

NTK CUTTING TOOLS

GENERAL CATALOG 6200



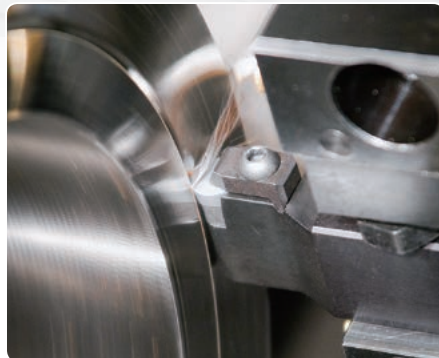
SHARP PEOPLE
SHARP IDEAS
SHARP TOOLS



NTKCUTTINGTOOLS.com
youtube.com/NTKCUTTINGTOOLS

NTK TECHNOLOGY

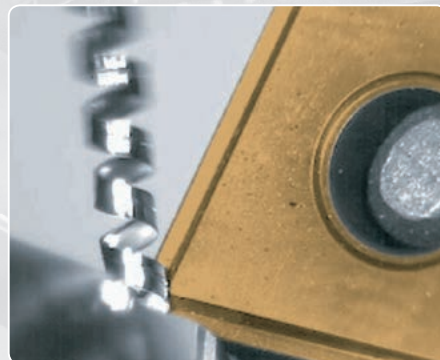
HIGH TEMPERATURE ALLOYS



GRAY/DUCTILE CAST IRON



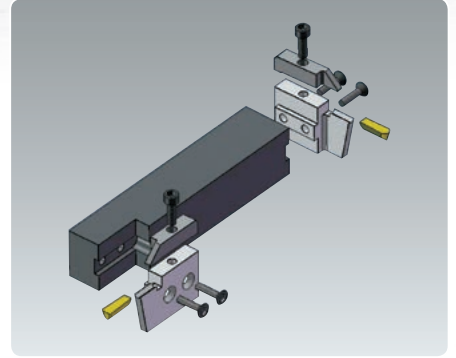
HARDENED STEELS



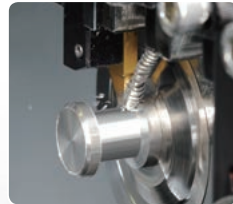
MILL ROLLS



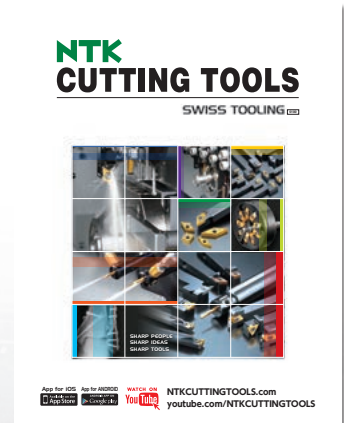
GROOVING



TOOLING FOR SWISS TYPE LATHES

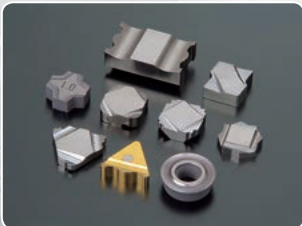


NTK Swiss Catalog 6100



Downloadable version online /
Hard copy upon request

BEARING PRODUCTION



STEEL MACHINING



HIGH SPEED MACHINING OF ALUMINUM



Guidelines for Catalog

- This catalog lists products as of September 2015.
- Please note that specifications of the products listed in this catalog may be changed without notice due to continuous research & development and product improvements.
- This catalog contains the major features and relevant information on all of our products. Please contact our sales representatives or dealers if more detailed information is needed.
- Stock Status Symbols
 - : Standard stock available for Right-Hand, Left-Hand and neutral products
 - R : Stock available only in Right-Hand
 - L : Stock available only in Left-Hand
 - : 1-2 weeks delivery
 - Ⓜ : 1-2 weeks delivery only in Right-Hand
 - Ⓛ : 1-2 weeks delivery only in Left-Hand
 - : While stock lasts
 - No symbol : Not stocked
- Please note that this catalog was prepared based on products intended mainly for sale in North and South America.

■ Standard

1) Holder Type	Package quantity	Notes
Turning holder	1 pc/case	
Milling cutter	1 pc/case	
2) Spare parts	Package quantity	Notes
Screw	10 pcs/case	Clamp screw, Clamp bolt, Double screw, Button screw
Seat	10 pcs/case	Shim seat
Clamp	10 pcs/case	Clamp
Wrench and cutter parts (such as cartridges)	5 pcs/case	Wrench, bit, cutter product
Handle, Hose	1 pc/case	Handle with magnet, handle and bit
3) Insert Type	Package quantity	Notes
BIDEMICS (Brazed)	1 pc/case	JP2
CBN	1 pc/case	B23, B30, B36, B40, B52, B5K, B6K, B99
PCD	1 pc/case	PD 1, PD2
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 dealer or our sales office.

New Product Information		A 1 to A 8
NEW PRODUCTS		
"JX1" New grade for Super Alloys "BIDEMICS"	A2	Application Introduction
"JP2" New grade for Super Alloys "BIDEMICS"	A3	B 1 to B 12
"NTK CBN Grades"	A4	Tool Materials / Selection Guide
"DM4 / DT4" New PVD coated carbide	A5	C 1 to C 16
"PD2" Super micro grain PCD	A5	Grade Introduction
"Groove DUO" Modular system for both OD and Face grooving	A6	D 1 to D47
"New Products for Swiss Type Lathes"	A8	Insert Item List
NEW PRODUCTS FOR SWISS-TYPE LATHES		
"SPLASH Series" Coolant through toolholders	N2	General Turning Toolholders
"TBP/TBPA-BM" 3D Chipbreaker for Back turning	N6	F 1 to F 20
"GTMH-GX" 3D Chipbreaker for Grooving/Side turning	N7	ID Tooling
"Front Turning Chipbreakers"	N8	G 1 to G 6
"SHAPER DUO" New concept of Hex/Square socket machining tool	N9	Grooving / Side Turning
"VBGT Tooling" Designed for Swiss machines	N10	H 1 to H23
"Groove DUO" Sharper grooving tool for Swiss machines	N11	Milling Cutter
		I 1 to I 24
		For Swiss-type Lathes
		N 1 to X 5
		Information
		Y 1 to Y 30
		Index
		Z 1 to Z 6



JX1

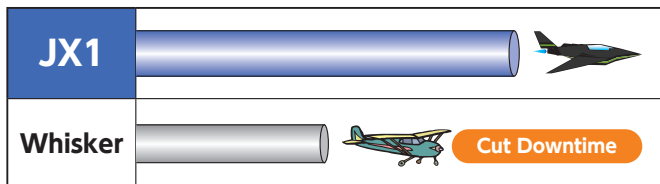
Features

Patents Pending

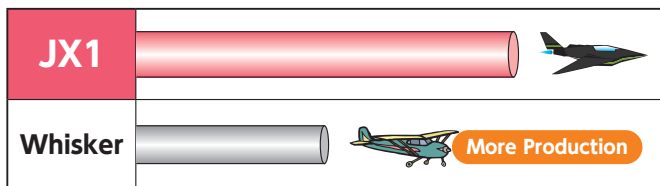
- Significantly extended tool life compared to whisker ceramics
- Double cutting speed potential compared to whisker ceramics
- Superior surface finish compared to whisker ceramics
- Applicable to powder-metallurgical heat resistant alloys

Increase Productivity vs. Whisker Ceramics

① Significantly extended tool life at same speed



② Double speed capability



JP2

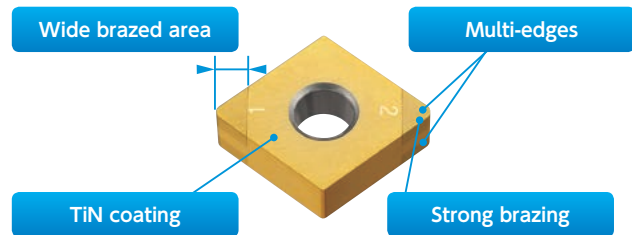
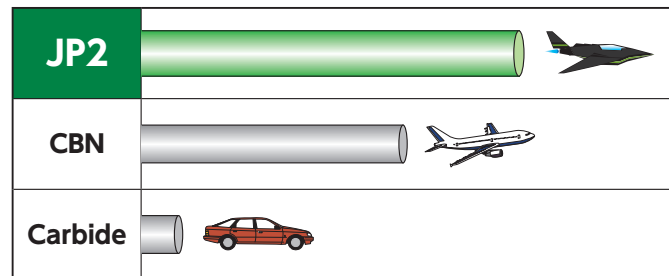
Features

Patents Pending

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

Increase Productivity vs. Carbide

① 10 to 15 times higher speed capability



Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
JX1	Heat Resistant Alloy	Turning	Rough no scale	600- 1600	.005-.011	.040-.100		●
			Semi finishing	600- 1600	.004-.010	.020-.080		●
JP2	Heat Resistant Alloy	Turning	Finishing	600- 1700	.002-.007	.005-.030		●

1 Longer tool life

JX1'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.

Turbine shaft (Inco718 Pre-machined)		
	Comp. whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	800	←
Feed (IPR)	.008	←
Depth of cut (inch)	.080	←
	WET	←
NTK : JX1	10 min	
Competitor's whisker ceramic	3 min	

2 Higher speeds

JX1'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 needs for additional equipment to meet increasing demands.

Turbine disk (Inco718 rough)		
	Comp. whisker	JX1
Shape	RPGX45	←
Cutting speed (SFM)	650	1300
Feed (IPR)	.006	←
Depth of cut (inch)	.080	←
	WET	←
NTK : JX1	120 cc/min	
Competitor's whisker ceramic	60 cc/min	

JX1

Whisker Ceramic



Chips break easily at higher cutting speed vs typically continuous chips of Super Alloy materials. This makes more efficient chip removal.

3 Works well on wide range of High Temperature Alloys

JX1's Unique Physical Properties enables machining of newer compositions of difficult to machine High Nickel Alloys, High Nickel/Cobalt alloys, or powdered metallurgy alloys that are becoming more common in the market .

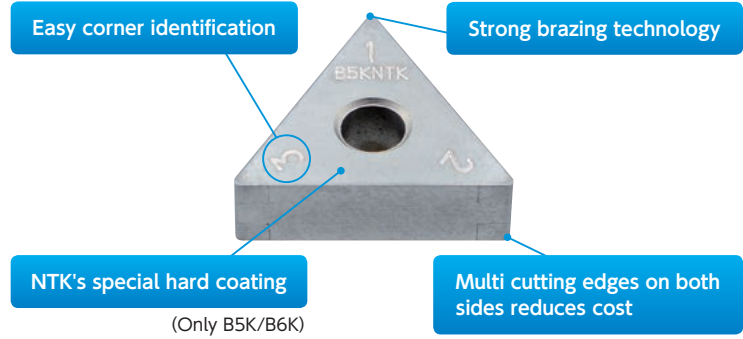
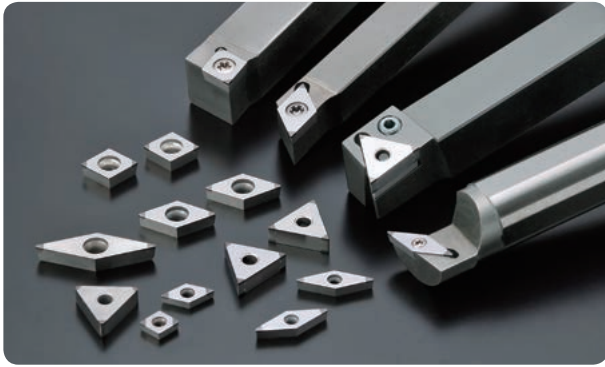
Turbine case (718Plus semi finish)		
	Comp. coated whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	800	←
Feed (IPR)	.010	←
Depth of cut (inch)	.020	←
	WET	←
NTK : JX1	3 pass	
Competitor's whisker ceramic	1 pass	

4 Superior Surface Finish

JP2's Outstanding Wear Resistance and Notching Resistance results in workpiece surface finishes consistently superior to either CBN or Carbide

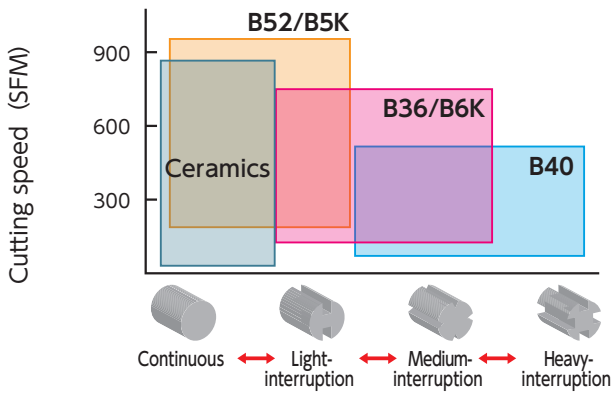
	JP2	CBN	Carbide	
Machined surface				
Roughness				
	Ra	0.64 μm	1.18 μm	2.75 μm
	Rz	3.36 μm	5.56 μm	9.64 μm
Cutting speed	800 SFM	←	120 SFM	
Feed rate	.006 IPR	←	←	
Cycle time	3.3 min	←	14.7 min	
Removed chip	48 cc	←	←	

CBN series

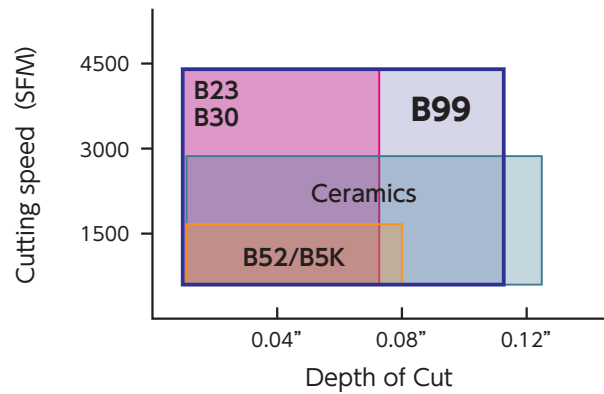


Grade	Style	Coating	Main Binder	CBN Volume	Applications				
					Cast Iron	Ductile Cast Iron	Hardened Material	Mill Rolls	Sintered Alloy
NEW B99	Solid	—	AlN	93%	●	○		●	
B23	Brazed	—	Ti	90%	●				●
B30	Brazed	—	Ti	95%	●				●
B36	Brazed	—	TiCN	65%			●		
NEW B6K	Brazed	TiCN	TiCN	65%			●		
B40	Brazed	—	TiN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

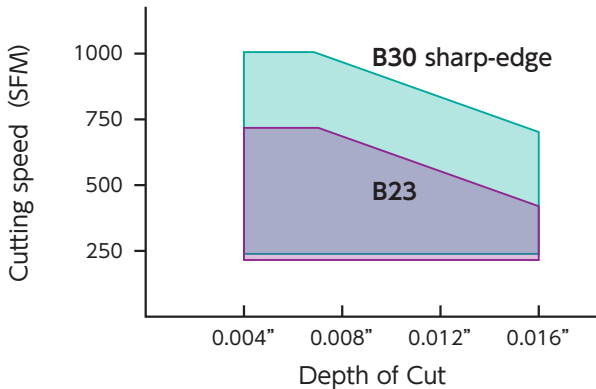
Hardened Material Applications



Gray / Ductile Cast Iron Applications



Sintered Alloy Applications

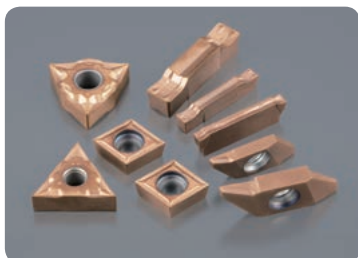


NEW

DM4 / DT4 New PVD coated carbide

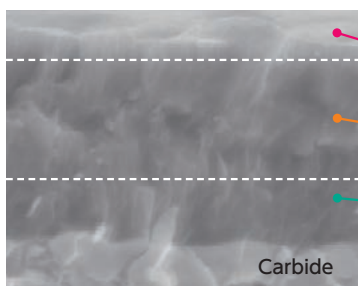


DM4



Features

- Best grades for Titanium alloys
- Excellent oxidation resistance enables high temperature machining
- Triple coating layers provide superior tool life and consistency

