pi \times D_m} \quad (\text{min}^{-1})$$

v_c : Cutting speed (m/min)
D_m : Machining diameter (mm)
n : Spindle speed (min^{-1})
π : Pi (3.14)

Example : Obtaining a cutting speed for machining a work piece of 200 mm diameter at the spindle speed of 1,000 min^{-1}:

$$v_c = \frac{\pi \times 200 \times 1000}{1000} = \underline{628\ (\text{m/min})}$$

Calculating the cutting time



Calculating the cutting time for OD (ID) machining

$$T = \frac{\ell}{f \times n} \quad (\text{min})$$

T : Cutting time (min)
ℓ : Cutting length (mm)
f : Feed rate (mm/rev)
n : Spindle speed (min^{-1})

Calculating the cutting time for facing

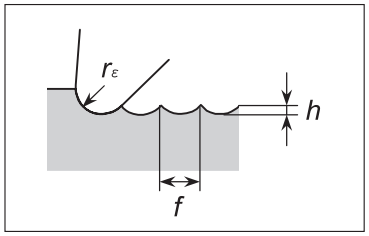
$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times v_c \times f} \quad (\text{min})$$

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 100 mm long at the spindle speed of 1,000 min^{-1} and at a feed rate of 0.1 mm/rev:

$$T = \frac{100}{0.1 \times 1000} = \underline{1\ (\text{min})}$$

Calculating the theoretical surface roughness



$$h = \frac{f^2}{8\, r_\varepsilon} \times 1000 \quad (\mu\text{m})$$

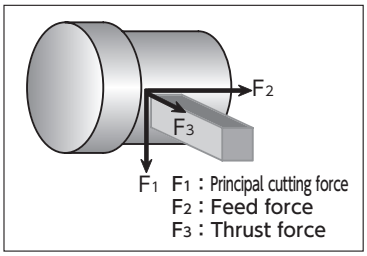
h : Theoretical surface roughness (μm)
f : Feed amount (mm/rev)
r_ε : Corner radius (mm)

Example : Obtaining the theoretical surface roughness when machining with an insert having 0.8 corner radius at a feed rate of 0.1 mm/rev:

$$h = \frac{0.1^2}{8 \times 0.8} \times 1000 = \underline{1.56\ (\mu\text{m})}$$

【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



$$F_{(N)} = k_c \times a_p \times f$$

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:

$$F = 1800 \times 3 \times 0.2 = \underline{1080\,(N)}$$

Calculating the power required

$$P_{c\,(kW)} = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times \eta}$$

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):

$$P_c = \frac{700 \times 0.4 \times 2 \times 1400}{60 \times 10^3 \times 0.8} = \underline{16.33\,(kW)}$$

Specific cutting force

Work material		Tensile strength or hardness	Specific cutting force (N/mm²) "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

$$Q_{(cm^3/min)} = v_c \times f \times a_p$$

Q : Volume of evacuated chips (cm³/min)
v_c : Cutting speed (m/min)
a_p : Depth of cut (mm)
f : Feed amount (mm/rev)

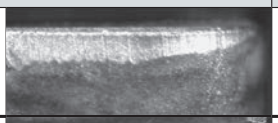
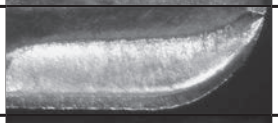
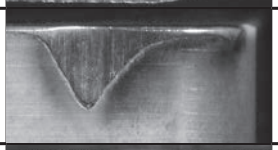
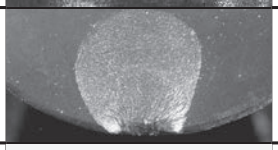
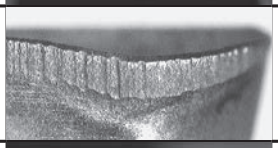
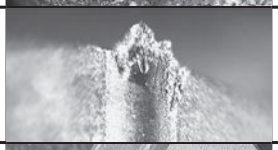
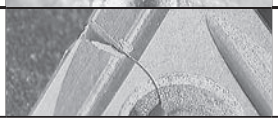
Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed of 0.4 mm/rev, and a depth of cut of 2mm

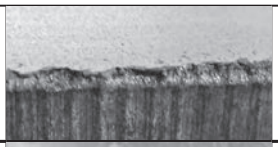
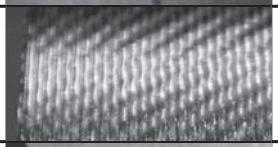
$$Q = 700 \times 0.4 \times 2 = \underline{560\,(cm^3/min)}$$

Troubleshooting for Turning

Type of problem	Possible cause	Corrective measures: Material/grade selection: 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 conditions: Cutting speed (Decrease ↘ / Increase ↗)	Feed rate (Decrease ↘ / Increase ↗)	Depth of cut (Decrease ↘ / Increase ↗)	Coolant: Use non-water-soluble type	Coolant: Review dry or wet operation	Tool shape: Review the type of chipbreaker	Rake angle (Decrease ↘ / Increase ↗)	Nose radius of the insert	Side cutting edge angle	Cutting edge strength, honing	Improve the accuracy of insert	Improve the rigidity of the holder	Machine/installation: Improve the installation accuracy of the cutting tool	Review the overhang of the cutting tool	Prevent vibration of the machine, improve the machine rigidity
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					↘	↗			Wet									
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												↘	↘					

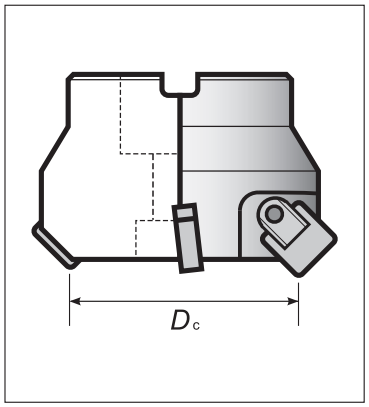
Troubleshooting Case Studies: Turning

	Case/Symptom		Possible causes	Corrective measures
Insert	VB wear		●The material / grade is too soft ●Cutting speed is too high ●Relief angle is too small	●Use a coated grade ●Choose a material/grade highly resistant to wear ●Decrease the cutting speed
	Wear on face		●High temperature causes chemical reactions between the insert material and chips	●Use a coated grade ●Decrease both of the cutting speed and feed rate ●Widen the rake angle
	Notching wear		●The work surface is too hard ●Boundary area has been oxidized ●Burrs, caused by chips in the sheared form, have been cut	●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		●Feed rate is too high ●Chips have become trapped ●Chatter resulting in vibration	●Enlarge the honed edge ●Make the nose radius larger ●Narrow the rake angle to secure the cutting edge strength
	Flaking		●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	●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		●High cutting force and excessive heat is applied to the cutting edge	●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		●This occurs because the cutting temperature is lower than the recrystallization temperature of the work material	●Increase the cutting speed ●Use coolant with excellent lubrication performance ●Change to a grade with less affinity to the work material
	Deposition		●The deposition is caused to the face by a chemical reactions of the work material due to heat generation	●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		●The insert was clamped under improper seating conditions	●Clean the clamping areas and install the insert in the recommended way ●Tighten to the specified torque

Work piece	Chipping		●The feed rate is too high ●An unsuitable insert was selected	●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		●The feed rate is incorrect ●The shape of insert is not suitable	●Decrease the feed rate ●Use a smaller edge preparation
	Chatter mark		●The cutting force is too great ●The rigidity of the work piece and cutting tool is insufficient	●Decrease the feed rate ●Use a smaller edge preparation ●Ensure tool overhang is minimised ●Change the cutting edge angle of the holder
	Gouging		●Vibration of the cutting edge due to deposition/built-up edge	●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

$$v_c = \frac{\pi \times D_c \times n}{1000} \quad (\text{m/min})$$

Calculating the revolution speed from the cutting speed

$$n = \frac{1000 \times v_c}{\pi \times D_c} \quad (\text{min}^{-1})$$

v_c : Cutting speed (m/min)
D_c : Cutter diameter (mm)
n : Spindle speed (min^{-1})
π : Pi (3.14)

Example : Obtaining the cutting speed for machining with an 200 mm diameter cutter at the Spindle speed of 1,000 min^{-1}:

$$v_c = \frac{\pi \times 200 \times 1000}{1000} = \underline{628\,(\text{m/min})}$$

Calculating the feeding speed and feed rate

Calculating the feed rate per blade

$$f_z = \frac{v_f}{z \times n} \quad (\text{mm/t})$$

Calculating the feeding speed per minute

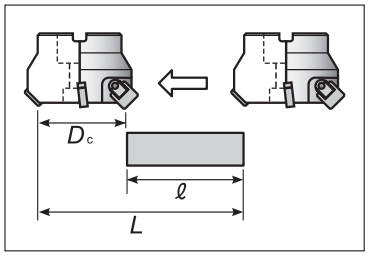
$$v_f = f_z \times z \times n \quad (\text{mm/min})$$

f_z : Inch amount per tooth (mm/t)
v_f : Table feed (mm/min)
z : Number of tooth
n : Spindle speed (min^{-1})

Example : Obtaining the feed rate for milling with a 10-teeth cutter at the 0.2mm/t and the revolution speed of 1,000 min^{-1}

$$v_f = 0.2 \times 10 \times 1000 = \underline{2000\,(\text{mm/min})}$$

Calculating the machining time



$$T = \frac{L}{v_f} \quad (\text{min})$$

T : Cutting time (min)
L : Total length of table feed (mm) ($\ell + D_c$)
v_f : Table feed (mm/min)

Example : Obtaining the machining time for milling 200 mm on a work piece fed at the rate of 1000 (mm/min)

$$T = \frac{200}{1000} = \underline{0.2\,(\text{min})}$$

Calculating the cutting power

$$P_{c\,(kW)} = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times \eta}$$