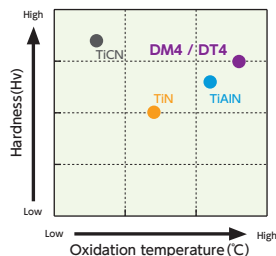


Carbide

Adhesion resistant layer (TiN)

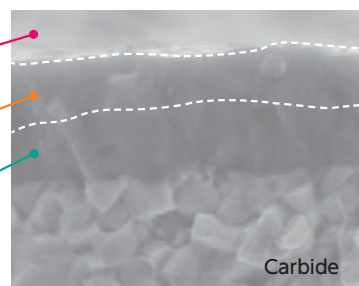
Wear resistant layer (TiCN)

Oxidation resistant layer (TiAlN)



- For Titanium alloys
- For hard to cut materials
- For high temperature alloys

DT4

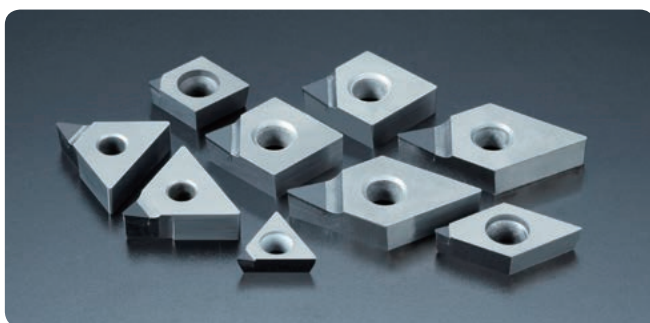


Carbide

→D44

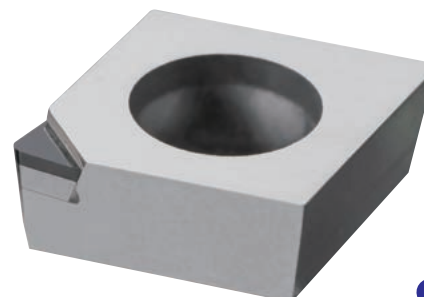
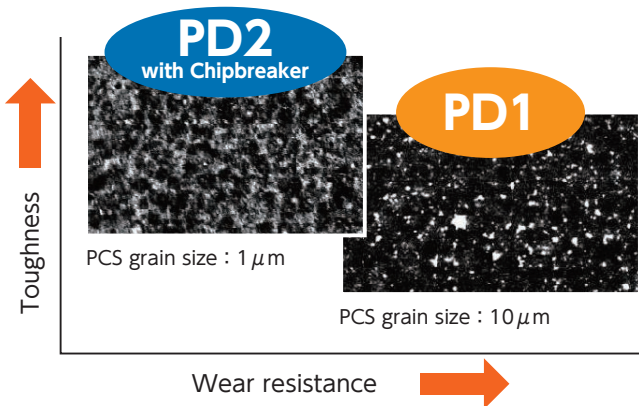
NEW

PD2 Super micro grain PCD



Features

- Super micro grain PCD, maintains sharp cutting edges and increases chipping resistance
- Good chip control due to the high rake angle on the insert



→D34

New Products

NEW

Groove DUO



New Products

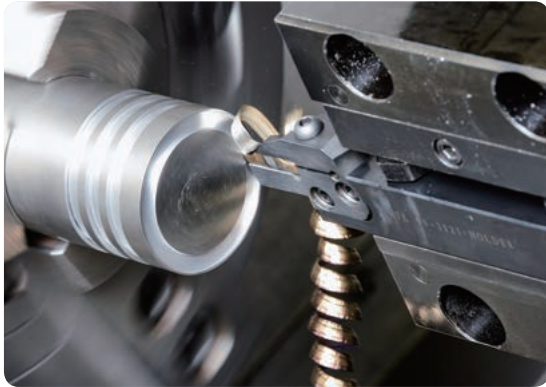


Features

- Grooving and side turning tools with highly rigid design
- 3D design chipbreakers result in less tool pressure and excellent chip control
- Modular system provides more flexibility

Multi purpose

Face Grooving



Side-turning

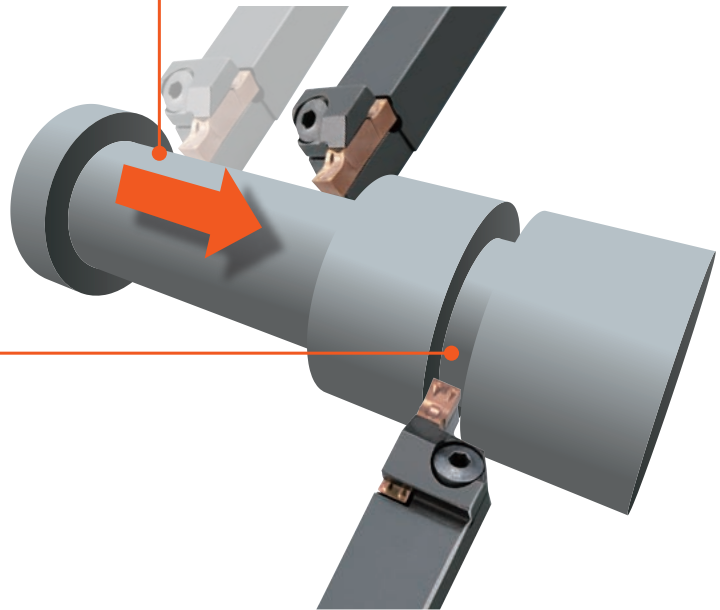
	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : 4135, 500SFM, .004IPR, .040DOC

Grooving

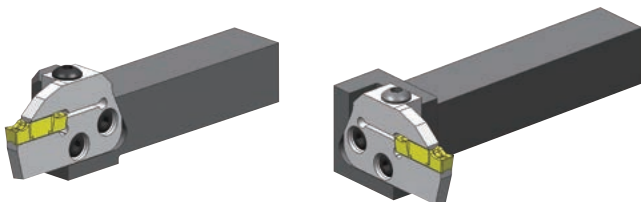
	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : 4135, 500SFM, .004IPR, .275DOC



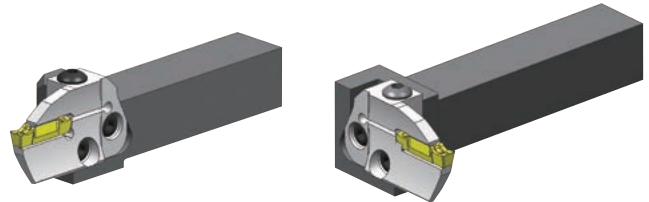
Modular system (To be released in 2016)

For OD Grooving



For Face Grooving

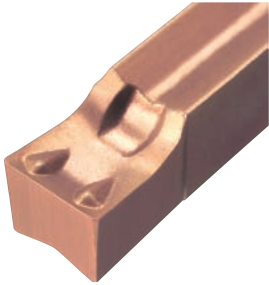
From ϕ 1.14" min. diameter



Chipbreaker

For Grooving / Side-turning

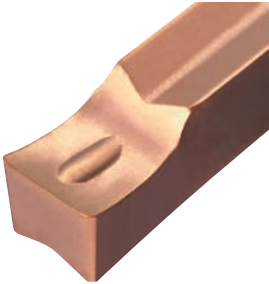
GW



- Excellent chip control
- Good sharpness
- Side turning capability

Less tool pressure

GV



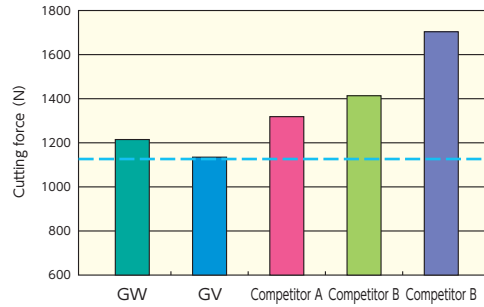
- Superior sharp edge

Chip condition (Grooving)

[Cutting condition]
260 SFM .003 IPR .197" width

	GW	GV
304SS		
303SS		
4135		

Tool pressure comparison when grooving



Recommended cutting conditions

Application	Work material	Cutting speed (SFM)				Feed rate (IPR)			Depth of cut (inch)
		160	330	500	650	.002	.004	.006	
Grooving 	Free cutting steels	[Red bar]				[Red bar]			~.138
	Carbon steels, Alloy steels	[Red bar]				[Red bar]			
	Stainless steel	[Red bar]				[Red bar]			
Side-turning 	Free cutting steels	[Red bar]				[Red bar]			
	Carbon steels, Alloy steels	[Red bar]				[Red bar]			
	Stainless steel	[Red bar]				[Red bar]			

Inserts → H15 Holders → H12 • H16

New Products for Swiss Type Lathes

Swiss tooling starts in Section N

New Products



Coolant through toolholders

NEW

SPLASH Series

→N2 · O3

WATCH ON
YouTube



Coolant through boring sleeves

NEW

STICK DUO SPLASH

→N4 · O3

WATCH ON
YouTube



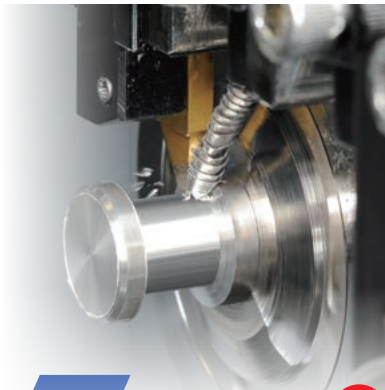
For HEX / Square socket

NEW

SHAPER DUO

→N9 · W1

WATCH ON
YouTube



New molded chipbreaker for TBP/TBPA

NEW

TBP / TBPA-BM

→N6

WATCH ON
YouTube



New molded chipbreaker for GTM32 grooving

NEW

GTMH-GX

→N7

WATCH ON
YouTube



Developed for Swiss machines

NEW

VBGT Tools

→N10



Perfect combination of sharpness and chip control

NEW

YL Chipbreaker

→N8

WATCH ON
YouTube



Very sharp edge with good chip control

→N8

WATCH ON
YouTube

CL Chipbreaker



For light depth of cut

→N8

WATCH ON
YouTube

AMX Chipbreaker

B



Application Introduction

- **Machining High Temperature Alloys with BIDE MICS and Ceramics ... B2**
- **Machining Gray / Ductile Cast Iron with Ceramics B4**
- **Machining Mill Rolls with Ceramics ... B6**
- **Machining Hardened Materials with Ceramics B7**
- **Machining Poly-V Pulley Profiles... B8**
- **Tools for Bearing Industry / Tube Scarfing Tools / Tooth Chamfering Tools B9**
- **Tooling for Swiss Type Lathes B10**
- **High Speed Milling of Aluminum ...B12**

Solutions for the Aerospace Industry

Application Introduction

JX1 BIDE MICS

NEW

→D2 · D4



■ Features

- Significantly extended tool life compared to whisker ceramics
- Double cutting speed potential compared to whisker ceramics
- Superior surface finish compared to whisker ceramics
- Applicable to powder-metallurgical heat resistant alloys

■ Recommended Work Materials

- Inco 718
- MAR-M247
- 718 Plus
- Rene

■ Recommended Applications

- Semi-Finish
- Profiling

	JX1	WA1
Notching	◎	
Flank Wear	◎	◎
Toughness	○	
Heat Shock		

■ Profiling of Inco 718



Competitor's Whisker Ceramic

Tool Life : 3min



JX1

Tool Life : 10min



Turbine Shaft

RNG45, 8005FM, 008IPR, 080DOC, WET, Inco 718 (pre-machined)



SX5 SiAlON Ceramic →D27

■ Features

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

■ Recommended Work Materials

- Waspaloy
- 718Plus
- Udimet 720
- Rene 41

■ Recommended Applications

- Rough Turning with scale and interruptions

SX9 SiAlON Ceramic →D27



■ Features

- Tougher when compared to whisker ceramics
- Extreme toughness makes higher feed and heavier DOC machining possible
- Best grade for machining Inco 718 with scale

■ Recommended Work Materials

- Inco 718
- Inco 713
- Inco 706

■ Recommended Applications

- Rough turning with scale
- Milling

Application Guidance →D6
Milling Guidance →I 4

Turning Guidance →D8
Grooving Guidance →H3

WA1 Whisker-Reinforced Ceramic →D23

■ Features

- Versatile grade for machining of high temperature alloys
- Better flank wear resistance compared to SiAlON ceramics
- Better notching resistance compared to competitor's whisker ceramics

■ Recommended Work Materials

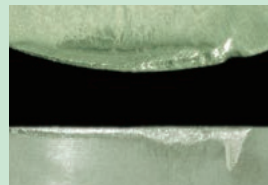
- Inco 718
- Inco 625

■ Recommended Applications

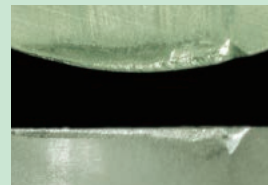
- Semi-Finish
- Profiling
- Grooving

SX7	SX9	SX5
◎	◎	○
○		
	◎	○
◎	◎	

■ Profiling of Inco 718



Competitor's Whisker Ceramic



WA1



Turbine Case

Tool Life : 5.0min
RPGX45, 800SFM, .006IPR., .040", Wet
Inco 718 (pre-machined)



SX7 SiAlON Ceramic →D26



■ Features

- Can run at same cutting condition vs whisker ceramics
- Better notching resistance compared to whisker ceramics
- No need to program ramping when compared to whisker ceramics
- Better flank wear resistance compared to competitor's SiAlON ceramics
- Best grade for pre-machined Waspaloy
- Best grade for high-speed milling

■ Recommended Work Materials

- Inco 718
- Inco 625
- Waspaloy
- Udimet 720

■ Recommended Applications

- Semi-Finish
- Profiling
- Milling
- Grooving

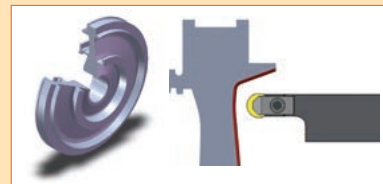
■ Profiling of Inco 718



Competitor's Whisker Ceramic



SX7



Turbine Disk

Tool Life : 4.5min
RCGX45, 800SFM, .006IPR., .040", Wet
Inco 718 (pre-machined)

Machining Gray / Ductile Cast Iron with Ceramics

High Speed Machining of Cast Irons

SX6

Silicon Nitride Ceramic

→D24

■ Features

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

■ Recommended Applications

- Gray cast iron – Rough – Turning and milling

■ Recommended Cutting Conditions

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

	SX6
Notching	◎
Flank Wear	
Toughness	○
Heat Shock	◎

HC1, HW2

Alumina Oxide Ceramic

→D18·D19

■ Features

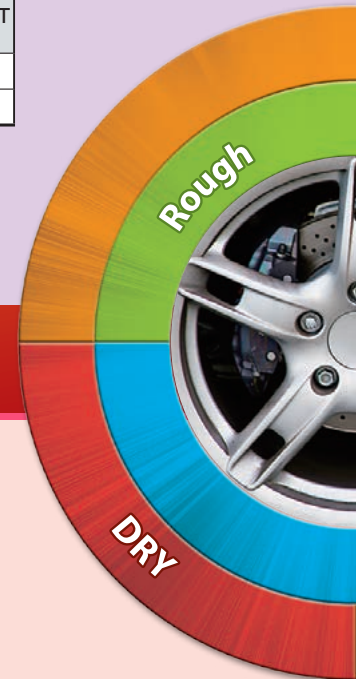
- 1st choice for finishing gray cast iron with no coolant
- Excellent wear resistance makes high speed finishing possible

■ Recommended Applications

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

■ Recommended Cutting Conditions

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



SP9

CVD Coated Silicon Nitride Ceramic

→D25



SP9
○
○

■ Features

- Extremely tough – Tough enough to rough cast iron with T0420 (.004" X20) edge preparation
- Small edge preparation – Low tool pressure for stable precision machining
- SP9's toughness makes higher feed rates possible
- Dramatically reduced flank wear due to CVD coating

■ Recommended Applications

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

■ Recommended Cutting Conditions

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



HC2, HC6

TiC Ceramic →D20·D21

WA1

Whisker Reinforced Ceramic →D23

■ Features

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

■ Recommended Applications

- Gray cast iron – Finish – Turning (HC2 • HC6 • WA1)
- Ductile cast iron – Finish – Turning (HC6)