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/mm²) *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)

$$P_c = \frac{150 \times 3 \times 1100 \times 1400}{60 \times 10^6 \times 0.8} = \underline{14.44\,(kW)}$$

Specific cutting force

Work material		Tensile strength or hardness	Specific cutting force (N/mm²) "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

$$Q_{(cm^3/min)} = a_e \times a_p \times v_f$$

Q : Volume of evacuated chips (cm³/min)
a_e : Cutting length (mm)
a_p : Depth of cut (mm)
v_f : Feed rate (mm/min)

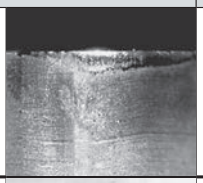
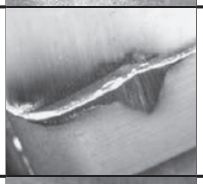
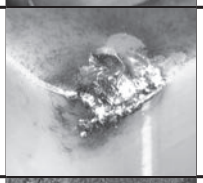
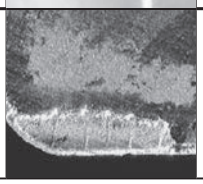
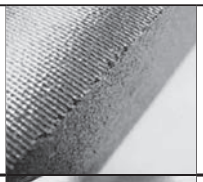
Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed rate of 0.4 mm/rev, and with a 2 mm depth of cut:

$$Q = 150 \times 3 \times 1100 = \underline{495\,(cm^3/min)}$$

Troubleshooting for Milling

Type of problem	Possible cause	Corrective measures: Material/grade selection: Change to a harder material/grade	Material/grade selection: Change to a tougher material/grade	Material/grade selection: Change to a material/grade more resistant to thermal shock	Material/grade selection: Change to a material/grade more resistant to deposition	Cutting conditions: Cutting speed (Decrease ↘ / Increase ↗)	Cutting conditions: Feed rate (Decrease ↘ / Increase ↗)	Cutting conditions: Depth of cut (Decrease ↘ / Increase ↗)	Cutting conditions: Review cutter diameter and cutting width	Cutting conditions: Review tool path	Cutting conditions: Coolant: Wet	Cutting conditions: Coolant: Dry	Tool shape: Relief angle of insert (Decrease ↘ / Increase ↗)	Tool shape: Nose radius of cutting edge (Decrease ↘ / Increase ↗)	Tool shape: Cutting edge strength, honing (Decrease ↘ / Increase ↗)	Tool shape: Number of teeth/blades	Tool shape: Enlarge the chip pocket	Tool shape: Check the wiper shape	Tool shape: Improve accuracy of cutting edge run-out	Tool shape: Improve rigidity of tool
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					↘	↘	↘	●	●			↗	↘	↘	↘				
	Poor chip evacuation	Improper cutting conditions					↗	↘		●		●	●								
		Unsuitable tool/blade edge shape												↗			↘	●			

Troubleshooting Case Studies: Milling

	Case/Symptom		Possible causes	Corrective measures
Insert	VB wear		●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.	●Decrease the cutting speed. ●Increase the feed rate. ●Make the nose radius larger. ●Change to a grade highly resistant to boundary wear.
	Notching wear		●The material / grade of the inserts is not suitable. ●The shape of the cutter is not suitable ●The shape of insert is not suitable.	●Change to a grade highly resistant to boundary wear. ●Widen the rake angle. ●Change the Insert shape to a different one.
	Chipping / fracture		●The cutting speed is incorrect. ●The shape of the cutter is not suitable ●The shape of insert is not suitable.	●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		●The cutting conditions are incorrect ●The material / grade of insert is not suitable	●Decrease the cutting speed. ●Change to dry cutting from wet cutting. ●Use a material / grade highly resistant to thermal shock
Work piece	Chipping		●The feed rate is too high. ●An unsuitable insert is selected. ●The shape of the cutter is not suitable.	●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		●The feed rate is incorrect. ●The shape of insert is not suitable. ●The shape of the cutter is not suitable.	●Adjust the feed rate. ●Use a smaller edge preparation. ●Make the lead angle narrower.

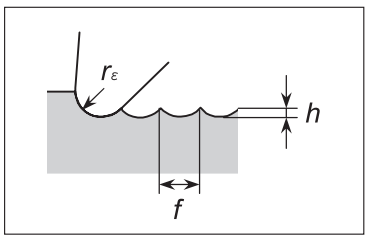
Surface Roughness Standards

			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 λs-λc	Phase correction, short wavelength λc
	Evaluation length		Determine individually for each standard length λc.	Average for ℓn, calculated for each standard length λc
	Maximum height		Maximum height **Rz**	Maximum height Ry
	Set standard length based on height parameters Rz, Rmax, and Ry.	0.25mm	0.1~0.5μm	0.1~0.5μm
		0.8mm	0.5~10μm	0.5~10μm
		2.5mm	10~50μm	10~50μm
	Dimension indicated in drawing		U 0.008 – 2.5/Rz 1.5 L – 2.5/Rz 0.7	Ry = 1.6~0.8 λc 0.25
	10-point average roughness		**Rz_{JIS}**	Rz
	Center line average roughness		Ra_{75}	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	0.1~0.5μm	0.1~0.5μm
		0.8mm	0.5~10μm	0.5~10μm
		2.5mm	10~50μm	10~50μm
	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.

$$h_{(\mu m)} = \frac{f^2}{8\,r_\varepsilon} \times 1000$$



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

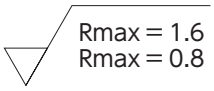
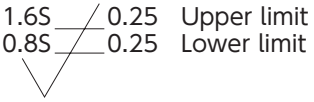
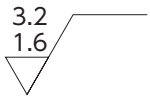
- Increase the nose radius.
- Adjust the cutting speed and/or feed amount.
- Use a wiper insert.
- Change the material and/or shape of the insert

Relationship with triangle symbols

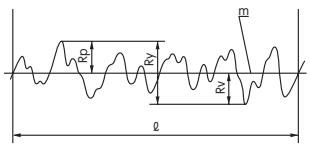
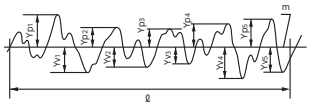
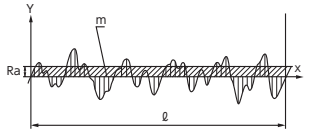
Arithmetic average roughness Ra (μm)	Maximum height Rz (μm)	10-point average roughness Rz_{JIS} (μm)	※ (Triangle symbol)
0.025	0.1	0.1	▽▽▽▽
0.05	0.2	0.2	
0.1	0.4	0.4	
0.2	0.8	0.8	
0.4	1.6	1.6	▽▽▽
0.8	3.2	3.2	
1.6	6.3	6.3	
3.2	12.5	12.5	▽▽
6.3	25	25	
12.5	50	50	▽
25	100	100	

• Examples of reading
(i) When Ra = 1.6μm ➡ 1.6μm Ra
(ii) When Rz = 6.3μm ➡ 6.3μm Rz
(iii) When Rz_{JIS} = 6.3μm ➡ 6.3μm 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 ≧ 3λc	One measured length ≧ 3λc	—
—	—	—
0.8μm or less	0.8μm or less	Select from 0.3, 1, 3, 5 and 10mm
0.8~6.3μm	0.8~6.3μm	Select from 0.3, 1, 3, 5 and 10mm
6.3~25μm	6.3~25μm	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 12.5μm or less.	λc shall be 0.8 mm.	—
12.5~100μm	—	—
	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

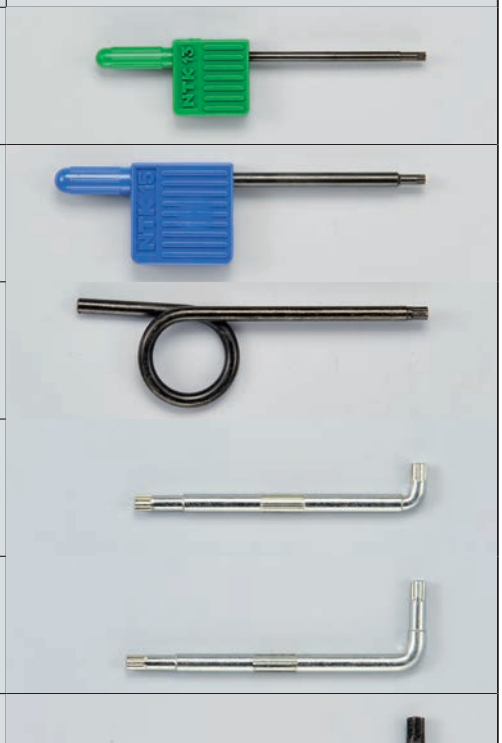
Type	New symbol JIS B0601:'01	Old symbol JIS B0601:'94	Calculation	Obtaining method (example)
Max. height (Peak)	Rz	Ry	The addition of the max. value for the depth Rv and the max. height Rp on the roughness curve for the reference length: $Rz = Rp + Rv$	
Average roughness of 10 points	Rz_{JIS}	Rz	The 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: $Rz_{JIS} = \frac{(Yp1+Yp2+Yp3+Yp4+Yp5)+(Yv1+Yv2+Yv3+Yv4+Yv5)}{5}$	
Arithmetic average of roughness	Ra	Ra	The average of absolute values on the roughness curve f (x) for the reference length: $Ra = \frac{1}{\ell}\int_0^{\ell}\{f(x)\}$	

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 ℓr (mm) = cut-off λc (mm)	Evaluated length ℓn (mm) = ℓr × 5
0.006<Ra≦0.2	0.025<Rz≦0.1	0.08	0.4
0.02<Ra≦0.1	0.1<Rz≦0.5	0.25	1.25
0.1<Ra≦2	0.5<Rz≦10	0.8	4
2<Ra≦10	10<Rz≦50	2.5	12.5
10<Ra≦80	50<Rz≦200	8	40