■ Recommended Cutting Conditions

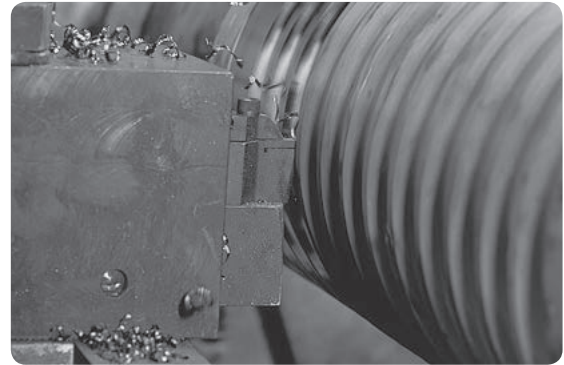
Work material	Purpose	Grade	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Gray cast iron	Turning	HC2/HC6	1200–2100	.004–.016	-.060	●	●
		WA1	1200–2100	.004–.016	-.120	●	●
Ductile cast iron	Turning	HC6	600–1500	.004–.012	-.040	○	●

Machining Mill Rolls with Ceramics

Improve Productivity

Features

- Several ceramic and CBN grades for all mill-roll turning applications
- In addition to standard grade "HC2", NTK offers "HC5" and "HC7" for higher productivity



Recommended Cutting Conditions

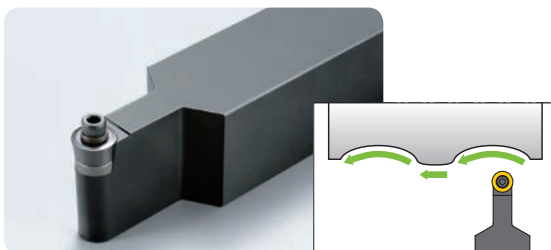
Material	Choice		Grade	Cutting speed (SFM)			Feed (IPR)	Depth of cut (inch)	DRY	WET
				Shore Hardness Scale						
				55-65	65-72	72-				
Steel ex. D2	1st	HC7	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	2nd	HC5	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	3rd	HC2	350-450	100%	80%	60%	.004-.012	.025-.075	●	
Chilled Cast Iron	1st	HC5	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	2nd	HC7	450-600	100%	80%	60%	.004-.012	.025-.075	●	
	3rd	HC2	350-450	100%	80%	60%	.004-.012	.025-.075	●	
Ductile Cast iron	1st	HC5	300-600	100%	80%	60%	.004-.012	.025-.075	●	
	2nd	HC6	300-600	100%	80%	60%	.004-.012	.025-.075	●	
Carbide	1st	B99	100-200				.004-.012	.010	●	
	2nd	WA1	100-200				.004-.012	.010	●	
CPM Rolls ex. Powdered Metal	1st	ZC4	400-500				.004-.012	.025-.075	●	
	2nd	HC7	400-500				.004-.012	.025-.075	●	

Key Points

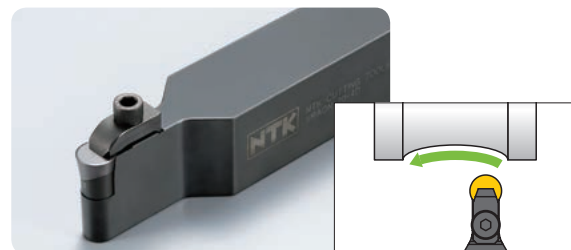
- Hardness of the roll is an important factor. As the roll gets harder, reduce SFM.
- RCGX style inserts are the preferred insert style for rigidity and cost savings.
- DOC will depend upon the amount of material to remove. When making multiple passes with one edge, vary your DOC to move the wear on the insert edge and reduce notching wear.
- If you encounter chatter, increase your feed rate. Variable RPM controllers are helpful to reduce harmonics.

HOLDERS

■ HRC D → F20



■ VRAON → F19



Machining Hardened Materials with Ceramics

Dramatically Reduce Costs

Features

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



AG-Chipbreaker

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

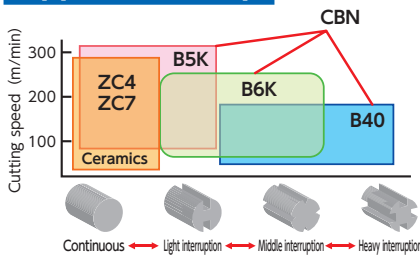
With AG-chipbreaker



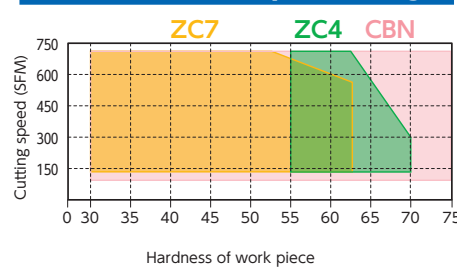
Without AG-chipbreaker



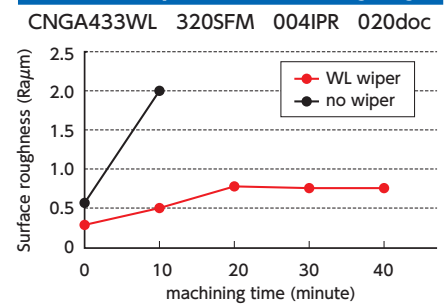
Application Map



Recommended Speed Range



Effect of Wiper Flat on Cutting Edge



Recommended Cutting Conditions

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

→D22

Recommended Depth of Cut and Feed Rate

Recommended depth of cut and feed rate by corner R dimension

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

※for 30RMS finish

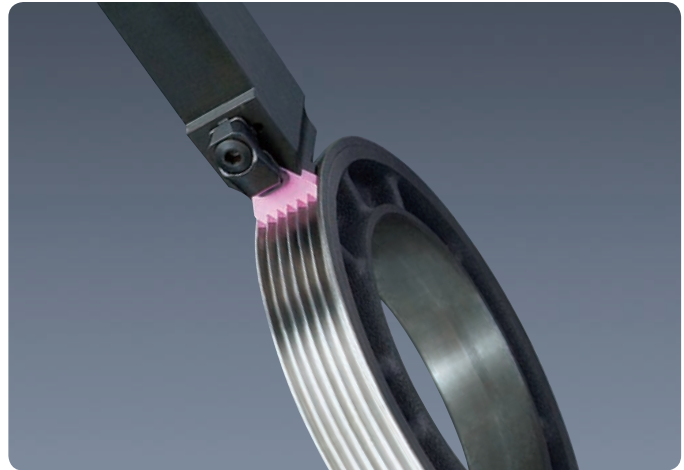
Troubleshooting for Hard Turning with Ceramic Inserts

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

Machining Poly-V Pulley Profiles

Grooving With Ceramics

Application Introduction

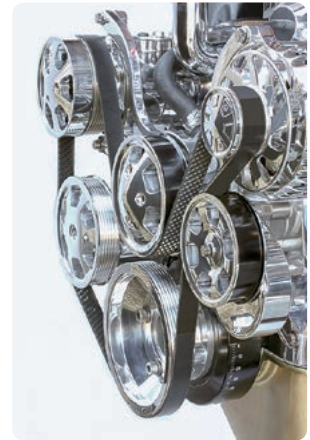


Features

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

Recommended Cutting Conditions

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



3V

21 HP needed

4V

28 HP needed

5V

35 HP needed

6V

42 HP needed

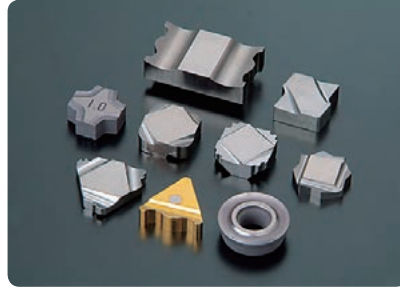
→H19

Tools for Bearing Industry

Features

- **NTK offers both Cermet and Carbide form tools for the Bearing industry**

⇒Contact NTK for details



Application
Introduction

Tube Scarfing Tools

Features

- **NTK offers standard Ceramic inserts for tube scarfing applications**

⇒Contact NTK for details



Tooth Chamfering Tools

Features

- **NTK offers indexable end-mills for chamfering teeth in gears**

⇒Contact NTK for details



Tooling for Swiss Type Lathes

Application Introduction



Coolant through toolholders

NEW

SPLASH Series

→N2 · O3

WATCH ON YouTube



Coolant through boring sleeves

NEW

STICK DUO SPLASH

→N4 · O3

WATCH ON YouTube



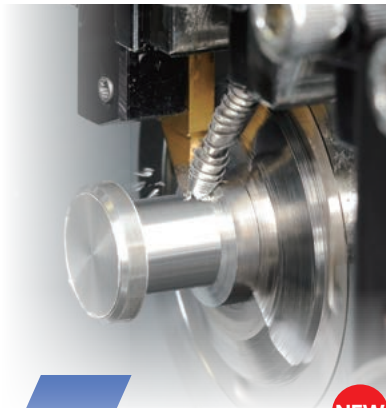
For HEX / Square socket

NEW

SHAPER DUO

→N9 · W1

WATCH ON YouTube



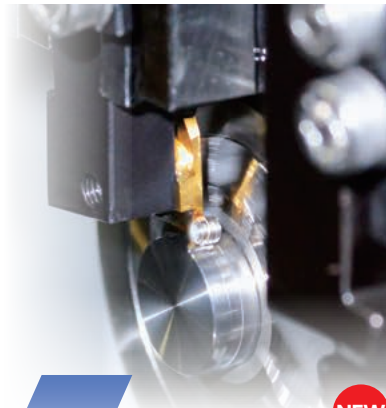
New molded chipbreaker for TBP/TBPA

NEW

TBP / TBPA-BM

→N6

WATCH ON YouTube



New molded chipbreaker for GTM32 grooving

NEW

GTMH-GX

→N7

WATCH ON YouTube



Developed for Swiss machines

NEW

VBGT Tools

→N10



Perfect combination of sharpness and chip control

NEW

YL Chipbreaker

→N8

WATCH ON YouTube



Very sharp edge with good chip control

→N8

WATCH ON YouTube

CL Chipbreaker



For light depth of cut

→N8

WATCH ON YouTube

AMX Chipbreaker

Swiss tooling starts in section N



A great solution for chip control problems

Y-axis Toolholders

→O11 [WATCH ON YouTube](#)



High performance thread forming

THREAD WHIRLING

→O2 · O16 [WATCH ON YouTube](#)

Application Introduction



Best for up to ϕ .200 diameter material

CSV Series

→O27



Adjustable centerline height

DS-ACH

→O17 [WATCH ON YouTube](#)



High rigidity boring bar

Mogul Bar

→O16 [WATCH ON YouTube](#)



6 corner insert for swiss

UL Chipbreaker

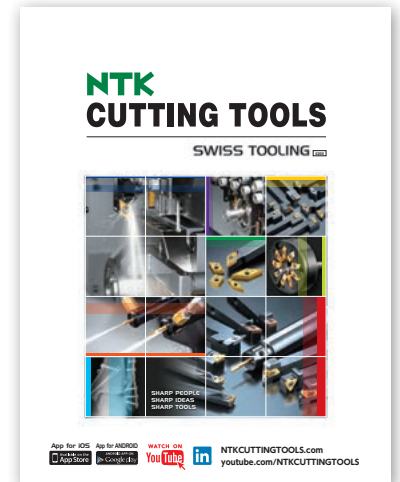
→O34 [WATCH ON YouTube](#)



A must for extended guide bushing users

Shifted Toolholders

→O35 [WATCH ON YouTube](#)



Swiss tooling starts in section N

High Speed Milling of Aluminum

HPC High performance cutter

Features

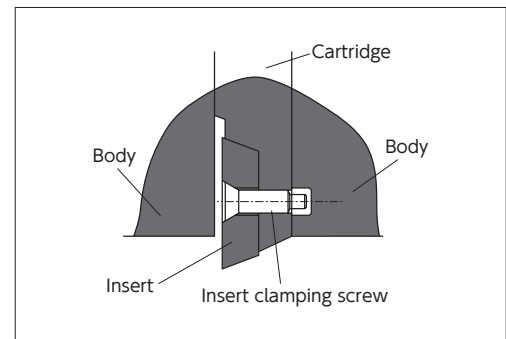
- **Wide cutter diameter range**
Ranging from $\phi.79"$ to $\phi3.94"$
- **No presetting required**
The fixed-type HPC can be indexed simply by replacing inserts
※The adjustable HPC allows adjustment of cutter variance to $5\mu\text{m}$ or less
- **High rigidity**
High-reliability due to steel cutter body
- **Max. speed 18000 RPM**



Safety design

Prevents insert movement due to centrifugal force

- **HPC clamping system**
The HPC insert is protected from centrifugal movement by combining the body and cartridge with an insert clamp screw



Recommended Cutting Conditions

Work material	Grade	Cutting speed (SFM)	Feed (IPT)	Depth of cut (inch)	DRY	WET
Aluminum	PD1	1000-20000	.002-.008	~200		●
	TM1	500-8000	.003-.008	~200	○	●

→ I 22

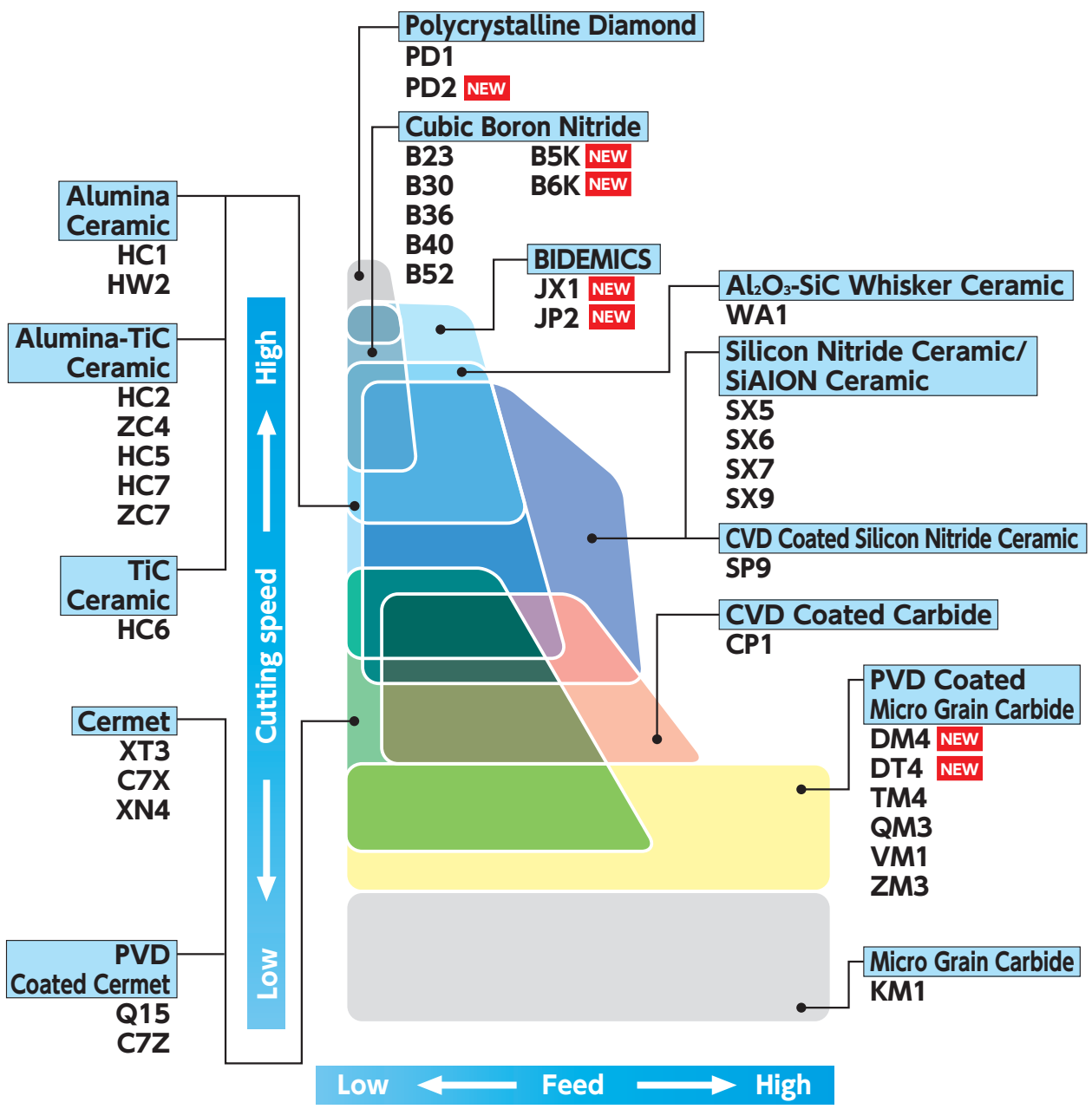
C



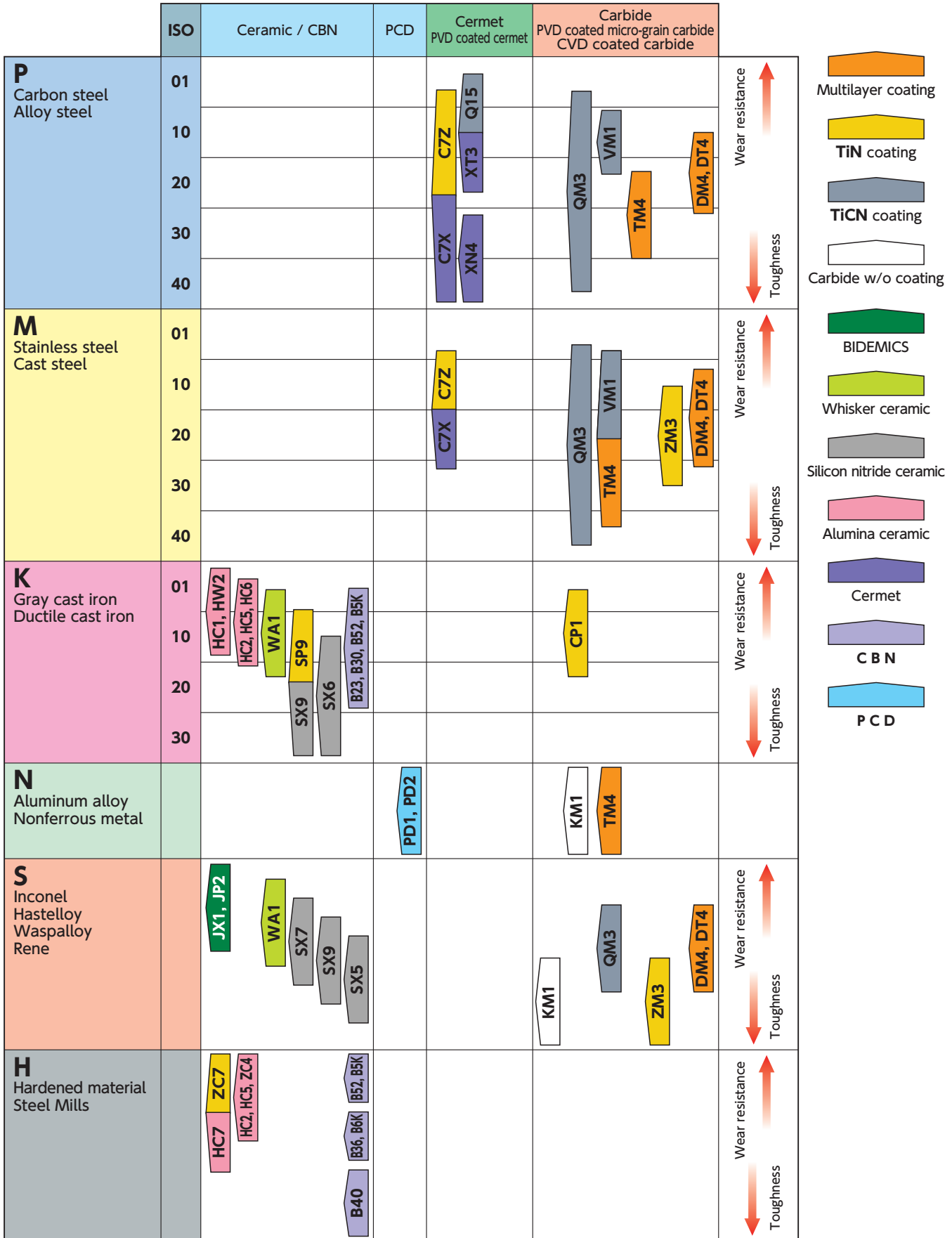
Tool Materials / Selection Guide

- **Application Range of NTK Insert Grades C2**
- **Recommended Types of Materials and Applications : BIDE MICS, Ceramics and CBN..... C4**
- **Recommended Types of Materials and Applications : Cermet and Carbide C6**
- **ANSI / ISO Insert Nomenclature ... C8**
- **Chipbreakers for Positive Inserts ... C10**
- **Chipbreakers for Negative Inserts C14**

Application Range of NTK Insert Grades


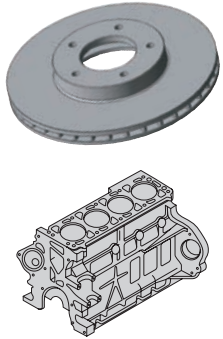






Insert grade recommendation by work material type



Tool Materials / Selection Guide

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

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

Tool Materials / Selection Guide



• Starting speed based on using CNGA432 insert

Tool Materials / Selection Guide

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

Work material		Tool Grade	Application		Coolant					
			Roughing	Semi-finishing	Continuous	Light interruption	Interruption	Dry	Wet	
400 series Stainless	Hardness (HB) 160-350	Cermet	C7X/C7Z	●						●
		Cermet	C7X/C7Z/XT3		●					●
		Carbide	QM3/DM4/DT4	●	●					●
	Milling	Cermet	C7X/C7Z	●	●				●	
300 series Stainless	Hardness (HB) 200-350	Cermet	C7X/C7Z	●						●
		Cermet	C7X/C7Z/XT3		●					●
		Carbide	QM3/DM4/DT4	●	●					●
	Milling	Cermet	C7X/C7Z	●	●				●	
Precipitation Hardness (17-4PH etc)	Hardness (HB) 175-350	Cermet	C7X/C7Z		●					●
		Carbide	QM3/DM4/DT4	●	●					●
	Milling	Cermet	C7X/C7Z	●	●				●	
Carbon Steels Alloy Steels	Hardness (HB) 130-300	Cermet	C7X/C7Z	●						●
		Cermet	C7X/C7Z/XT3		●					●
		Carbide	QM3/DM4/DT4	●	●					●
	300-400	Cermet	C7X/C7Z	●						●
		Cermet	C7X/C7Z/XT3		●					●
		Carbide	QM3/DM4/DT4	●	●					●
	Milling	Cermet	C7X/C7Z	●	●				●	
Tool Steels	Hardness (HRC) -45 Turning	Cermet	C7X/C7Z/XT3		●					●
		Carbide	QM3/DM4/DT4	●	●					●
	Milling	Cermet	C7X/C7Z		●				●	

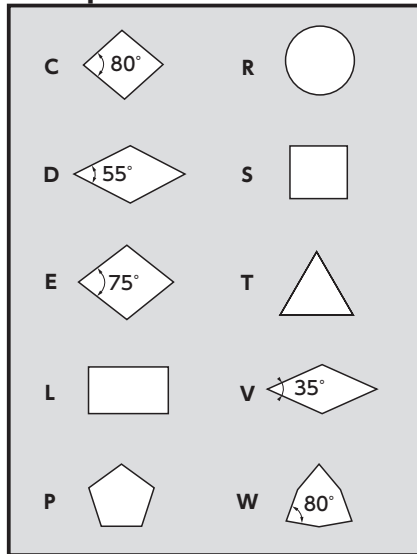
Cutting speed (SFM)													Feed rate (IPR / IPT)							Depth of cut (inch)				
100	200	300	400	500	600	700	800	900	1000	1100	1200	.002	.004	.006	.008	.010	.012	.014	.02	.04	.08	.12	.16	
Light Green													Light Green							Light Green				
Light Green													Light Green							Light Green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

• Starting speed based on using CN..432 insert

Tool Materials / Selection Guide

ANSI / ISO Insert Nomenclature

1 Shape



3 Tolerance Class

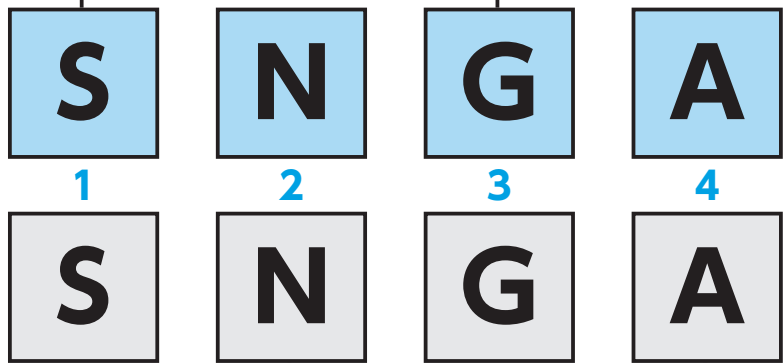
Diagram showing dimensions d , m , and s for an insert.

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

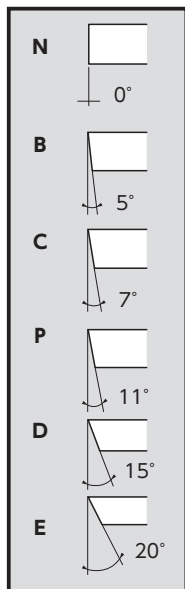
C S T	M tolerance	
	Inscribed Circle	
	d (inch)	m (inch)
	1/4"	±.002 ±.003
	3/8"	±.002 ±.003
	1/2"	±.003 ±.005
	5/8"	±.004 ±.006
	3/4"	±.004 ±.006
	1"	±.005 ±.007

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

Inch



2 Clearances



4 Type

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

6 Thickness

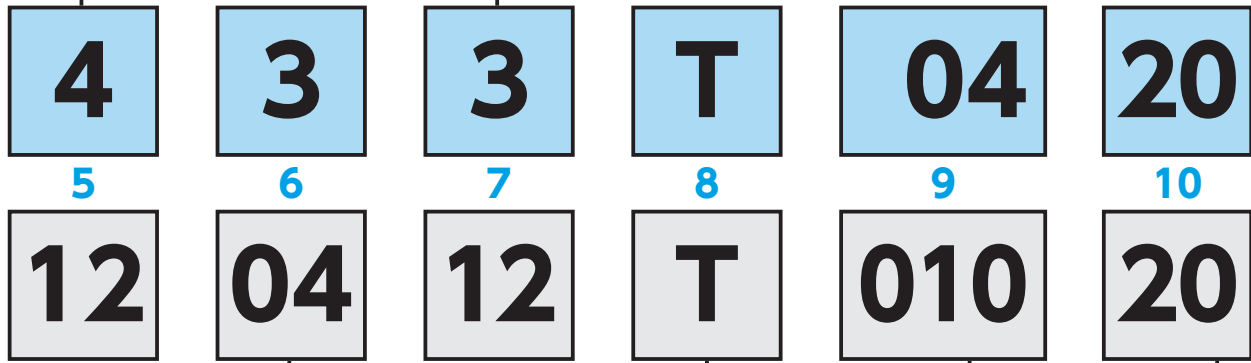
Thickness S (inch)	Inch	Metric
3/32"	1.5	02
1/8"	2	03
5/32"	2.5	T3
3/16"	3	04
1/4"	4	06
5/16"	5	07
3/8"	6	09
1/2"	8	12

5 Symbol for Insert Size

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

7 Corner Radius

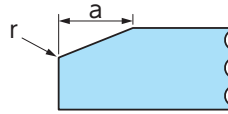
Corner Radius	Inch	Metric	
	1/64"	1	04
	1/32"	2	08
	3/64"	3	12
	1/16"	4	16
	5/64"	5	20
	3/32"	6	24
	1/8"	8	32



8 Edge Condition

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

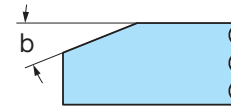
9 Negative Land Width



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

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

10 Negative Land Angle

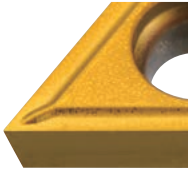
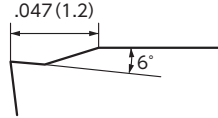
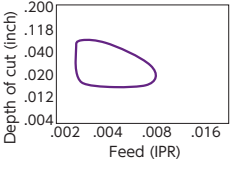

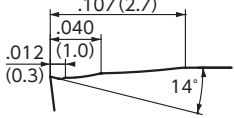
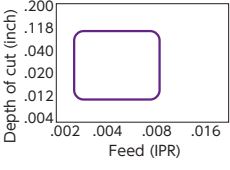

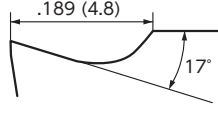
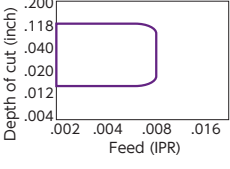

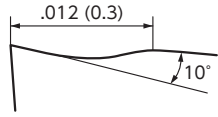
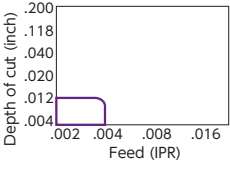

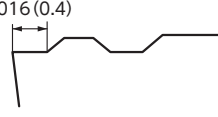
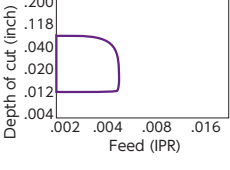

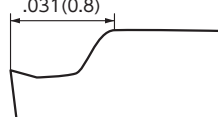
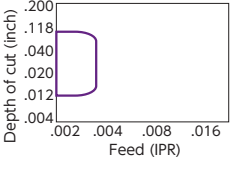


Description	b
10	10°
15	15°
20	20°
25	25°
30	30°

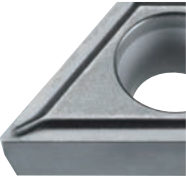
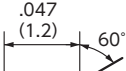
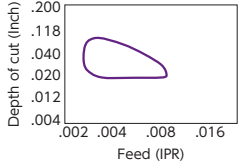

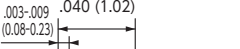
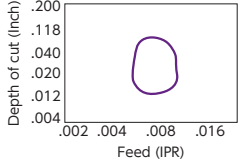

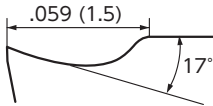
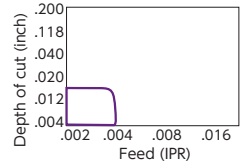
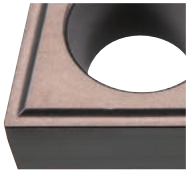
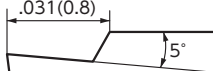
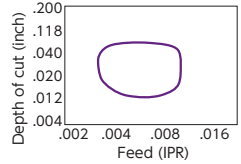
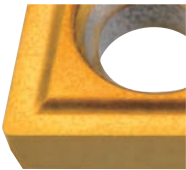
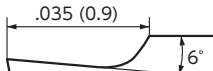
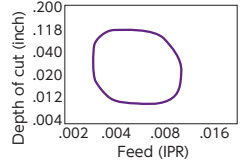

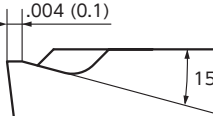
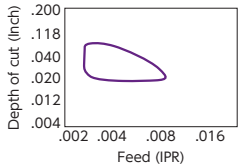
Note: K, J, P & Q show its primary land angle

Chipbreakers for Positive inserts

Molded Chipbreakers for Positive Inserts

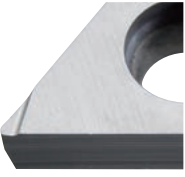
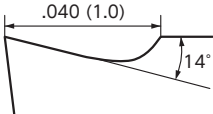
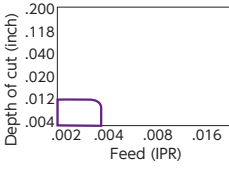