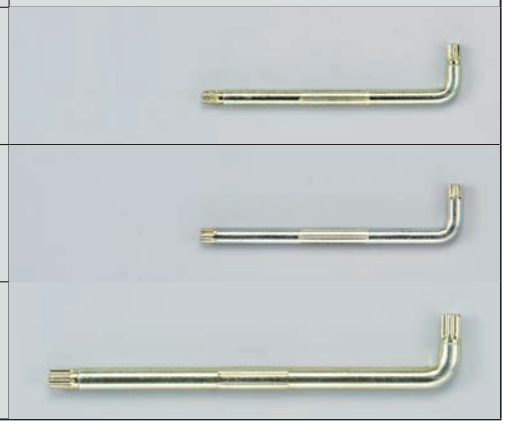
Spare Parts - Wrenches

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	

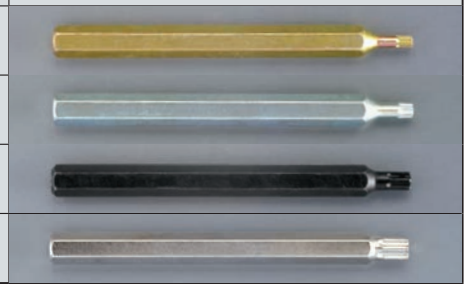
Optional Items

〈LLR Type〉

Item Number	Appearance
LLR-13S	
LLR-15S	
LLR-20S	

〈Driver type wrench for increased adaptability〉

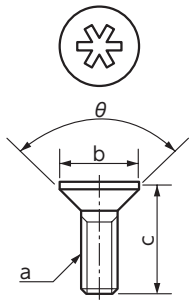
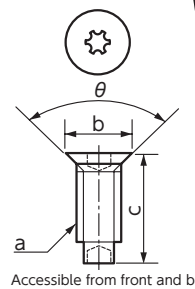
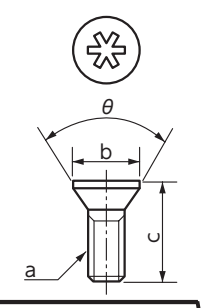
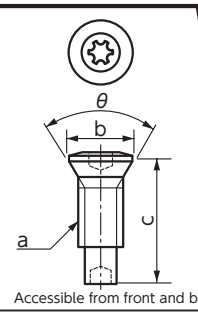
Item Number	Magnetic Driver Handle
XX2815-04	

Item Number	Replaceable Bits
HLR-13S	
HLR-15S	
HLR-20S	
HLR-25S	

〈Driver type wrench kits〉

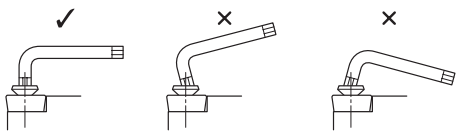
Item Number	Contents
XX2815-04-13S	XX2815-04 with HLR-13S
XX2815-04-15S	XX2815-04 with HLR-15S
XX2815-04-20S	XX2815-04 with HLR-20S
XX2815-04-25S	XX2815-04 with HLR-25S

Clamp Screws and Wrenches

Clamp Screw			Dimension (mm)				Standard Wrench		Adaptable standard wrench	
Appearance	Order Code	Item Number	a	b	c	θ (°)	Order Code	Item Number	LR	Hexalobular (6-LOBE)
	5704739	**LR-S-2×3.5**	M2×P0.4	3.1	3.5	82	5681994	**CLR-13S**	LR-1	T-6
	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	5681978	**CLR-15S**	LR-2	T-7
	5704747	**LR-S-2.5×5.5**	M2.5×P0.45	3.6	5.5	82				
	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				
 Accessible from front and back	5773619	**LR-S-3×5.8**	M3×P0.5	4.1	5.8	90	5485164	**RLR-20S**	LR-3	T-10
	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				
	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**	LR-2	T-7
	5534029	**LRIS-2×6**	M2×P0.4	2.6	6.0	60	5681994	**CLR-13S**	LR-1	T-6
	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**	LR-2	T-7
	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**	LR-3	T-10
	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**	LR-4	T-15
	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				
 Accessible from front and back	5907852	**LRIS-5×10**	M5×P0.8	7.0	9.5	60	5364948	**LLR-28S**	-	T-20
	5116983	**LRIS-4×10PW**	M4×P0.7	5.7	10.0	60	5681978	**CLR-15S**	LR-2	T-7
	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 (N•m)
CLR LLR HLR **13S**	0.7
CLR LLR HLR **15S**	1.4
RLR LLR HLR **20S**	3.0
LLR HLR **25S**	5.0
LLR HLR **28S**	7.0
LW-4	12
LW-5	15

Material Cross Reference Chart

ISO	Country / Standard	U.S.A. AISI / SAE	Japan JIS	Germany DIN
Stainless steel M		**Stainless Steel (Ferrite/Martensitic)**		
		403	SUS403	X6Cr13
				X7Cr14
		416	SUS416	X12CrS13
		430	SUS430	X6Cr17
		410	SUS410	X10Cr13
			SUS420J2	X46Cr13
		405		X6CrAL13
		420		X20Cr13
		431	SUS431	X19CrNi17-2
		430F	SUS430F	X14CrMoS17
		434	SUS434	X6CrMoS17-2
		CA6-	SCS5	X3CrNiMo13-4
		405	SUS405	X10CrAL13
		HNV6	SUH4	X85CrMoV18-2
		446	SUH446	X10CrAL2-4
		EV8	SUH35,SUH36	X53CrMnNiN21-9
		S44400		X1CrMoTi18-2
				X20CrMoV12-1
		630		X5CrNiCuNb16-4
		Stainless Steel (Austenitic)		
		304L		X2CrNi19-11
		304	SUS304	X5CrNi18-10
		303	SUS303	X8CrNiS18-9
			SUS304L	
		304L	SCS19	X2CrNi19-11
		301	SUS301	X9CrNi18-8
		304LN	SUS304LN	X2CrNi18-10
		316	SUS316	X5CrNiMo17-2-2
		316LN	SUS316LN	X2CrNiMoN17-13-3
		316L		X2CrNiMoN17-12-2
		316L	SCS16	X2CrNiMo18-14-3
			SUS316L	
		317L	SUS317L	X2CrNiMo18-15-4
		UNS		X1NiCrMoCu25-20-5
		V 0890A		
		321	SUS321	X6CrNiTi18-10
		347	SUS347	X10CrNiNb18-10
		316Ti		X6CrNiMoTi17-12-2
		318		X10CrNiMoNb 18-12
		309	SUH309	X15CrNiSi20-12
		310S	SUH310	X8CrNi25-21
		308	SCS17	X2CrNiMoN17-11-2
		17-7PH		X7CrNiAL 17-7
		N08028		X1NiCrMoCu31-27-4
		Stainless Steel (Austenitic/Ferrite)		
		S31500		X2CrNiN23-4
		S32900		X8CrNiMo27-5
		S32304		X2CrNiN23-4
		S31803		X2CrNiMoN22-53
Hardened material H		5130H	SCr430H	34Cr4
		5135H	SCr435H	37Cr4
		4135H	SCM435H	34CrMo4
		4140H	SCM440H	42CrMo4

ISO	Country / Standard	U.S.A. AISI / SAE	Japan JIS	Germany DIN
Cast iron K		**Malleable cast iron**		
		–	FCMB310	–
		32510	FCMW330	EN-GJMB350-10
		40010	FCMW370	EN-GJMB450-6
		50005	FCMW490	EN-GJMB550-4
		70003	FCMP540	
		A220-70003	FCMP590	EN-GJMB650-2
		A220-80002	FCMP690	EN-GJMB700-2
		Gray cast iron		
		No 20 B	FC100	EN-GJL-100
		No 25 B	FC150	EN-GJL-150
		No 30 B	FC200	EN-GJL-200
		No 35 B	FD250	EN-GJL-250
		No 40 B	–	–
		No 45 B	FC300	EN-GJL-300
		No 50 B	FC350	EN-GJL-350
		No 55 B	–	EN-JLZ
		A436 Type 2	–	GGL-NiCr20-2
		Ductile cast iron		
		60-40-18	FCD400	EN-GJL-400-15
		–	–	EN-GJL-400-18-LT
		80-55-06	FCD500	EN-GJL-500-7
		A43D2	–	EN-GJSA-500
		–	FCD600	EN-GJS-600-3
		100-70-03	FCD700	EN-GJS-700-2
Nonferrous material N		SC64D	C4BS	G-AlSi9MGWA
		GD-AlSI12	AC4A	G-ALMG5
		356.1	A5052	
		A413.0	A6061	GD-AlSi12
		A380.1	A7075	GD-AlSi8Cu3
		A413.1	ADC12	G-AlSi12(Cu)
		A413.2		G-AlSi12
		A360.2		G-AlSi10Mg(Cu)
Heat-resistant alloy S		**Heat-resistant alloy**		
		330	SUH330	X12NiCrSi36 16
			SCH15	G-X40NiCrSi36-18
		5390A		
		5666		NiCr22Mo9Nb
				NiCr20Ti
		5660		NiFe35Cr14MoTi
		5391		S-NiCr13A16MoNb
		5383		NiCr19Fe19NbMo
		4676		NiCu30AL3Ti
				NiCr20TiAk
		AMS 5399		NiCr19Co11MoTi
		AMS 5544		NiCr19Fe19NbMo
		AMS 5397		NiCo15Cr10MoAl
		5537C		CoCr20W15Ni
		AMS 5772		CoCr22W14Ni
		Titanium alloy		
		AMS R54520		TiAl5Sn2.5
		AMS R56400		TiAl6V4
		AMS R56401		TiAl6V4ELl
				TiAl4Mo4Sn4Si0.5