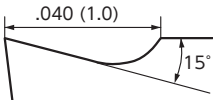
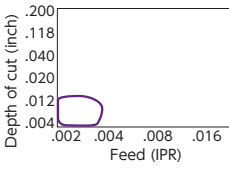
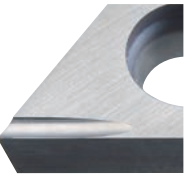
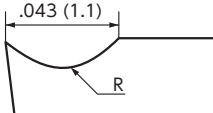
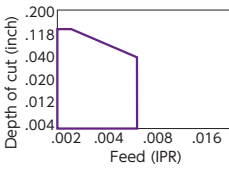
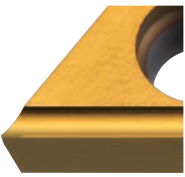
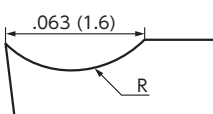
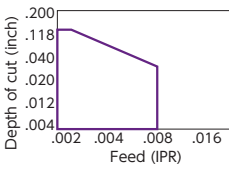
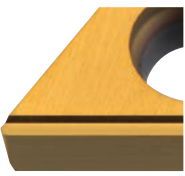
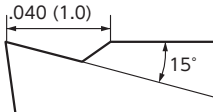
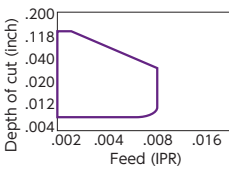

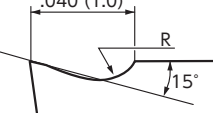
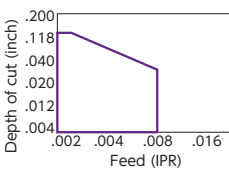
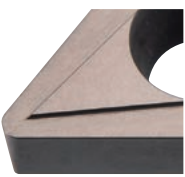
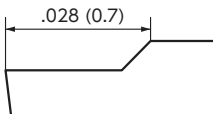
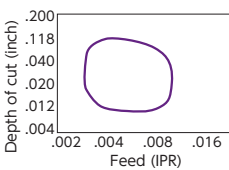
Name	Chipbreaker Geometry	Features	Chip Control Range
AM3	  <p>DCGT32.508 shown</p> <p>→N8</p>	<ul style="list-style-type: none"> ● All purpose chipbreaker ● Sharp edge with toughness 	
YL	  <p>DCGT11T302MYL</p> <p>WATCH ON YouTube →N8</p>	<ul style="list-style-type: none"> ● Great combination of sharpness and toughness ● Covers extremely wide range ● Excellent chip control 	
CL	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →N8</p>	<ul style="list-style-type: none"> ● Sharpest molded Chipbreaker ● Excellent chip control ● Less tool pressure 	
AMX	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →N8</p>	<ul style="list-style-type: none"> ● Designed for very light depth of cut ● Good sharpness 	
AZ7	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube</p>	<ul style="list-style-type: none"> ● Excellent chip control at light feed and light depth of cut 	
ZR	  <p>DCMT32.508 shown</p>	<ul style="list-style-type: none"> ● Covers a wide depth of cut range under high-speed and low-feed conditions 	

Molded Chipbreakers for Positive Inserts (continued)

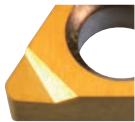
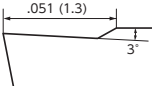
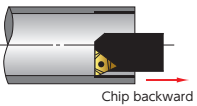
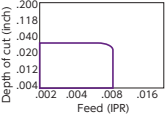


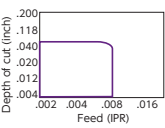
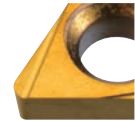
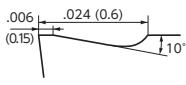
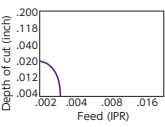
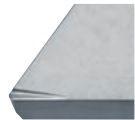
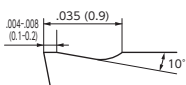
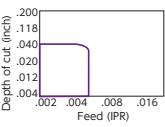

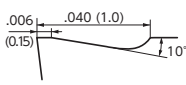
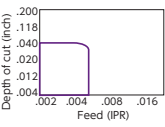

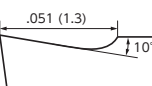
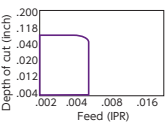
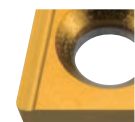
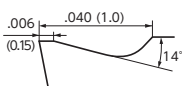
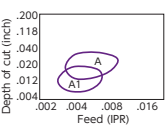

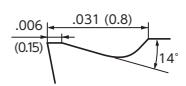

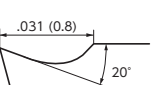
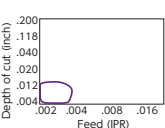
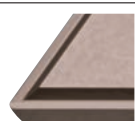

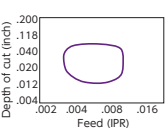


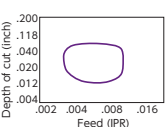
Name	Chipbreaker Geometry		Features	Chip Control Range
AF3		 <p>DCGT32.508 shown</p>	<ul style="list-style-type: none"> ● Good chip control 	
GA		 <p>VBGT332 shown</p>	<ul style="list-style-type: none"> ● Sharp and tough cutting edge 	
FG	 <p>→O16</p>	 <p>TPGH221 shown</p>	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD at light depth of cut ● Sharp cutting edge with high rake angle 	
AF1		 <p>CCGT32.508 shown</p>	<ul style="list-style-type: none"> ● Produces remarkable surfaces in semi-finishing of steels 	
AM5		 <p>CPGH21.508 shown</p>	<ul style="list-style-type: none"> ● Chipbreaker for boring ● Provides both good cutting performance and chip control 	
QB		 <p>WCGT5208 shown</p>	<ul style="list-style-type: none"> ● Sharp and tough cutting edge 	

Chipbreakers for Positive inserts

Ground Chipbreakers for Positive Inserts


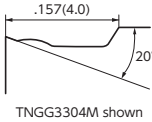
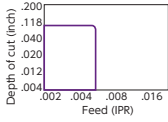

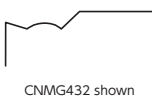
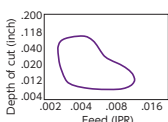


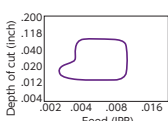

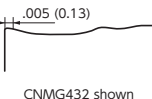
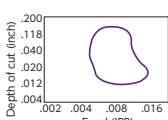
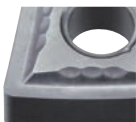

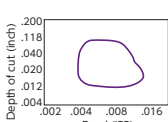

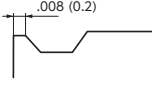
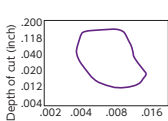

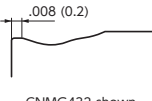
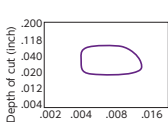

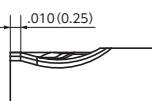
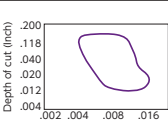

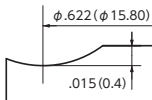
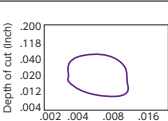

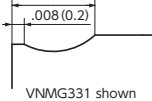
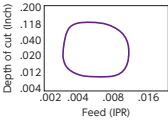

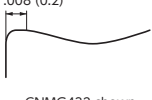
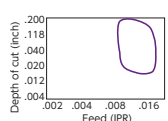
Name	Chipbreaker Geometry		Features	Chip Control Range
KHG		 DCET32.508 shown	<ul style="list-style-type: none"> ● Excellent chip control on finishing cuts ● For super high-precision machining <p>* Precision tolerance in corner radius: $\pm .0004$"</p>	
K		 TPGHP7308 shown	<ul style="list-style-type: none"> ● Superb chip control on finishing applications ● Sharp cutting edge with the high rake angle 	
UHG		 DCET32.504M shown	<ul style="list-style-type: none"> ● Sharp cutting edge ● Covers wide cutting condition range <p>* Precision tolerance in corner radius: $\pm .0004$"</p>	
U/U1		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Sharp cutting edge prevents materials from work hardening 	
S		 DCGT320.508 shown	<ul style="list-style-type: none"> ● Standard ground chipbreaker with wide cutting condition coverage ● Sharp cutting edge with excellent chip control 	
AT		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Excellent adhesion resistance with dimensional stability ● Best for small diameter parts and for machining low carbon steels 	
FM		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Full-peripheral ground chipbreaker 	

Ground Chipbreakers for Positive Inserts (continued)

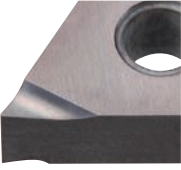
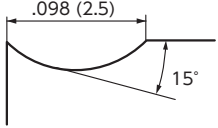
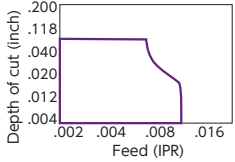
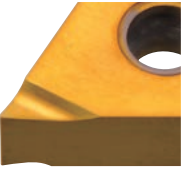
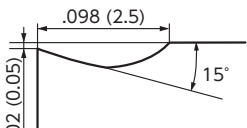
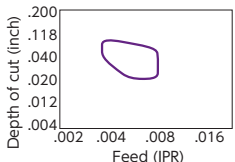

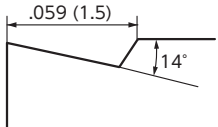
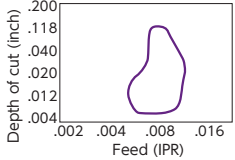
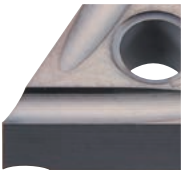
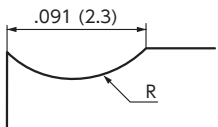
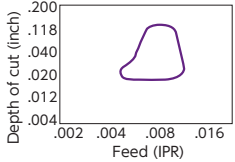
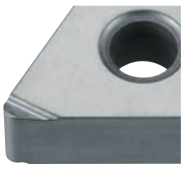
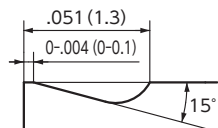
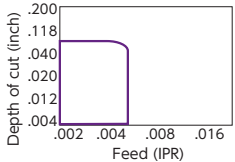

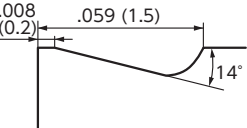
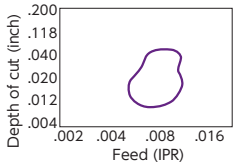

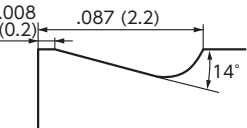
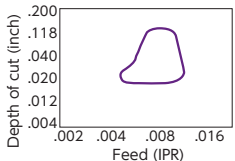
Name	Chipbreaker Geometry		Features	Chip Control Range	
F05		 TPGP5208 shown	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD ● Excellent choice for blind hole machining 		
F1		 TPGP2208 shown			
B1		 TCGP5208 shown	<ul style="list-style-type: none"> ● Stable cutting when boring thanks to sharp and tough cutting edge 		
P1		 TPGR321R shown			
B2		 TPGP7308 shown			
B3		 TPGP6308 shown			
A		 CPGP0308 shown	<ul style="list-style-type: none"> ● Tough cutting edge and good chip control ● General-purpose ID chipbreaker 		
A1		 CPGP8308 shown			
A2		 ERGP52Y shown	<ul style="list-style-type: none"> ● Control chips at light feed and light depth of cut ● Sharp cutting edge due to large rake angle 		
A283		 TPMR221 shown	<ul style="list-style-type: none"> ● Breaks chip into small pieces 		
A305		 TPMR332 shown			

Chipbreakers for Negative inserts

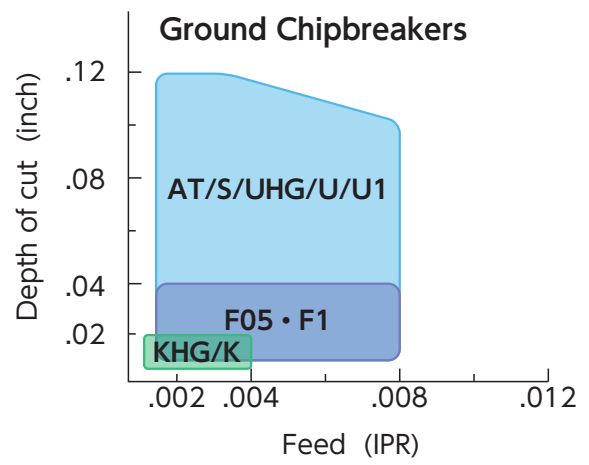
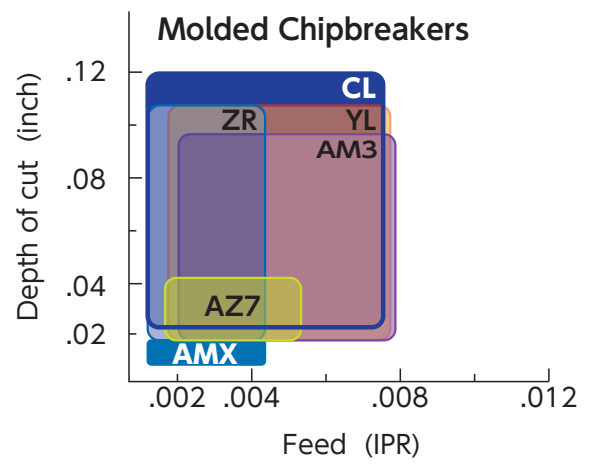
Molded Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
UL			<ul style="list-style-type: none"> ● Negative insert with a positive insert's chipbreaker ● Reduced burr ● Improved microfinish ● Superb advantage in cost per corner over positive inserts 	
ZF1			<ul style="list-style-type: none"> ● Produce small curled chips on finishing cuts 	
WM			<ul style="list-style-type: none"> ● Remarkable chip control in the low feed range 	
ZW1			<ul style="list-style-type: none"> ● Versatile chipbreaker with remarkable chip control performance in a wide range of conditions 	
ZP			<ul style="list-style-type: none"> ● Double-positive rake and sharp cutting edge ● Low tool pressure even at heavy depth of cut 	
Z5			<ul style="list-style-type: none"> ● Very tough insert ● Designed for machining with heavy interruption 	
WV			<ul style="list-style-type: none"> ● Offers the advantages of both a tough cutting edge and chip control 	
WR			<ul style="list-style-type: none"> ● Designed for cermet ● Covers wide range of conditions 	
R1			<ul style="list-style-type: none"> ● Sharp cutting edge ● Good chip control 	
GE			<ul style="list-style-type: none"> ● Sharp and tough cutting edge 	
G			<ul style="list-style-type: none"> ● Tough chipbreaker for roughing with exceptional stability 	

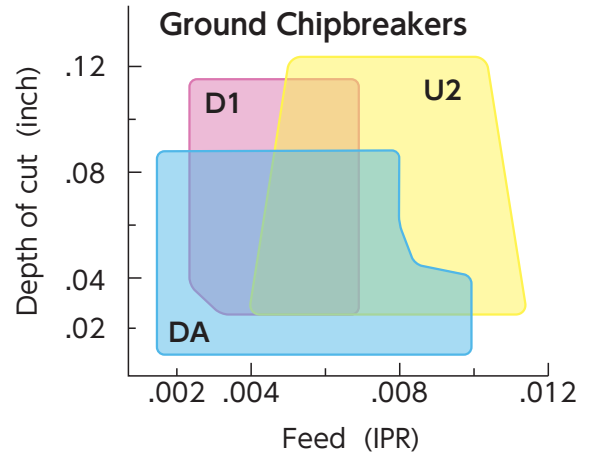
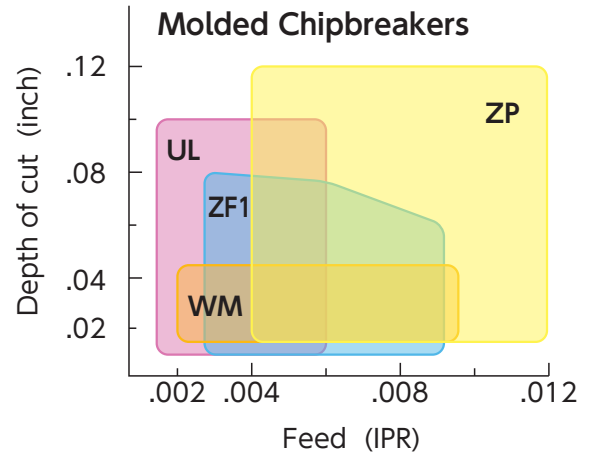
Ground Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
DA		 <p>TNGG3304 shown</p>	<ul style="list-style-type: none"> ●Excellent chip control and sharp cutting edge 	
D1		 <p>TNEG3308 shown</p>		
N1		 <p>TNGG3308 shown</p>	<ul style="list-style-type: none"> ●Double-positive design with the large rake angle ●Excellent chip control 	
U2		 <p>TNGG3308 shown</p>	<ul style="list-style-type: none"> ●Reduced burr and work hardening due to high rake design 	
L2		 <p>TNGG332R shown</p>		
B		 <p>TNGG331 shown</p>	<ul style="list-style-type: none"> ●General-purpose chipbreaker with excellent toughness and chip control 	
C		 <p>TNGG3308 shown</p>		

Positive Inserts



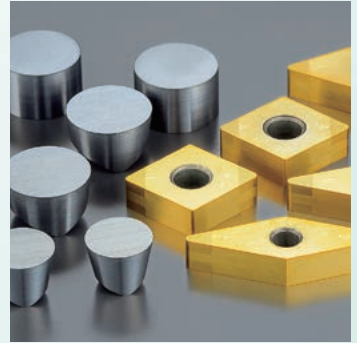
Negative Inserts



Flat Top with Mirror Finish - Good for non-ferrous materials like PEEK, Brass, Aluminum and Copper -

Name	Chipbreaker Geometry	Features	Chip Control Range
V P H		<ul style="list-style-type: none"> ● Very up-sharp edge with mirror finish V: Mirror finish on Top and Flank side with R0 nose radius P: Mirror finish on Top and Flank side H: Mirror finish on Top side 	—

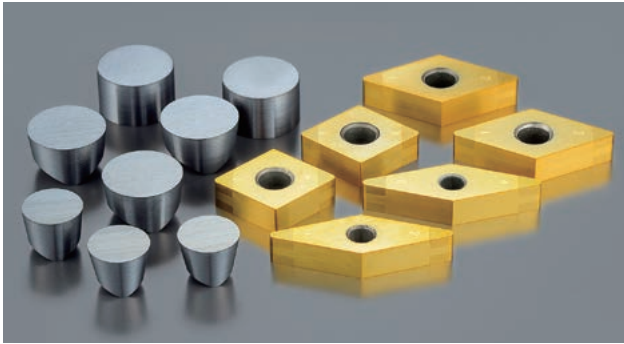
D



Grade Introduction

■ BIDE MICS	D2
● Guideline for Machining Heat Resistant Alloys	D6
■ Ceramics	D15
■ BIDE MICS (Brazed) / CBN / PCD ...	D29
■ Cermet / Coated Cermet	D35
■ Carbide / Coated Carbide	D37

BIDEMICS



NTK Cutting Tools introduces BIDEMICS; a proprietary group of advanced composite cutting tool materials. [Patents Pending]. BIDEMICS have been specifically developed to significantly improve productivity when machining Heat Resistant Alloys. Also BIDEMICS have specific advantages compared to traditional whisker reinforced ceramics. The first BIDEMICS grades to be commercially available are **JX1** and **JP2**.

Grade Introduction

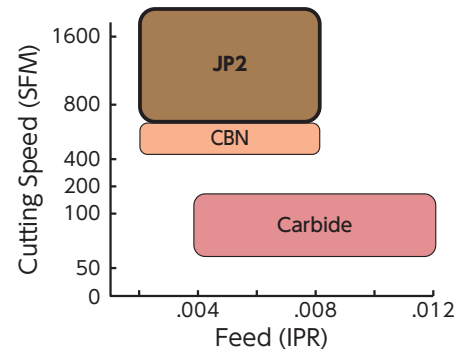
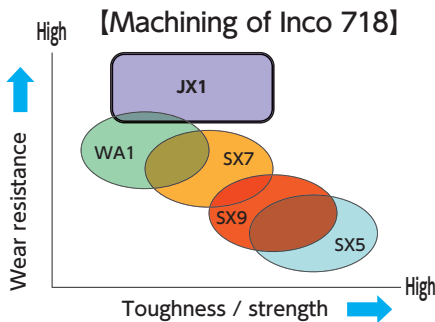
JX1 Semi-finishing & Finishing / Rough no scale

- Up to 1600 SFM speed capability
- Much longer tool life at Whisker ceramics's speed range
- Better wear resistance and notching resistance than Whisker ceramics
- Superior surface finish vs. Whisker ceramics

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

[Heat-resistant alloy]



[BIDEMICS]



● Physical properties


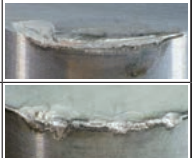
Grade	Hardness HRA	Bending Strength MPa	Thermal Conductivity W/m · K
JX1	95.5	1,800	40
WA1	94.5	1.200	35

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

1 Longer tool life

JX1'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.

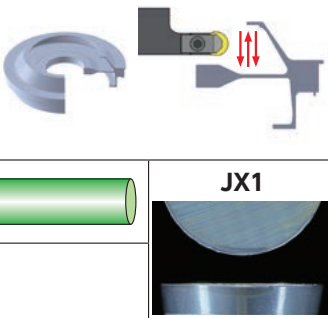
Turbine shaft (Inco718 pre-machined)		
	Comp. whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	800	←
Feed (IPR)	.008	←
Depth of cut (inch)	.080	←
	WET	←
NTK : JX1	10 min 	
Competitor's whisker ceramic	3 min 	

2 Higher speeds

JX1'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 needs for additional equipment to meet increasing demands.

Turbine disk (Inco718 rough)		
	Comp. whisker	JX1
Shape	RPGX45	←
Cutting speed (SFM)	650	1300
Feed (IPR)	.006	←
Depth of cut (inch)	.080	←
	WET	←
NTK : JX1	120 cc/min	
Competitor's whisker ceramic	60 cc/min	

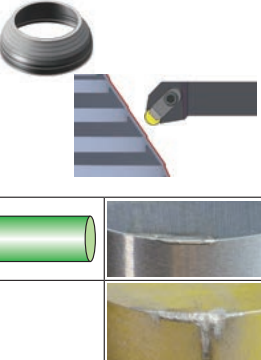


Chips break easily at higher cutting speed vs typically continuous chips of Super Alloy materials. This makes more efficient chip removal.

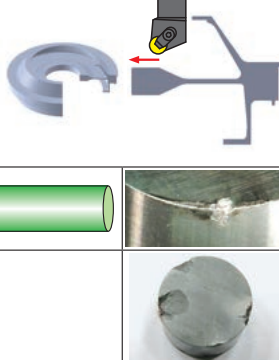


3 Works well on wide range of High Temperature Alloys

Turbine case (718Plus semi finish)		
	Comp. coated whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	800	←
Feed (IPR)	.010	←
Depth of cut (inch)	.020	←
	WET	←
NTK : JX1	3 pass	
Competitor's whisker ceramic	1 pass	



Turbine disk (Rene104 rough)		
	Comp. whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	700	←
Feed (IPR)	.007	←
Depth of cut (inch)	.040	←
	WET	←
NTK : JX1	4 pass	
Competitor's whisker ceramic	1 pass	



JX1's Unique Physical Properties enables machining of newer compositions of difficult to machine High Nickel Alloys, High Nickel/Cobalt alloys, or powdered metallurgy alloys that are becoming more common in the market .

4 Superior surface finish

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

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

JX1

New Composite Material for Super Alloy Machining

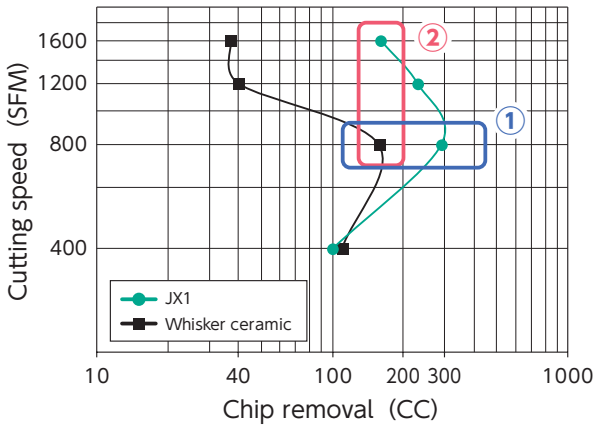
[BIDEMICS] Grade Introduction



Features

Patents Pending

- Significantly extended tool life compared to whisker ceramics
- Double cutting speed potential compared to whisker ceramics
- Superior surface finish compared to whisker ceramics
- Applicable to powder-metallurgical heat resistant alloys



Increase Productivity vs. Whisker Ceramics

① Significantly extended tool life at same speed

JX1	
Whisker	

② Double speed capability

JX1	
Whisker	

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

Turbine disk (Inco718 rough)		
	Comp. whisker	JX1
Shape	RPGX45	←
Cutting speed (SFM)	650	1300
Feed (IPR)	.006	←
Depth of cut (inch)	.080	←
	WET	←
NTK : JX1	120 cc/min	
Competitor's whisker ceramic	60 cc/min	

Turbine case (718Plus semi finish)		
	Comp. coated whisker	JX1
Shape	RNG45	←
Cutting speed (SFM)	800	←
Feed (IPR)	.010	←
Depth of cut (inch)	.020	←
	WET	←
NTK : JX1	3 pass	
Competitor's whisker ceramic	1 pass	

JP2

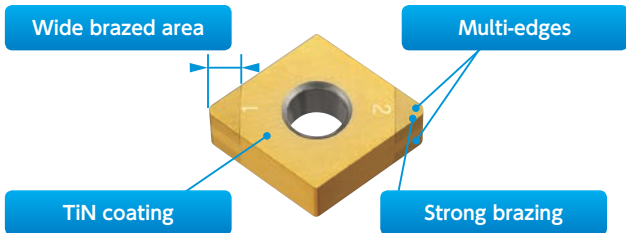
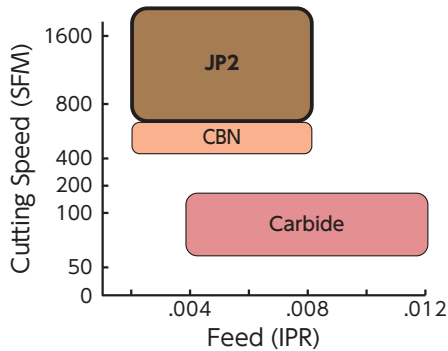
Ultra High-Speed Finishing of Super Alloys



Features

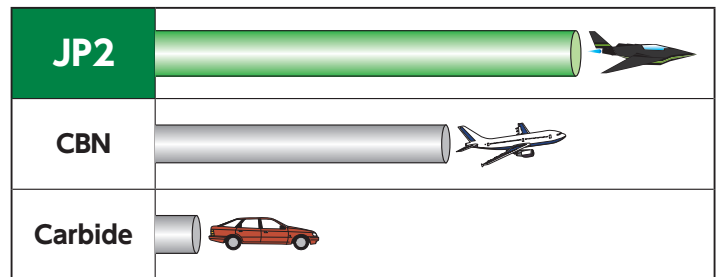
Patents Pending

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



Increase Productivity vs. Carbide

① 10 to 15 times higher speed capability



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

Disk (Inco718 Finishing)		
	Competitor's Coated Carbide	JP2
Shape	CNGG432	CNGA432
Cutting speed (SFM)	70	800
Feed (IPR)	.003	←
Depth of cut (inch)	.010	←
	WET	←
Tool life	1pc	←
NTK : JP2	525 cc/min	
Competitor's Coated Carbide	45 cc/min	

Disc (Inco718 Semi-finishing / Finishing)		
	Competitor's Coated Carbide	JP2
Shape	CNGP432	CNGA432
Cutting speed (SFM)	150	600
Feed (IPR)	.0035	←
Depth of cut (inch)	.015+.005	←
	WET	←
Tool life	1pc	4pcs
NTK : JP2	4 pcs with 4 times higher productivity	
Competitor's Coated Carbide	1 pc	

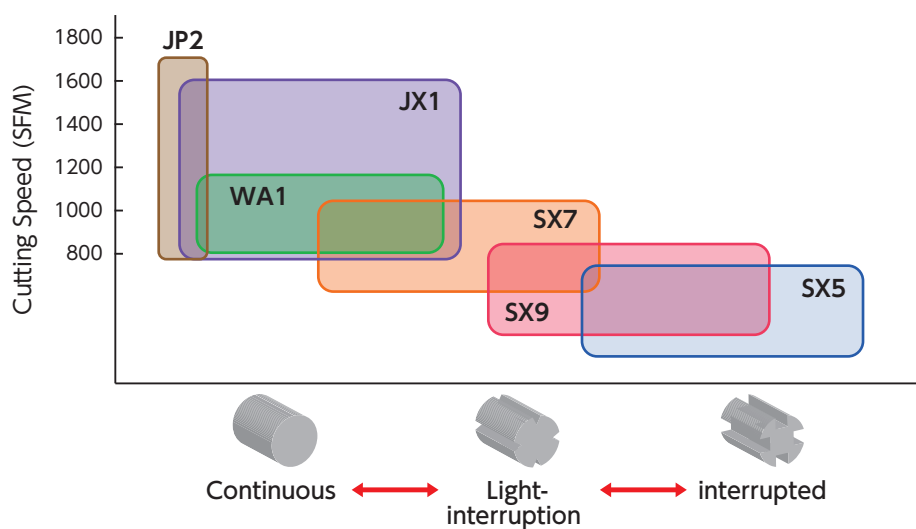
[Guidelines for Machining Heat Resistant Alloys]

Insert Grade

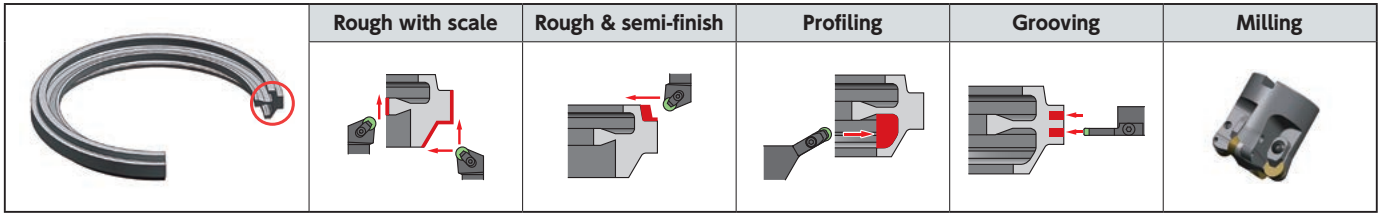
Category	Grade	Applications	Scale	No scale	Profiling	Finishing	Grooving	Milling
								
BIDEMICS	JX1	Special grade with higher speed and longer tool life potential		●	●			
	JP2	Special grade for finish turning				●		
Whisker	WA1	General versatile grade for turning		●	●		●	
SiALON	SX5	Best grade for scale of Waspaloy	●				●	
	SX7	General versatile grade for turning Best grade for milling	●	●	●		●	●
	SX9	Best grade for scale of Inco718	●					●

● 1st Choice ● 2nd Choice










Grade Map





Applications



Applications

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

Application	Grade	Work material	Cutting speed					Feed					Depth of cut					Coolant
			1500	2000	2500	3000	3500	4000	.002	.003	.004	.005	.006	.020	.040	.060	.080		.100
Milling 	SX7	Overall	2700 (2000-4000) SFM					.004 (.003-.005) IPT					.070 (.040-.100)"					DRY 
	SX9	Overall	2500 (1500-3500) SFM					.005 (.004-.006) IPT					.080 (.040-.100)"					

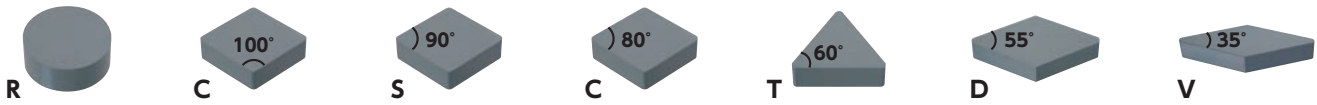
Guidelines For Success

Keys to successful machining of Heat Resistant Alloys

- 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 finishing with outstanding shiny surface finishes
- Stable machining can be performed by optimizing cutting conditions and tooling

Use strong insert shapes

Maximize geometry for strength productivity



Strength Increases

Use largest nose radius

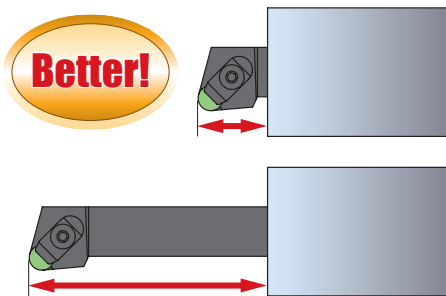
Maximize insert nose radius for strength and longer tool life