ISO	Country / Standard	U.S.A. AISI/SAE	Japan JIS	Germany DIN
Steel P		**Carbon steel**		
		A570.36	STKM12A;C	S235JRG2
		1115		GC16E
		A573-8165		S235J2G3
		1015		C15
		1020		C22
		1213	SUM22	11SMn30
		12L13	SUM22L	11SMnPb30
				10SPb20
		1215		11SMn37
		12L14		11SMnPb37
		1015	S15C	Ck15E
		1025	S25C	Ck25E
		A572-60		S380N
		A572-60		17MnV7
		1035		C35
		1045		C45
		1040		35S20
		1039		40Mn4
		1335	SMn438(H)	36Mn5
		1330	SCMn1	28Mn6
		1035	S35C	C35G
		1045	S45C	C45E
		1050	S50C	C53G
		1055		C55
		1060		C60E
		1055	S55C	C55E
		1060	S58C	C60E
		1095		C101E
		W1	SK3	C101u
		W210	SUP4	C105W1
		Alloy steel		
		ASTMA353		X8Ni9
		2515		12Ni19
				14NiCrMo13
		D3	SKD1	X210Cr12
		H13	SKD61	X40CrMo134
		A2	SKD12	X100CrMoV51
			SKD2	X210CrW12
		S1		45WCrV7
		H21	SKD5	X30WCrV93
				X30WCrV9
				X165CrMoV12
		HW3	SUH1	X45GrSi93
		D3	SUH3	S6-5-2
		M2	SKH51	S6-5-2
		M35	SKH55	S6-5-2-5
		M7		S6-9-2
		HNV3		X210Cr12G

ISO	Country / Standard	U.S.A. AISI/SAE	Japan JIS	Germany DIN
Steel P		A573-81	SM400A;B;C	S275J2G3
			SM490A;B;C;YA;YB	S355J2G3+C2
		5120		DS355J2G3
		9255		55Si7
		9262		S340MGC
		52100	SUJ2	100Cr6
		ASTM		16Mo3
		4520		16Mo5
		ASTM		14Ni6
		8620	SNCM220(H)	21NiCrMo2
		8740	SNCM240	40NiCrMo22
				17CrNiMo6
		5015	SCr415(H)	15Cr3
		5140	SCr440	42Cr4
		5155	SUP9(A)	55Cr3
			SCM415(H)	15CrMo5
		8740	SNCM240	40NiCrMo8-4
		5015	SCr415(H)	15Cr3
		ASTMA182		13CrMo5
		ASTMA182		13CrMo4-5
				14MoV63
				31CrMo12
				39CrMoV13
		L1		41CrS4
		8620		22Mo4
				50CoMo4
				16MnCr5
				31NiCrMo14
		L6		50NiCr13
		3135	SNC236	36NiCr6
		3415	SNC415(H)	14NiCr10
		3415;3310	SNC815(H)	14NiCr14
		9255		
		9840		36CrNiMo4
		4340		34CrNiMo6
		5132	SCr430(H)	34Cr4
		5140	SCr440(H)	41Cr4
		5115		16MnCr5
		4130	SCM420;SCM430	25CrMo4
		4137;4135	SCM432;SCCRM3	34CrMo4
		4140;4142	SCM440	41CrMo4
		4140	SCM440(H)	42CrMo4
				32CrMo12
		6150	SUP10	51CrV4
				41CrMo7
		L3		100Cr6
			SKS31	105WCr6
			SKS2,SKS3	
		L6	SKT4	55NiCrMoV6
		Cast steel		
			SEMnH1	
			SCMnH/1	G-X120Mn12

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
—	—	—	—	—	NiCr16MoAl	—
5396A	5396	—	ND37FeV	2.48	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
	Metric		Number of tools	Metric		Number of tools		Metric		
	h×b	L		h×b	L	Turret	Station	mm		mm
A12	□10	100	5	—	—	—	—	ϕ19.05/ϕ20	R	ϕ12
A16	□10	100	5	—	—	—	—	ϕ19.05/ϕ20	R	ϕ16
A20	□12(□13)	120	5-7	—	—	—	—	ϕ25.4	R	ϕ20
A25	□12(□13)	120	5/6	—	—	—	—	ϕ25.4	R	ϕ25
A32	□16	150	6	—	—	—	—	ϕ25.4	R	ϕ32
B12, B12E	□10	100	5	—	—	—	—	ϕ19.05/ϕ20	R	ϕ12
B16E	□10	120	5	—	—	—	—	ϕ19.05/ϕ20	R	ϕ16
B20	□12(□13)	120	6	—	—	—	—	ϕ19.05/ϕ20	R	ϕ20
BL12	□10	60-120	5	—	—	—	—	ϕ19.05/ϕ20	R	ϕ12
BL20	□12(□13)	120	7	—	—	—	—	ϕ19.05/ϕ20	R	ϕ20
BL25	□12(□13)	120	7	—	—	—	—	ϕ19.05/ϕ20	R	ϕ25
C12	□10	120	6	—	—	—	—	ϕ19.05	R	ϕ12
C16	□10	120	6	—	—	—	—	ϕ19.05	R	ϕ16
C32	□16	130	5	—	—	—	—	ϕ25.4	R	ϕ32
D25 VIII	□16	—	10					ϕ25.4	R	ϕ25
E32	—	—	—	□16(19×13)	90	2	10/Turret	ϕ25.4	R	ϕ32
F10	—	—	—	□10	60	1	10	ϕ19.05	R	ϕ10
F12	—	—	—	□10	60	1	10	ϕ19.05	R	ϕ12
F16	—	—	—	□10	60	1	10	ϕ19.05	R	ϕ16
F20	—	—	—	□16(19×13)	90	1	10	ϕ25.4	R	ϕ20
F25	—	—	—	□16(19×13)	90	1	10	ϕ25.4	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	□10	100	7	—	—	—	—	ϕ20	R	ϕ12
K16, K16E	□12	100	6	—	—	—	—	ϕ20	R	ϕ16
L10	□8	100-130	5	—	—	—	—	ϕ15.875	R	ϕ10
L12	□10	100	6	—	—	—	—	ϕ19.05	R	ϕ12
L16, L16E	□12(□10)	130	7	—	—	—	—	ϕ19.05	R	ϕ16
L20, L20E, L20X	□12	130	7	—	—	—	—	ϕ19.05	R	ϕ20
L25	□16	130	5	—	—	—	—	ϕ25.4	R	ϕ25
L32	□16	130	5	—	—	—	—	ϕ25.4	R	ϕ32
M$_2$12, M$_3$12	□10	120	5	□10	60	1	10	ϕ19.05	R	ϕ12
M$_2$16, M$_3$16, M$_4$16	□10	120	5	□10	60	1	10	ϕ19.05	R	ϕ16
M$_2$20, M$_3$20	□12	130	5	□16	90	1	10	ϕ25.4	R	ϕ20
M$_2$32, M$_3$32, M$_4$32	□16	130	5	□16	90	1	10	ϕ25.4	R	ϕ32
M20	□13(□12)	150	5	□10	60	1	10	ϕ19.05	R	ϕ20
MSL12	□10	120	—	—	—	—	—	—	R	ϕ12
R04	□8	120	7	—	—	—	—	ϕ15.875	R	ϕ4
R07	□8	120	5	—	—	—	—	ϕ15.875	R	ϕ7
RL02	□16	60-150	Max 6	—	—	—	—	ϕ16/ϕ20	L	ϕ25
RL21	□10(□12)	90	—	—	—	—	—	ϕ19.05	R	ϕ35

● STAR

Machine Model	Gang Station			Turret Station				Sleeve Station	Hand	DS-Sleeve item number	Max cutting dia
	Metric		Num ber of tools	Metric		Number of tools		Metric			
	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	□12(10)	95-130	6(7)					ϕ22	R	SS-DSU-L23 SS-DSU-SK	ϕ12/ϕ13/ϕ16
SB-16/16R	□12(10)	95-130	6(7)					ϕ22	R	SS-DSU-L23 SS-DSU-SK	ϕ16
SB-20/20R	□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	□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	□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	□12	100-130	7					ϕ22	R	SS-DSU-B8L23	ϕ20
SR-25J/32J	□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	□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
	□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	□12(16)	80-144	6					ϕ22	R	SS-DSU-B8L23	ϕ20
SW-7	□8	80-120	4					—	R	—	ϕ7

TSUGAMI

Machine Model	Gang Station			Turret Station				Sleeve Station	Hand	Max cutting dia
	Metric		Number of tools	Metric		Number of tools		Metric		
	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	□12	85	10	—	—	—	—	ϕ25	R	ϕ18
BC25	□12	85	10	—	—	—	—	ϕ10/ϕ25	R	ϕ25
BE18	□12	85	9	—	—	—	—	ϕ20	R	ϕ18
BH20/BH20Z	□12	85	4	□12	85	1	12	ϕ25/ϕ32	R	ϕ20
BH38	□16	125	7	□20	125	1	12	ϕ25/ϕ32	R	ϕ38
BM07	□8	85	9	—	—	—	—	ϕ20	R	ϕ7
BM163/BM164/BM165	□12	85	9	—	—	—	—	ϕ20	R	ϕ16
BM20-V	□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	□12	85	8(12)	—	—	—	—	ϕ20/ϕ25	R	ϕ12
BS18-III	□12	85	7(10)	—	—	—	—	ϕ14/ϕ25	R	ϕ18
BS20-V	□12	85	8(12)	—	—	—	—	ϕ20/ϕ25	R	ϕ20
BS26(ABC)-V	□16	100	7(10)	—	—	—	—	ϕ16/ϕ25	R	ϕ26
BS32C-V	□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	□16	100	7	□20	80	1	8	ϕ20/ϕ32	R	ϕ38
BW07-III	□12	85	7	—	—	—	—	ϕ20	R	ϕ7
BW12-III/BW129Z	□12	85	7	—	—	—	—	ϕ20	R	ϕ12
BW20-III/BW209Z	□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
	Metric		Number of tools	Metric		Number of tools		Metric		
	h×b	L		h x b	L	Turret	Station	mm		mm
M42J/M42D/M42SD	—	—	—	□20	125	1	12	ϕ25/ϕ32	R	ϕ42
M50SY-III	—	—	—	□20	100	1	12	ϕ32	R	ϕ51
M50J	—	—	—	□20	100	1	12	ϕ20/ϕ32	R	ϕ51
MB25	—	—	—	□20	80	2	8/Turret	ϕ20/ϕ32	R	ϕ25
MB35-III	—	—	—	□20	80	2	8/Turret	ϕ20/ϕ32	R	ϕ35
MB38-III	—	—	—	□20	80	2	8/Turret	ϕ20/ϕ32	R*	ϕ38
MB50-III	—	—	—	□20	80	2	8/Turret	ϕ20/ϕ32	R	ϕ50
MU26	—	—	—	□20	80	2	8/Turret	ϕ20/ϕ32	R	ϕ26
MU38	—	—	—	□20	80	2	8/Turret	ϕ20/ϕ32	R	ϕ38
NU50-III	—	—	—	□20	100	1	12	ϕ20/ϕ32	R	ϕ51
B020M-II/SS20M/SS20M-5AX	□10*	46	—	BT15 spindle			24	ϕ20	R	ϕ20
S205/S206	□12(□16)	100	8	—	—	—	—	ϕ20/ϕ22	R	ϕ20
SS20	□16	100	8	—	—	—	—	ϕ20/ϕ22	R	ϕ20
SS207/SS207-5AX	□12(□16)	100	8	—	—	—	—	ϕ20/ϕ22	R	ϕ20
SS26	□16	100	7	—	—	—	—	ϕ20/ϕ22	R	ϕ26
SS267/SS267-5AX	□16	100	8					ϕ25	R	ϕ26
SS32/SS32L	□16	100	7	—	—	—	—	ϕ20/ϕ22	R	ϕ32
SS327/SS327-5AX	□16	100	8					ϕ25	R	ϕ32
TMB2	—	—	—	□20	125	1	16	ϕ32	R	ϕ51
TMU1	—	—	—	□20	125	1	16	ϕ32	R	ϕ38
TMA8-IV/TMA8J	□20*	100		KM40 spindle			30		R	ϕ220
M06J				□25	150	1	8	ϕ32/ϕ40	R	ϕ260
M06SY				□25	150	1	12	ϕ32/ϕ40	R	ϕ260
M06JC				□20	125	1	8	ϕ32/ϕ40	R	ϕ260
M08J				□25	150	1	8	ϕ32/ϕ40	R	ϕ280
M08SY/M08D/M08SD				□25	150	1	12	ϕ32/ϕ40	R	ϕ280

● DMG MORI

Machine Model	Gang Station		Number of tools	Sleeve Station	Hand	Max cutting dia
	Metric			Metric		
	h×b	L		mm		mm
Sprint 20/5	□12		6	ϕ20	R	ϕ20
Sprint 20/8	□12		6	ϕ20	R	ϕ20
Sprint 32/5	□16		6	ϕ20	R	ϕ32
Sprint 32/8	□16		6	ϕ20	R	ϕ32

NOMURA

Machine Model	Gang Station			Sleeve Station	Hand	Max cutting dia
	Metric		Number of tools	Metric		
	h×b	L		mm		mm
NS-P1053A	□9.5	130	5	—	R	ϕ10
NN-10C	□10	130	6	ϕ17	R	ϕ10
NN-10E	□10	130	6	ϕ16	R	ϕ10
NN-10C2	□10	130	6	ϕ17	R	ϕ10
NN-10CS	□10	130	6	ϕ17	R	ϕ10
NN-10CS(No live tools)	□10	130	5	ϕ17	R	ϕ10
NN-10SII	□10	130	5	ϕ17(ϕ23)	R	ϕ10
NN-10T	□10	130	7	ϕ17(ϕ23)	R	ϕ10
NN-10SB5	□10	130	5	ϕ17(ϕ23)	R	ϕ16
NN-16SB5	□10	130	5	ϕ17(ϕ23)	R	ϕ16
NN-16SB6 Type1	□12.7	130	5	ϕ17(ϕ22)	R	ϕ16
NN-16SB6 Type2	□12.7	130	5	ϕ17(ϕ22)	R	ϕ16
NN-16SB6 Type2.5	□12.7	130	5	ϕ17(ϕ22)	R	ϕ16
NN-16SB6 Type3	□12.7	130	5	ϕ17(ϕ22)	R	ϕ16
NN-16SB7	□12.7		5(7)	ϕ16	R	ϕ16
NN-16HIII	□12	130	6	ϕ23	R	ϕ16
NN-20HIII	□12	130	6	ϕ23	R	ϕ20
NN-16UIII	□12	130	5	ϕ23	R	ϕ16
NN-20UIII	□12	130	5	ϕ23	R	ϕ20
NN-20CS	□12.7	130	5(6)	ϕ22	R	ϕ20(ϕ25)
NN-20U5	□12.7	130	5(6)	ϕ22	R	ϕ20(ϕ25)
NN-16UB5	□12	130	5	ϕ23	R	ϕ16
NN-20UB5	□12	130	5	ϕ23	R	ϕ20
NN-20UB7	□12	130	6	ϕ23	R	ϕ20
NN-20UB8	□12.7	130	5(6)	ϕ22	R	ϕ20(ϕ25)
NN-20YB	□12	130	8	ϕ23	R	ϕ20
NN-25UB8	□12		5	ϕ22	R	ϕ25
NN-32UB8	□16		5	ϕ22	R	ϕ32
NN-38UB8	□20		5	ϕ22/ϕ32	R	ϕ38
NN-25YB/32YB	□16	130	8	ϕ23/ϕ32	R	ϕ25/ϕ32
NN-32YB2	□16	130	5	ϕ22/ϕ32	R	ϕ32
NN-32YB3	□16		5	ϕ22/ϕ32	R	ϕ32
NN-32YB3XB	□16		6	ϕ22/ϕ32	R	ϕ32
NN-16J	□12.7	130	6	ϕ23	R	ϕ16
NN-20J	□12.7	130	6	ϕ23	R	ϕ20
NN-20J2	□12.7	130	6	ϕ22	R	ϕ20
NN-20J3	□12.7		6	ϕ23	R	ϕ20
NN-20J3XB	□12.7		5	ϕ23	R	ϕ20

TORNOS

Machine Model	Gang Station			Turret Station			Sleeve Station	Hand	Max cutting dia
	Metric		Number of tools	Metric		Number of tools	Metric		
	h×b	L		h x b	L		mm		mm
EvoDECO 10/10	□8		8				φ20/φ25	R	φ10
EvoDECO 10/8	□8		8				φ20/φ25	R	φ10
EvoDECO 16/10	□12		10				φ20/φ25	R	φ16
EvoDECO 16/8	□12		10				φ20/φ25	R	φ16
EvoDECO 20	□16		10				φ20/φ25	R	φ25.4
EvoDECO 32	□16		10				φ20/φ25	R	φ32
Swiss ST 26	□12		17				φ20/φ22/φ25	R	φ25.4
Sigma 20/6	□16		14				φ20	R	φ25.4
Sigma 32/6	□16		14				φ32	R	φ32
SwissNano	□8		7				φ12/φ16	R	φ4
Delta 12/4	□12	85	5				φ20	R	φ12
Delta 12/5	□12	85	5				φ20	R	φ12
Delta 20/4	□12	85	5				φ20	R	φ20
Delta 20/5	□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	□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

Hanwha Machinery

Machine Model	Gang Station			Turret Station			Sleeve Station	Hand	Max cutting dia
	Metric		Number of tools	Metric		Number of tools	Metric		
	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: Scale A Load: 60 kgf brale indenter (HRA)	Rockwell hardness: Scale C Load: 150 kgf brale indenter (HRC)	Rockwell hardness: Scale B Load: 100 kgf Diameter 1/16" indenter (HRB)	Brinell hardness, 10 mm balls, 3000 kgf load: Tungsten carbide ball	Shore hardness (HS)	Tensile strength Kgf/mm² [N/m²] Approximate value MPa (1)
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: Scale A Load: 60 kgf brale indenter (HRA)	Rockwell hardness: Scale C Load: 150 kgf brale indenter (HRC)	Rockwell hardness: Scale B Load: 100 kgf Diameter 1/16" indenter (HRB)	Brinell hardness, 10 mm balls, 3000 kgf load: Tungsten carbide ball	Shore hardness (HS)	Tensile strength Kgf/mm² [N/m²] Approximate value MPa (1)
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

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Item number (alphabetical order)

(○ represents a number and □ represents a letter)