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

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

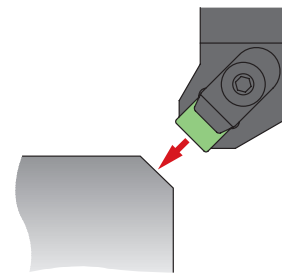
Minimize overhang

Too much overhang may cause chatter or insert breakage



Pre-chamfering

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



No dwelling

Inserts wear out when rubbing the part instead of cutting

Coolant

When turning with JX1, SX7, SX9, SX5, WA1 a flood coolant condition should be used

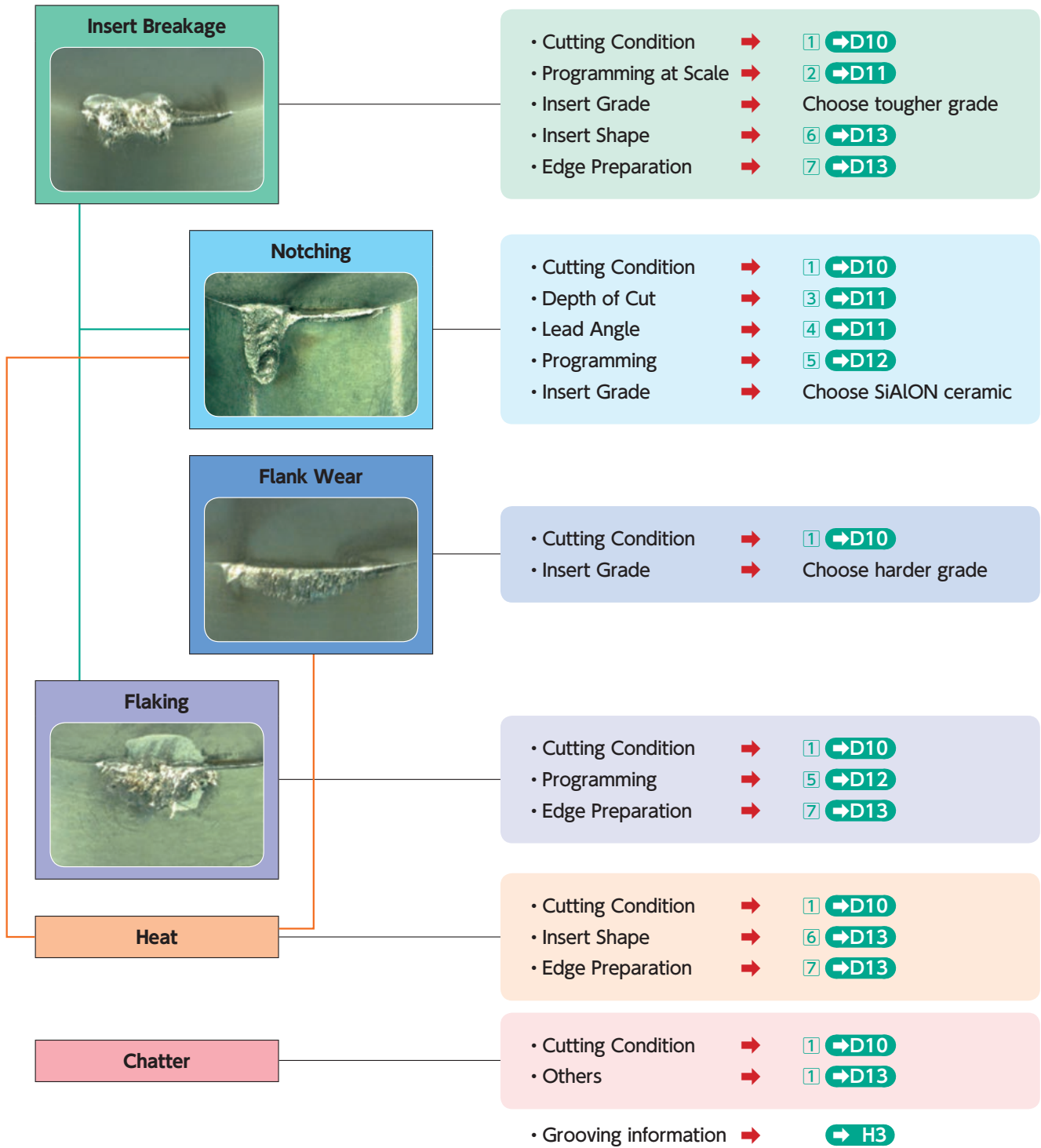
In some cases where a high interruption is encountered it may be best to cut-off the coolant

No coolant should be used while milling with SX7 & SX9

Edge preparations




Typical cutting tool applications machining Heat resistant alloys require the insert cutting edge to be sharp. Using a slight T-land or honed edge is also effective to reduce notching, flaking and built up edge

Troubleshooting



Troubleshooting (continued)

1 Cutting Condition

		Cutting speed (SFM)					Feed rate (IPR)					Grade attribute			
		SX5	SX7	SX9	JX1	WA1	SX5	SX7	SX9	JX1	WA1	JX1	SX5	SX7	SX9	WA1
	Notching				↗ [a]		↗ [b]				⊙		⊙		
	Flank wear	↘ [c]					↗ [d]				⊙	● SX7		⊙	
	Breakage						↘		↘		●		⊙		
	Heat				↘		↘		↘		—		—		—
	Chatter		↗		↗		↘		↘		—		—		—

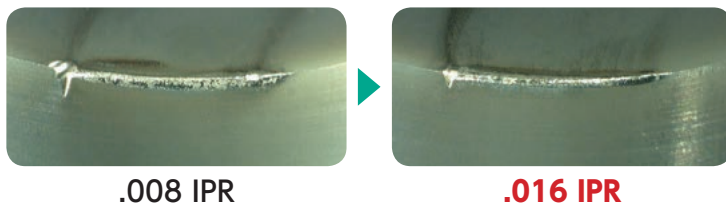
⊙ 1st Choice ● 2nd Choice

Test Results

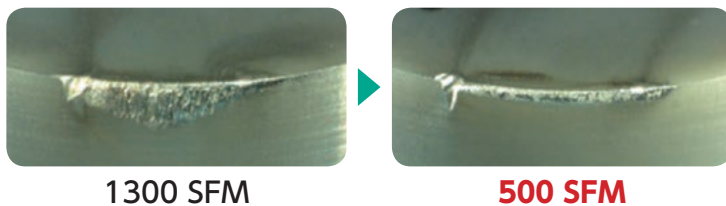
[a] **WA1** : Increase cutting speed



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

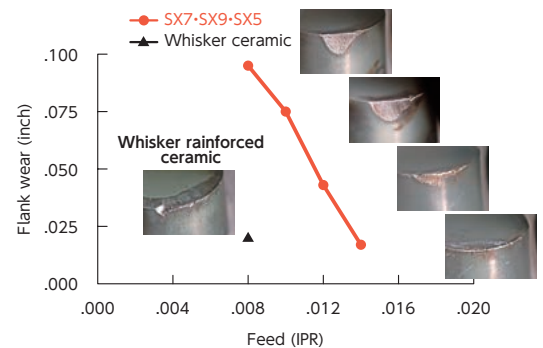


[c] **SX7 • SX9 • SX5** : Decrease cutting speed



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

Feed rate increased decreases wear amount of SiAlON



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

In some cases, in order to increase the wear resistance of **SX7 & SX9 & SX5**, the feed must be increased. By increasing the feed and utilizing the toughness of **SX7 & 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 : Speed and feed rates shown are recorded test data and should not be thought of as recommended cutting conditions.

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

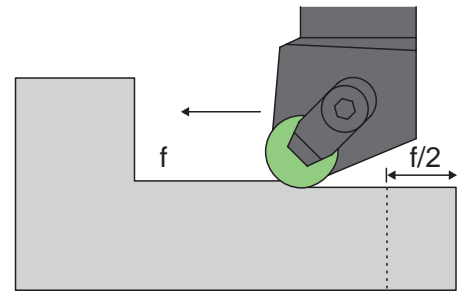
Grade Introduction
[Guidelines for Machining Heat Resistant Alloys]

Troubleshooting (continued)

2 Scale machining

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

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



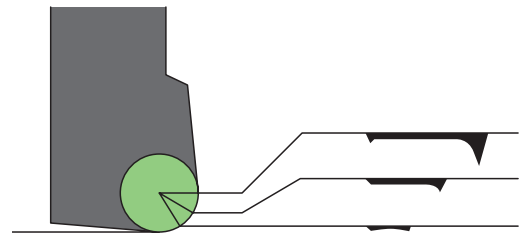
3 Depth of Cut

Depth of Cut Notching

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

Depth of Cut

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



Recommended Depth of Cut Range (Inch)

Round insert	Maximum DOC	*Insert radius	Maximum DOC
1/4	.060...Less	1/32	.008...Less
3/8	.090...Less	3/64	.012...Less
1/2	.125...Less	1/16	.016...Less
1	.250...Less	3/32	.024...Less

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

4 Lead Angle

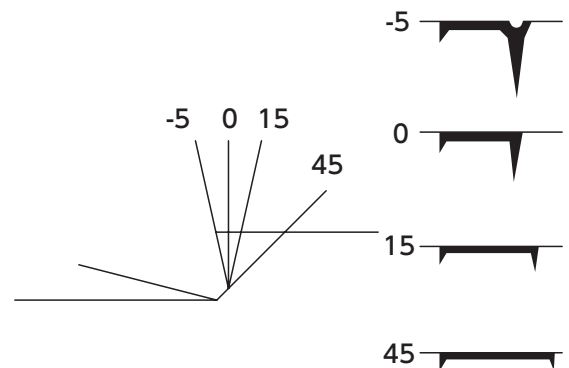
Lead Angles

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

Feeds

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

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

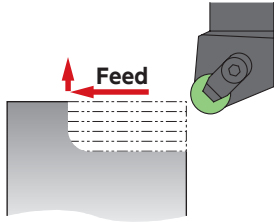


Troubleshooting (continued)

5 Programming

● Rough

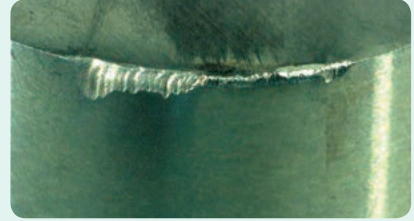
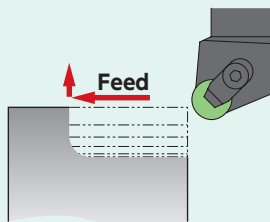
Same Depth of Cut



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

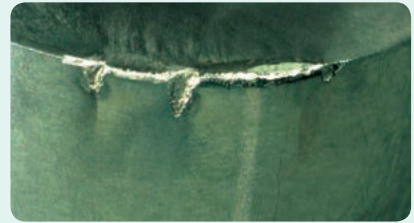
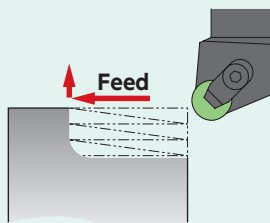
change to

Varying Depth of Cut



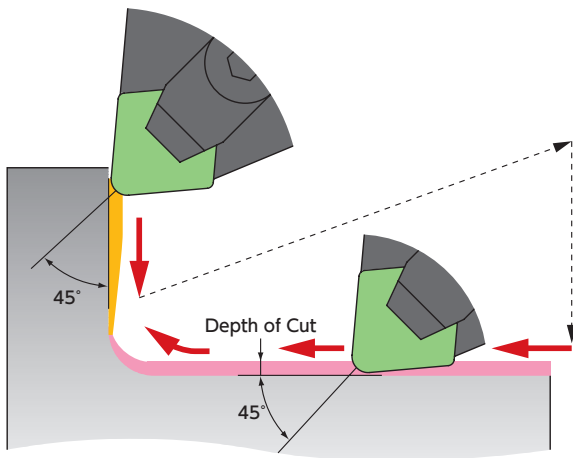
Note) Another programming change that may help to reduce notching is by varying the depth of cut. Again, the same principle applies, notching takes place at various points on the cutting edge rather than concentrated at one point.

Ramping



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

● Finish



• $\alpha = 45^\circ$

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

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

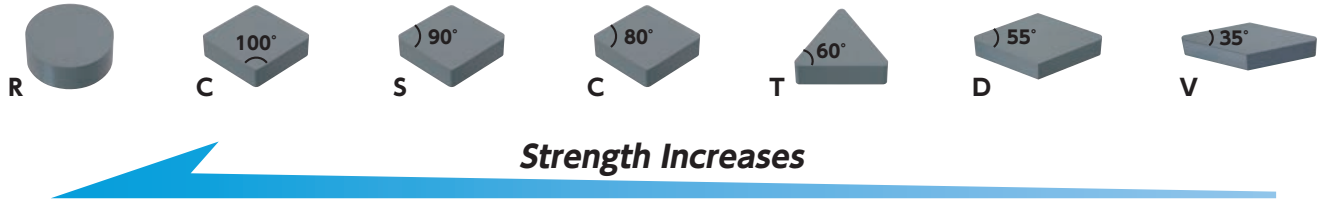
Depth of Cut



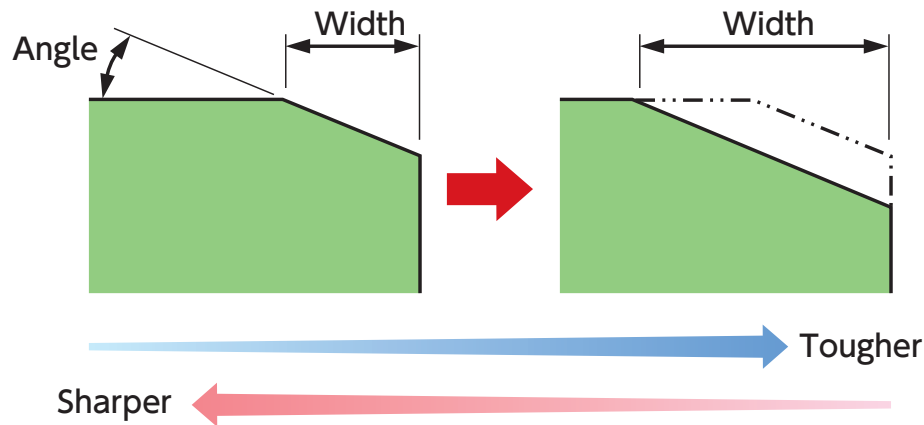
Better

Troubleshooting (continued)

6 Insert shape



7 Edge preparation



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

8 Eliminate chatter

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

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

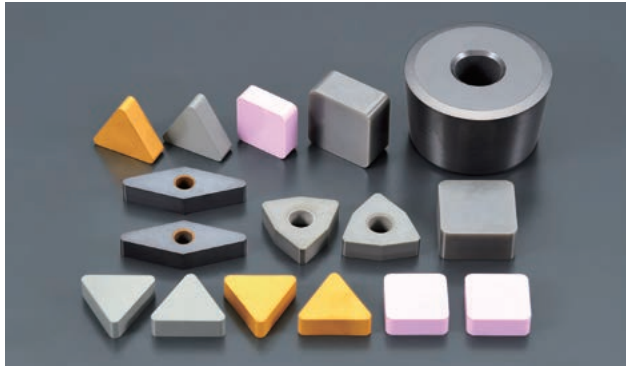
MEMO

D



Ceramics

- **Alumina-based Ceramics** **D16**
- **Alumina TiC-based Ceramics** ... **D18**
- **Whisker-reinforced Ceramics** ... **D21**
- **Silicon Nitride-based Ceramics** ... **D22**
- **SiAlON Ceramics** **D24**



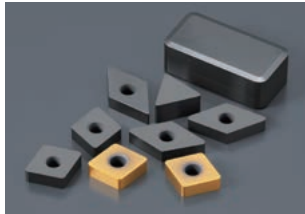
NTK's premium ceramic grades ensure the user higher productivity. All of the grades show superior high temperature hardness, heat resistance and chemical stability. NTK offers many types of ceramic cutting tool materials (silicon nitride-based, alumina-based and whisker-based) in a variety of geometries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



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



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



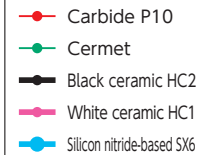
● **Alumina TiC-based ceramics (Black ceramics)**
For Gray Cast Iron
Ductile Cast Iron
Hardened Materials
Mill Rolls



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

Advantages of ceramic cutting tool (1)

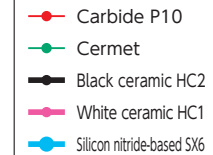
The material retains high hardness even at increased temperatures !!