Reference		Page
#		
1/4-20UNC＊11/○	Parts	L26,etc.
1240/-50/-60 -C	Parts	N13
2(○○)＊○AW	Parts	L27,etc.
3/8-16UNC＊11/○	Parts	L26,etc.
521673-GM	Parts	N10
5515/-20/-25 -C	Parts	N13
A		
ACN○○○	Parts	F9,etc.
ADN○○○	Parts	F13,etc.
AMS-○T	Parts	N11
AOB-○S-T○○	Parts	N11
AOB-○C	Parts	H30,etc.
AOB-5＊○○	Parts	H28,etc.
AOS-5＊○○	Parts	G58,etc.
AOS-6＊○○	Parts	F9,etc.
APCW○○○○○○□○○○○○	Insert	N10
APCW○○○○□□□□	Insert	N10
ARN○○	Parts	L23,etc.
ASG-○	Parts	G58,etc.
ASGL○	Parts	L22,etc.
ASGL○-D	Parts	F9,etc.
ASN○○○	Parts	F17,etc.
ATN○○○	Parts	F23,etc.
AVN○○○	Parts	F27,etc.
AWN○○○-□	Parts	F29,etc.
B		
B○○□-STZ□R/L-○○-□	Holder	K32
BGR○○	Holder	H35
BS○○○○	Parts	F9,etc.
C		
C○○□-SCL□R/L○○□○○-OH	Holder	K28
C○○□-STU□R/L○○□○○-OH	Holder	K30
C○○□-STZ□R/L○○□○○(○)-OH	Holder	K32
C○○□-MBR□○○-OH	Holder	K24
C○○○□-MBR□○○-OH	Holder	K24
C○○□-SEXRR/L□○□○○-OH	Holder	K27
C○○J-MSBR	Holder	K25
C11R/L-○○	Holder	F19
C12R/L-○○	Holder	F17
C13R/L-○○	Holder	F19
C14M-○○	Holder	F17
C15R/L-○○	Holder	F21
C16R/L-○○	Holder	F19
C17R/L-○○	Holder	F21
C21R/L-○○	Holder	F23
C22R/L-○○	Holder	F23
C23R/L-○○	Holder	F25
C24R/L-○○	Holder	F25
C25R/L-○○	Holder	F25
C31R/L-○○	Holder	F9
C54M-○○	Holder	F30
C55R/L-○○	Holder	F30
CA1040A	Parts	N15
CC08□	Parts	F9,etc.
CCBNR/L○○○○□○○	Holder	F11
CCET○○○○○○(Carbide)	Insert	E39
CCET○○□○○○(Carbide)	Insert	E39
CCGT○○○○○○(Carbide)	Insert	E39,E40
CCGT○○□○○○(Carbide)	Insert	E39,E40
CCGW○○○○○○(Carbide)	Insert	E40
CCGW○○○○○○PD(CBN)	Insert	E28
CCGW○○□○○○(Carbide)	Insert	E40
CCGW○○□○○○PD(CBN)	Insert	E28
CCKNR/L○○○○□○○	Holder	F11
CCLNR/L○○○○□○○	Holder	F9
CCMT○○○○○○(Carbide)	Insert	E39
CCMT○○□○○○(Carbide)	Insert	E39
CCMT○○○○○○PBF(PCD)	Insert	E28
CCMT○○□○○○P(PCD)	Insert	E28
CCMW○○○□○○(PCD)	Insert	E28
CDH○○□□	Insert	E17,L26
CDJNR/L○○○○□○○	Holder	F13
CH-FGVR/L○○○○	Holder	H38
CH-GTTR/L○○□○○	Holder	G61,H19
CH-LBML○○○○□	Holder	K6
CH-SDUCR/L○○○○□○○	Holder	G25
CH-STUCR/L○○○○□○○	Holder	G36
CH-SVUPR/L○○○○□○○	Holder	G33
CH-SVXCR/L○○○○□○○	Holder	G56
CH-TBPAR/L○○	Holder	G55
CH-TTPR/L○○	Holder	Ⅰ12
CLH○○○○	Insert	M11,M13
CLR-○○S	Parts	O16,etc.
CNGA○○○○○○□○○○○○	Insert	E6
CNGA○○○○○○BQ	Insert	E20
CNGA○○○○○○PQ(CBN)	Insert	E20
CNGA○○○○○○WL□○○○○○	Insert	E6
CNGG○○○○○○(Carbide)	Insert	E36
CNGG○○○○○○□○○○○○AG	Insert	E6
CNGN○○○○○○□○○○○○	Insert	E7
CNGX○○○○○○□○○○○○	Insert	E7
CNMG○○○○○○(Carbide)	Insert	E21,E36

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(○ represents a number and □ represents a letter)

Reference		Page
CNMX○○○○○○PF (PCD)	Insert	E21
COUP-R1/8	Parts	K15
CPGH○○○○○○ (Carbide)	Insert	E41
CPR/L5	Parts	H26,etc.
CPR/L6	Parts	H26
CRDCN○○○○□○○	Holder	F32
CRDNN○○○○□○○	Holder	F30
CRGNR/L○○○○□○○	Holder	F30
CRN○	Parts	F33,etc.
CRXCR/L	Holder	F33
CS○○○○	Parts	F33,etc.
CS○○○○A	Parts	N15
CSDNN○○○○□○○	Holder	F17
CSHNR/L○○○○□○○	Holder	F19
CSSNR/L○○○○□○○	Holder	F17
CSVB○○	Insert	G50,G96
CSVC○○	Insert	G72,G97
CSVF○○	Insert	G21,G96
CSVG○○	Insert	G97,H15
CSVR/L○○	Holder	G95,etc.
CSVT○○	Insert	G97, I 10
CTDP○○□	Insert	G88
CTDPR/L○○	Holder	G88
CTP○○	Insert	G76,G77,G79
CTPA○○	Insert	G82 ～ G84
CTPAR/L○○	Holder	G55,G81
CTPR/L○○	Holder	G75
CTPS○○□□	Insert	G73,G99
CTPSR/L○○	Holder	G98,etc.
CTPW○○□R/L	Insert	G86
CTPWR/L○○	Holder	G86
CTPX○○FR/L	Insert	G78
CTV○○□	Insert	G91
CTV○○□○○□	Insert	G87,G91
CTVN○○□○	Holder	G87
CTVR/L○○□	Holder	G87,G90
CTWPR/L○○○○□-○□○○	Holder	G89
CVR/L○□□	Parts	H30
CZH○○○○	Insert	M10
D		
DC5TN	Parts	F23,etc.
DC6CN	Parts	F9,etc.
DC6DN	Parts	F13,etc.
DC6VN	Parts	F27,etc.
DCET○○○○○○ (Carbide)	Insert	E42
DCET○○□○○○ (Carbide)	Insert	E42
DCGT○○○○○○ (Carbide)	Insert	E42,E43
DCGT○○□○○○ (Carbide)	Insert	E42,E43

Reference		Page
DCGW○○○○○○ (Carbide)	Insert	E43
DCGW○○○○○○PD (CBN)	Insert	E29
DCGW○○□○○○ (PCD)	Insert	E29
DCGW○○□○○○ (Carbide)	Insert	E29
DCMT○○○○○○ (Carbide)	Insert	E42,E43
DCMT○○○○○○P (PCD)	Insert	E29
DCMT○○□○○○ (Carbide)	Insert	E29,E42,E43
DCMT○○□○○○P (PCD)	Insert	E29
DNGA○○○○○○□○○○○○	Insert	E8
DNGA○○○○○○BQ	Insert	E22
DNGA○○○○○○PQ (CBN)	Insert	E22
DNGG○○○○○○ (Carbide)	Insert	E36
DNGG○○○○○○□○○○○○AG	Insert	E8
DNGN○○○○○○□○○○○○	Insert	E8
DNGX○○○○○○□○○○○○	Insert	E8
DNMG○○○○○○ (Carbide)	Insert	E36
DNMX○○○○○○PF (PCD)	Insert	E23
DS-FGVR/L○○	Holder	H38
DS-GTTR/L○○	Holder	G61,H19
DS-LBMBL○○	Holder	K6
DS-PTXR/L○○(□)-○○	Holder	G39
DS-SCLR/L○○	Holder	G23
DS-SDUR/L○○(□)-○○	Holder	G27
DS-SDXR/L○○(□)-○○	Holder	G27
DS-STTR/L○○□	Holder	I 15
DS-SVVPN○○-○○	Holder	G33
DS-SVXPR/L○○-○○	Holder	G33
DS-SVXR/L○○(□)-○○	Holder	G31
DS-TBPR/L○○	Holder	G53
DS-TTPR/L○○	Holder	I 12
E		
ENGN○○○○○○□○○○○○	Insert	E8
ERGH□○○○○○	Insert	E45,K27
F		
FBV○○□○○□○□□□	Insert	H39
FDX○○○○-○○-○○□	Cutter	N6
FGV○○○R/L□○○□○	Insert	H39
FGVR/L○○○○	Holder	H38
FSI01-○○○＊○	Parts	M13
FSI02-○○○＊○○○	Parts	M10,etc.
FSI04-○○○＊○○○	Parts	M13
FSI17-○○○＊○○○	Parts	I 21
FSI22-○○○＊○○	Parts	N10
FSI23-○○○＊○	Parts	N10
FSI24-○○○＊○○○	Parts	I 21

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(○ represents a number and □ represents a letter)

Reference		Page
FSI26-○○○＊○○-□□	Parts	N5
FSI28-○○○＊○○	Parts	H41,etc.
FSS15-○○○＊○○	Parts	F9,etc.
FSS16-○○○＊○	Parts	K34,etc.
G		
GBWPFR/L-○□○○-○○○○○○	Holder	H41
GEV○○○□	Insert	H36
GKVR/L○○○○-○	Holder	H36
GKWPR/L○○○○□-○□○○	Holder	H29
GKWPR/L○○○○-□	Holder	H41
GTG○○○○○	Insert	H35
GTMA43○○○	Insert	H27
GTMH32○○○	Insert	H22～H25
GTMT43○○○R/L	Insert	H27
GTMX32○○○	Insert	H23～H25
GTPA○○□□□○○	Insert	H17
GTPAR/L○○○○	Holder	H17
GTPS○○○□□	Insert	G99,H16
GTTR/L○○	Holder	G61,H19
GTWPR/L○○○○-□	Holder	H41
GTWPR/L○○○○-○□○○	Holder	H28
GTWPR/L○○○○□-○□○○	Holder	H28
GWPFM○○○□○○-□□	Insert	G89,H42
GWPG○○○□○○□-□□	Insert	H29
GWPM○○○□○○□-□□	Insert	H29
H		
H-M○＊○○	Parts	Ⅰ20
HACDH○○	Parts	F31,etc.
HAR○○Y	Parts	F33,etc.
HARCGX○○	Parts	F32,etc.
HC35KR-○○○○	Parts	F32,etc.
HC6CN	Parts	F9,etc.
HC6DN	Parts	F13,etc.
HC6SN	Parts	F17,etc.
HC6VN	Parts	F27,etc.
HCLNR/L○○○○□○○	Holder	F9
HDHNR/L○○○○□○○	Holder	F15
HDJNR/L○○○○□○○	Holder	F13
HDNNR/L○○○○□○○	Holder	F15
HFT○○○○(○)□○○	Insert	N14
HMC○○○-○○-○○□	Cutter	N8

Reference		Page
HLR-○○S	Parts	O16,etc.
HLW○○○	Parts	N6
HN59Z-○○○○	Holder	Ⅰ17
HOSE-CN-CN-○○○	Parts	K14
HRCD-○○	Holder	F31
HSDNN○○○○□○○	Holder	F17
HSSNR/L○○○○□○○	Holder	F17
HVJNR/L○○○○□○○	Holder	F27
HVPNR/L○○○○□○○	Holder	F27
HVVNN○○○○□○○	Holder	F27
HY-NBH○○○○○□	Holder	K19
HY-NBH○○○○○(○○)□-OH	Holder	K13
J		
JHF○○○□○○○○□○○	Cutter	N14
JOINT-□□-R1/8	Parts	K15
JWNXM○○○□○○○○□○○-□	Cutter	N4,N5
L		
LBM○○○○□□□□	Insert	K7
LBM□○○○○□□□	Insert	K7
LBMAR○○	Holder	K6
LCL○	Parts	F9,etc.
LCS○	Parts	F9,etc.
LLR-○○S	Parts	O16,etc.
LLR-T10	Parts	F9,etc.
LLR-T15	Parts	F23,etc.
LLR-T20	Parts	F9,etc.
LNM○○○○□□	Insert	E18,L31
LNX○○○-○○□○○○○○	Insert	N9
LRIS-○	Parts	O17,etc.
LR-S-○	Parts	O17,etc.
LS○○○	Parts	N28
LSC○○	Parts	F9,etc.
LSD○○	Parts	F13,etc.
LSP○	Parts	F9,etc.
LSS○○	Parts	F17,etc.
LST○○○	Parts	F23,etc.
LW-○	Parts	F9,etc.

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(○ represents a number and □ represents a letter)

Reference		Page
LWU-○	Parts	F31,etc.
M		
M○＊○○	Parts	F9,etc.
MBC-M○○	Parts	N23
MBL○○○□□	Insert	K24,K25
N		
NBH○○○○○□	Holder	K8,K9
NGTAR/L○○○○○○-○○□	Holder	H21,H26
NGTBR/L○○○○○○-○○□	Holder	H21,H26
NGTNR/L○○○○○○-○○	Holder	H21,H26
NTTBR/L○○○○○○	Holder	Ⅰ15
P		
PCLNR/L○○○○□○○	Holder	F9
PDJNR/L○○○○□○○	Holder	F13
PLUG-RC1/8	Parts	K15
PSBNR/L○○○○□○○	Holder	F19
PSDNN○○○○□○○	Holder	F17
PTANR/L○○○○□○○□	Holder	G39
PTLNR/L○○○○□○○	Holder	F23
PTM○○□○○○	Insert	L32
PTXNR/L○○○○□○○□	Holder	G39
Q		
QTE○○○-○○-○□	Cutter	N10
QTS○○○-○○-○□	Cutter	N10
R		
RBGX○○□□□	Insert	E17,L31
RCE□○○○□○□○○○□	Endmill	M4
RCGX○○○○○○□○○○○○	Insert	E17,L18,L27
RCGX○○○○□□	Insert	E17,L18,L27
RCGY○○○○○○□□□	Insert	E17,L22
RCL○○○□○R/L○○○	Holder	M13
RCS□○○○□○□○○○□	Endmill	M5
REL○○○□○□○○○	Holder	M11
REZ○○○□○□○○○	Holder	M10
RLR-○○S	Parts	O16,etc.
RNIW○○○□○○○□○○	Cutter	N11
RNGN○○○○○○□○○○○○	Insert	E9,L23,L30,N11
RNGN○○○○○○□○○○	Insert	E9,L23,L30
RNGN○○○○○○S	Insert	E23
RPIW○○○□○○○□○○	Cutter	N12
RPGN○○○○○○□○○○○○	Insert	E15,N12
RPGN○○○○○○□	Insert	E15,
RPGX○○○○○○□○○○○○	Insert	E17,L18
RPGX○○○○□□□	Insert	E17,L18

Reference		Page
RWEM○○○□○□○○□○○	Endmill	M7
S		
S○○-H	Adapter	K33
S○○□-BGR○○□○○	Holder	H35
S○○□-HCLNR/L○○	Holder	K34
S○○□-HDUNR/L○○	Holder	K35
S○○□-HSKNR/L○○	Holder	K36
S○○□-MBR□○○-OH	Holder	K24
S○○□-SCL□R/L○○□○○-OH	Holder	K28
S○○□-SEXRR/L□○□○○-OH	Holder	K27
S○○□-STU□R/L○○□○○-OH	Holder	K30
S○○□-TCLNR/L○○	Holder	K34
S○○□-TSKNR/L○○	Holder	K36
S○○□-WCLNR/L○○	Holder	K34
S○○□-WDUNR/L○○	Holder	K35
S○○□-WSKNR/L○○	Holder	K36
S○○□-WWLNR/L○○	Holder	K37
SBB○○○□□○○○	Insert	K11
SBFB○○○□○○○□	Insert	K11
SBFS○○○□○○○□	Insert	K11
SBG○○○○○○□□	Insert	H34
SBT○○○□○	Insert	Ⅰ16
SCACR/L○○○○□(□)○○□	Holder	G23
SCGW○○□○○○PQ(CBN)	Insert	E30
SCJ-M○	Parts	K15
SCJ-R1/8	Parts	K15
SCLCR/L○○-□○○	Holder	G23
SCLCR/L○○○○□○○	Holder	G23
SDCW○○○○○○□	Insert	N8
SDEW○○○○○○	Insert	E45
SDJCR/L○○-□○○	Holder	G25
SDJCR/L○○○○□(□)○○□	Holder	G25
SDNCN○○-□○○	Holder	G25
SDQCR/L○○-□○○	Holder	G25
SDW○○○○-○○-○○□	Insert	N8
SDXCR/L○○○○□○○□	Holder	G25
SFG○○○□○○○□	Insert	H37
SHF□○○○□○○○□	Insert	K21
SNEN○○○○□□□○○○○○	Insert	N6
SNGA○○○○○○□○○○○○	Insert	E10
SNGA○○○○○○PE(CBN)	Insert	E24
SNGF○○○○○○□□□-□	Insert	N6
SNGN○○○○○○□○○○○○	Insert	E10,E11,N13,N15,N17
SNGN○○○○□□□	Insert	N6
SNGX○○○○○○□○○○○○	Insert	E11
SNMG○○○○○○(Carbide)	Insert	E37
SNMN○○○○○○S(CBN)	Insert	E24

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(○ represents a number and □ represents a letter)

Reference		Page
SPGN○○○○○○**□**○○○○○	Insert	E15
SPGN○○○○○○**PQ** (CBN)	Insert	E30
SPR1/8	Parts	G34,etc.
SR08	Parts	F9,etc.
SS○○○○**□**	Parts	K8,etc.
SS-DSU-□	Holder	G104
SSP○○○**□**○○	Insert	J4
STACR/L○○○○**□**○○**□**	Holder	G36
STTNR/L○○○○○○	Holder	Ⅰ15
STXNR/L○○○○**□**○○**□**	Holder	G39
SVACR/L○○○○**□**○○**□**	Holder	G29,G62
SVACR/L○○**-□**○○	Holder	G29
SVJCR/L○○○○**□**○○**□**	Holder	G29
SVQCR/L○○**-□**○○	Holder	G31
SVQPR/L○○○○**□**○○**□**	Holder	G33
SVVCN○○**-□**○○	Holder	G31
SVVCN○○○○**□**○○	Holder	G31
SVVCR/L○○○○**□**○○○	Holder	G31
SVXCR/L○○○○**□**○○**□**	Holder	G31
SVXPR/L○○○○**□**○○**□**	Holder	G33

T

T-06	Parts	M13
T-07	Parts	Ⅰ21
T-15A	Parts	N10
T-20	Parts	N8
TB○○○○**R/L**	Insert	G59
TBDP○○○○	Insert	G57
TBDPR/L○○	Holder	G57
TBGN○○○○○○**□**○○○○○	Insert	E16
TBMH○○○○○**□**○○**-**○○	Insert	G61
TBP○○**□□**	Insert	G53
TBPA○○**□□**	Insert	G55
TBPAR/L○○**□-OH**	Holder	G55
TBPR/L○○	Holder	G53
TBPS○○**□□**	Insert	G51,G98
TBR/L○○**□**	Holder	G58
TBTR/L○○**□**	Holder	G58
TBVC○○**□□**○○**□**	Insert	G56
TBVCR/L○○	Holder	G56
TC5TN	Parts	F23,etc.
TC6CN	Parts	F9,etc.
TCBNR/L○○○○**□**○○	Holder	F11
TCGH○○○○○○	Insert	E46
TCGT○○○○○○	Insert	E46
TCGW○○○○○○**□□**	Insert	E46
TCGW○○**□**○○○**□□**	Insert	E46
TCLNR/L○○○○**□**○○	Holder	F9
TDX○○○○**-**○○**-**○○**□**	Cutter	N7

Reference		Page
TF33○○**□**	Insert	G35
TFD○○**□□**○○	Insert	E44
TFT○○**□□**○○	Insert	E48
TFTR/L○○	Holder	G34
TFV○○**□□**○○	Insert	E51
TFX33○○**□□**	Insert	G35
TGC○○**□**○○**□**○○○**□**	Holder	Ⅰ17
TMN○○**□□**○○	Insert	Ⅰ17
TNEG○○○○○○ (Carbide)	Insert	E37
TNGA○○○○○○**□**○○○○○	Insert	E12
TNGA○○○○○○**PH** (CBN)	Insert	E25
TNGG○○○○○○ (Carbide)	Insert	E37
TNGG○○○○○○**□**○○○○○**AG**	Insert	E13
TNGN○○○○○○**□**○○○○○	Insert	E12,E13
TNMG○○○○○○ (Carbide)	Insert	E37
TNMN○○○○○○**S** (CBN)	Insert	E26
TNMX○○○○○○**PF** (PCD)	Insert	E26
TPGH○○○○○○	Insert	E47
TPGN○○○○○○**□**○○○○○	Insert	E16
TPGN○○○○○○**PT** (CBN)	Insert	E31
TPGW○○○○○○**PT** (CBN)	Insert	E32
TPMH○○○○○○ (Carbide)	Insert	E33
TPMT○○○○○○**P** (PCD)	Insert	E33
TSDNN○○○○**□**○○	Holder	D19
TSSNR/L○○○○**□**○○	Holder	D19
TTFNR/L○○○○**□**○○	Holder	F25
TTGNR/L○○○○**□**○○	Holder	F23
TTMH○○○○**□**○○○	Insert	Ⅰ15
TTP○○**□R/L**	Insert	Ⅰ13
TTPR/L○○	Holder	Ⅰ12
TTPS○○**□□**	Insert	G99, Ⅰ11
TW○○○○**-□□**○○○**-□**○○	Insert	Ⅰ22
TWC○**□**	Cutter	Ⅰ20, Ⅰ21

V

VBGT○○○○○○	Insert	E49
VBGW○○○○○○**PD** (CBN)	Insert	E34
VCET○○○○○○	Insert	E49
VCGT○○○○○○	Insert	E49,E50,G62
VCGW○○○○○○**H**	Insert	E49
VCGW○○○○○○**PD** (CBN)	Insert	E34,E35
VCMT○○○○○○	Insert	E49
VCMW○○○○○○ (PCD)	Insert	E35
VGW○○○○**-**○**□**○○○	Insert	E18,L13
VGW○○○○**-**○**□□**○○○○	Insert	E18,L13
VGW○○○○**-□□**○○○	Insert	E18,L13
VGW○○○○**-□□□**○○○	Insert	E18,L13
VNGA○○○○○○**□**○○○○○	Insert	E14
VNGA○○○○○○**BQ**	Insert	E27
VNGA○○○○○○**P□** (CBN)	Insert	E27

Item number (alphabetical order)

(○ represents a number and □ represents a letter)

Reference		Page
VNGG○○○○○○(Carbide)	Insert	E38
VNMG○○○○○○(Carbide)	Insert	E38
VPET○○○○○○	Insert	E50
VPGT○○○○○○	Insert	E50
W		
W○○○	Parts	F31,etc.
WCBNR/L○○○○□○○	Holder	F11
WCLNR/L○○○○□○○	Holder	F9
WDHNR/L○○○○□○○	Holder	F15
WDJNR/L○○○○□○○	Holder	F13
WDNNR/L○○○○□○○	Holder	F15
WNGA○○○○○○□○○○○	Insert	E14
WNGG○○○○○○(Carbide)	Insert	E38
WNMG○○○○○○(Carbide)	Insert	E38
WNX○○-□○○□○○○○	Insert	N5
WS○○○	Parts	F31
WS0512	Parts	N6
W6226-GM	Parts	N6,N7
WSDNN○○○○□○○	Holder	F17
WSSNR/L○○○○□○○	Holder	F17
WTFNR/L○○○○□○○	Holder	F25
WTGNR/L○○○○□○○	Holder	F23
WVJNR/L○○○○□○○	Holder	F27
WVPNR/L○○○○□○○	Holder	F27
WVVNN○○○○□○○	Holder	F27
WWLNR/L○○○○□○○	Holder	F29
X		
XTM○○○-○○-○○□	Cutter	N9
XX2815-04	Parts	O16,etc.
Y		
Y-GTPAR/L○○	Holder	H17
Y-GTTR/L○○□	Holder	G61,H19
Y-SDJCR/L	Holder	G27
Y-SDNCN○○-○○□	Holder	G27
Y-SVJCR/L○○○○□○○□-OH	Holder	G29
Y-TBPR/L○○□	Holder	G53

keyword (alphabetical order)

keyword	Description	Page number
A		
A	Chipbreaker for Front turning	B11
A1	Chipbreaker for Front turning	B11
A2	Chipbreaker for Front turning	B11
ACH	Tools for sub-spindle machining	G18
AM3	Chipbreaker for Front turning	B8,G15
AM5	Chipbreaker for ID boring	B9
AMX	Chipbreaker for Front turning	B8,G15
AT	Chipbreaker for Front turning	B10,G17
AZ7	Chipbreaker for Front turning	B8
AZ8	Chipbreaker for Front turning	B9
B		
B1	Chipbreaker for ID boring	B11
B16	Grade (CBN)	C6
B2	Chipbreaker for ID boring	B11
B22	Grade (CBN)	C6
B23	Grade (CBN)	C7
B3	Chipbreaker for ID boring	B11
B30	Grade (CBN)	C7
B36	Grade (CBN)	C7
B40	Grade (CBN)	C7
B52	Grade (CBN)	C7
B5K	Grade (CBN)	C7
B6K	Grade (CBN)	C7
BIDEMICS	Grade (BIDEMICS)	C2,C3
BM	Chipbreaker for Back Turning	G48
C		
C	Chipbreaker for Front turning	B13
CERAMATIC	Solid Ceramic Endmill for HRSA/Cast iron materials	M2
CL	Chipbreaker for Front turning	B8,G15
CP1	Grade (CVD Coated Carbide)	D6
CP7	Grade (CVD Coated Carbide)	D6
CSV	Interchangeable tools	G94
CTPS	Cut-off Tools	G98
CUT DUO EXTRA	Cut-off Tools	G71
CUT DUO	Cut-off Tools	G70
CX	Chipbreaker for Cut-off	G69
D		
D1	Chipbreaker for Front turning	B13
DA	Chipbreaker for Front turning	B13
DM4	Grade (PVD Coated Carbide)	D4
DS Sleeves	Tools for sub-spindle machining	G103
DT4	Grade (PVD Coated Carbide)	D4
F		
F05	Chipbreaker for ID boring	B10,K23
F1	Chipbreaker for ID boring	B10,K23
FG	Chipbreaker for ID boring	B9,K23
G		
G	Chipbreaker for Front turning	B12
GT	Chipbreaker for Face Grooving	H42
GV	Chipbreaker for Grooving	H29
GW	Chipbreaker for Grooving	H29
GX	Chipbreaker for Grooving	H9
H		
HC1	Grade (Ceramic)	C9
HC2	Grade (Ceramic)	C9
HC6	Grade (Ceramic)	C9
HFC	Milling Cutters For Aluminum	N22
HPC	Milling Cutters For Aluminum	N32
HW2	Grade (Ceramic)	C9
J		
JP2	Grade (BIDEMICS)	C2
JX1	Grade (BIDEMICS)	C2
JX3	Grade (BIDEMICS)	C2
K		
K	Chipbreaker for Front turning	B10
KHG	Chipbreaker for Front turning	B10
KM1	Grade (Uncoated Carbide)	D6
M		
MOGUL BAR	High rigidity boring bars	K22
P		
PD1	Grade (PCD)	C5
PD2	Grade (PCD)	C5
Q		
QM3	Grade (PVD Coated Carbide)	D4
S		
S	Chipbreaker for Front turning	B10
SATURN DUO	Face turning/grooving tools	H12
SCRUM DUO BLADE	Face turning/grooving tools	H40
SCRUM DUO	Wide grooving tool for Swiss machines	H10
SFC	Milling Cutters For Aluminum	N26
SHAPER DUO	For Hexalobular, HEX and Square socket	J2
SHIFTED	Toolholders for extended guide-bushing	G102
S-MILL	Sharp carbide endmill for Swiss machine	M6
SP9	Grade (Ceramic)	C15
SPLASH	Keep edge cool, smooth chip evacuation	A45,K12

keyword (alphabetical order)

keyword	Description	Page number
ST4	Grade (PVD Coated Carbide)	D4
STICK DUO HYPER	Tools for for ID Tooling (bars with adjustable overhang mechanism)	K18
STICK DUO	Tools for for ID Tooling (Bars type)	K10
SX3	Grade (Ceramic)	C14
SX6	Grade (Ceramic)	C15
SX7	Grade (Ceramic)	C15
SX9	Grade (Ceramic)	C15
T		
TFX	Front turning for large DOC	G35
THREAD WHIRLING	Multi-lead thread machining capability	I 18
TM4	Grade (PVD Coated Carbide)	D5
U		
U	Chipbreaker for Front turning	B10
U1	Chipbreaker for Front turning	B10
U2	Chipbreaker for Front turning	B13
UC1	Grade (Diamond Coated Carbide)	C4
UHG	Chipbreaker for Front turning	B10
UL	Chipbreaker for Front turning	B12,G16
V		
VM1	Grade (PVD Coated Carbide)	D5
W		
WA1	Grade (Ceramic)	C17
WA5	Grade (Ceramic)	C16
Y		
YL	Chipbreaker for Front turning	B8,G15
Y-axis	Chip controlled by gravity	G100,G101
Z		
Z5	Chipbreaker for Front turning	B12
ZC7	Grade (Ceramic)	C9
ZM3	Grade (PVD Coated Carbide)	D5
ZP	Chipbreaker for Front turning	B12
Others		
CLR···/RLR···/LLR···	Wrenches	O16
Multi Clamp holders	Toolholders for General Turning	F6
LR-S.../LRIS···	Clamp Screws	O17
Coolant through holders	SPLASH Series	A45
Adiust centerline height	DS-ACH Toolholders	G18

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