Excellent wear resistance at high cutting speed

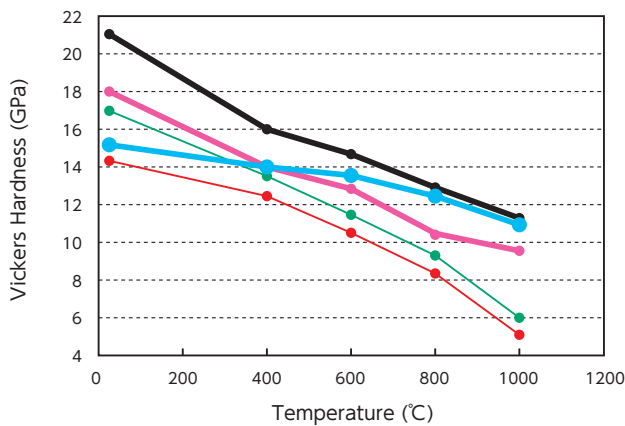
Advantages of ceramic cutting tools (2)

Low impact on bending strength even under high temperature

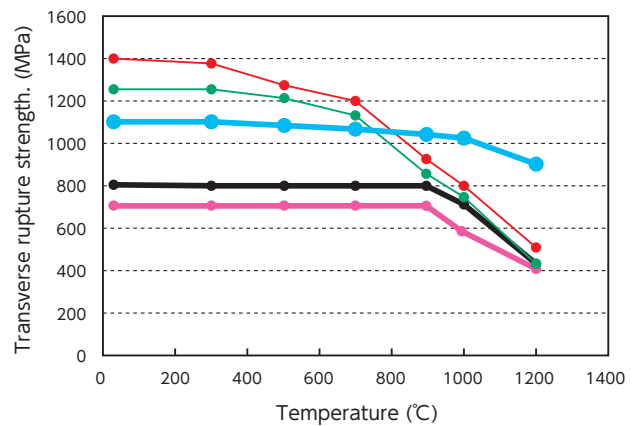



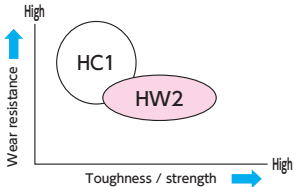

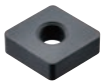
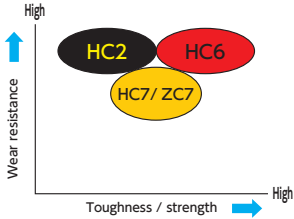
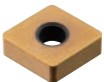

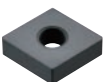
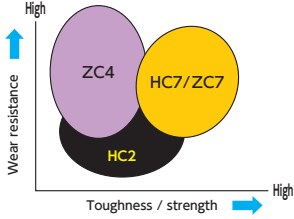
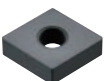
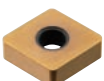
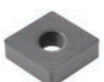
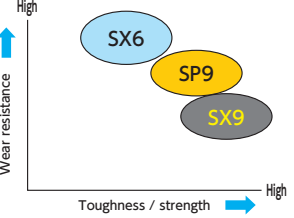



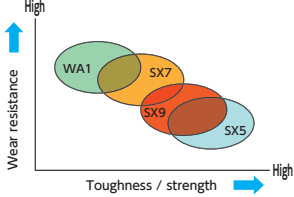
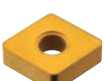

Stable machining is possible in the high speed range

[Hardness at high temperature by tool material]



[Breaking strength at high temperature by tool material]



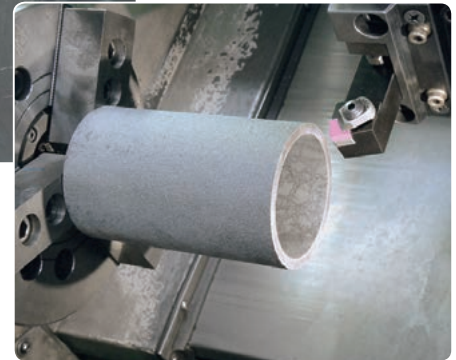
	Grade / Coating	Applications / Features	Physical properties*						Application map
			Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K	Thermal conductivity W/m·K	
White ceramics Alumina - based ceramics	HC1  Al ₂ O ₃	K	4.0	94.0	700	400	7.8	17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

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

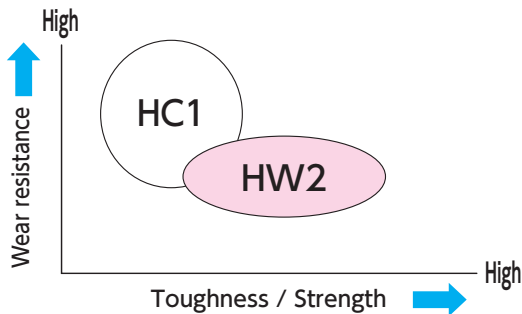
Alumina-based ceramics (White ceramics)



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



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



Grade Introduction

[Ceramics]

HC1

Ideal grade for high-speed finishing of cast iron !



Features

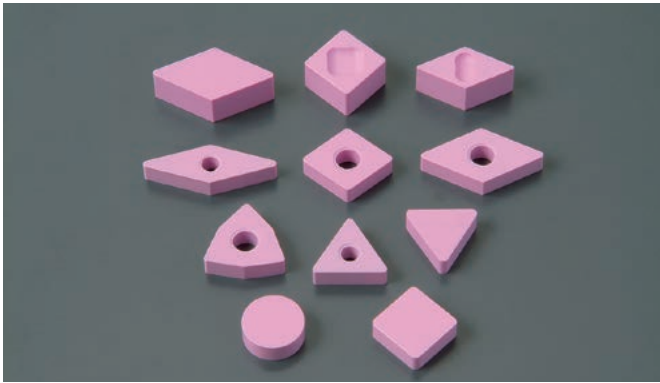
- Best wear resistance
- Stable machining performance in many high-speed machining applications

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

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

HW2

Alumina-based ceramic grade with high toughness !



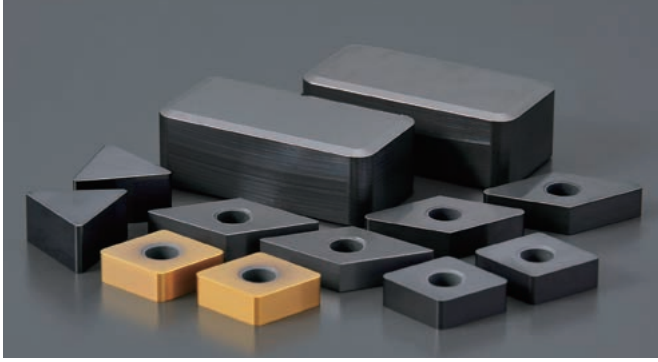
Cylinder liner	
Chilled liner	
1200 SFM	
.012 IPR	
.080" DOC	
DRY	
NTK : HW2	70 pcs
Competitor's white ceramic	30 pcs

Features

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

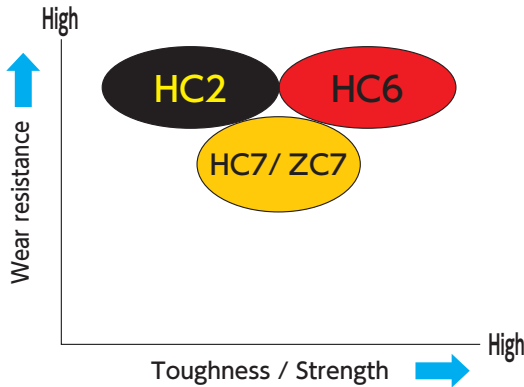
Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
HW2	Gray cast iron	Turning	Rough-Finish	1200-2100	.004-.016	.020-.080	●	
	Cylinder Liners	Turning	Rough-Finish	600-1800	.008-.016	.020-.100	●	

Alumina TiC-based ceramics (Black ceramics)

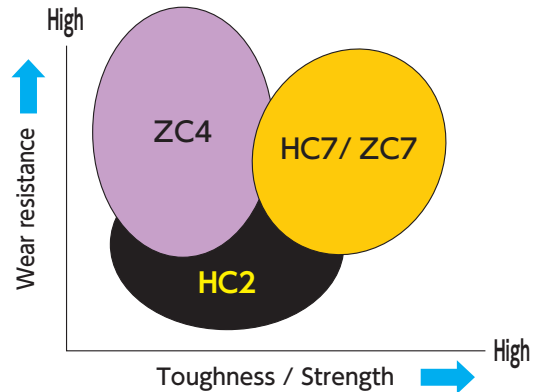


Alumina TiC-based ceramics are strengthened by adding hard carbide to highly pure alumina. This process results in ceramic materials that shows excellent performance in either wet or dry cutting conditions. As an added benefit, hardness and toughness has been improved which enables the machining of partially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

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



[Machining of hardened materials]



Grade Introduction

[Ceramics]

HC2

The standard grade for machining cast iron and hardened materials !



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

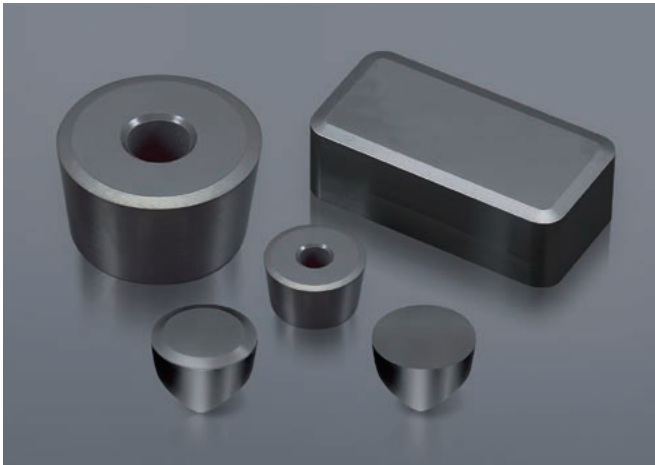
Features

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

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

HC5

Developed for Mill Rolls !



Mill roll	
Chilled cast iron	
230 SFM	
.016 IPR	
.394" DOC	
DRY	
NTK : HC5	4 pass
Competitor's black ceramic	2 pass

Features

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

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

HC6

For machining ductile cast iron !



Differential case	
Ductile cast iron	
900 SFM	
.008 IPR	
.020" DOC	
WET	
NTK : HC6	60 pcs
Competitor's coated carbide	30 pcs

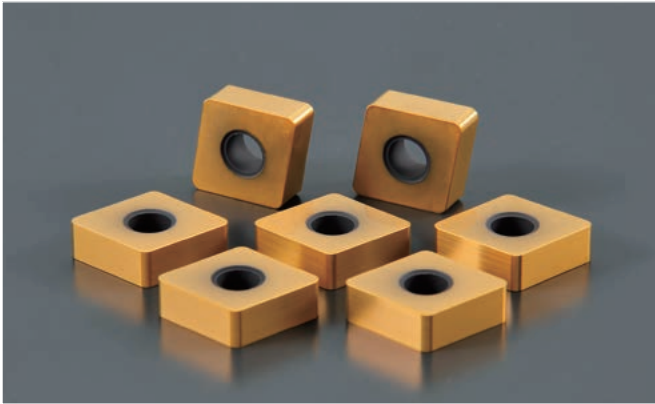
Features

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

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

ZC4

For machining hardened materials !



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

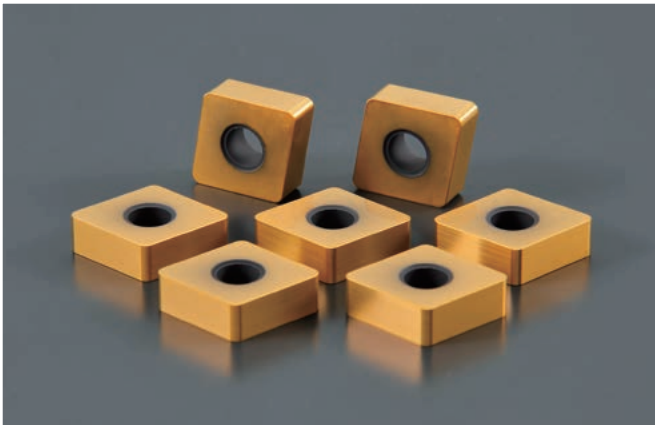
Features

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

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

ZC7/HC7

For machining hardened parts with a wide range of hardness !



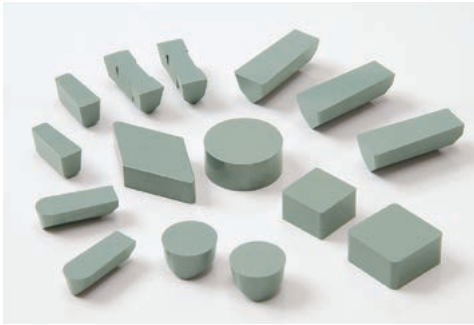
Gear	
Carburized and hardened steel	
300 SFM	
.005 IPR	
.006" DOC	
WET	
HRC58-62	
NTK : ZC7	80 pcs
Competitor's CBN	80 pcs

Features

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

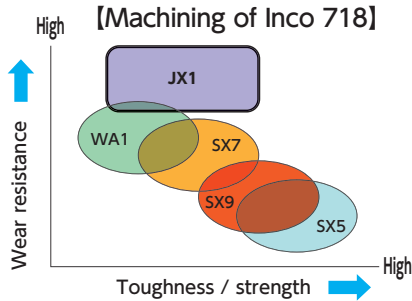
Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
ZC7 HC7	Hardened material (HRC30-62)	Turning	Finish	130-700	.003-.008	.005-.030	●	●
	Mill roll (Steel / Cast iron)	Turning	Rough - Finish	450-600	.004-.012	.025-.075	●	

Whisker-reinforced ceramics

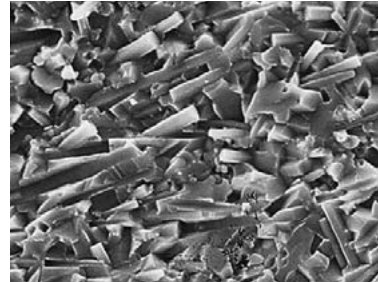


WA1 ceramic grade has a unique combination of superior wear resistance, toughness and flaking resistance as a result of adding SiC whiskers to Alumina. WA1 is primarily used in machining continuous cuts of aerospace alloys because of its productivity and reliability characteristics. WA1 can also be used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

[Heat-resistant alloy]

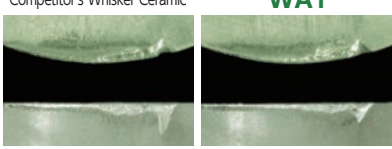
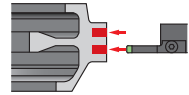




[WA1 structure]



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



Housing	
Inco 625	Competitor's Whisker Ceramic WA1
900 SFM	
.006 IPR	
.020"-.030" DOC	
WET	
NTK : WA1	 1 pass
Competitor's whisker ceramic	 1 pass

Features

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

Recommended applications

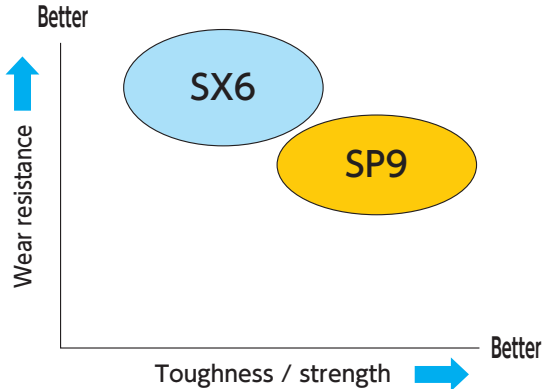
Grade	Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
WA1	Heat resistant alloy	Turning	Rough no scale	600-1000	.005-.010	.040-.100		●
			Semi finish Profiling	600-1100	.004-.010	.020-.080		●
			Grooving	600-1100	.002-.004	-		●
	Gray cast iron	Turning	Semi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

Silicon Nitride-based ceramics



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

[Gray cast iron, Roughing]

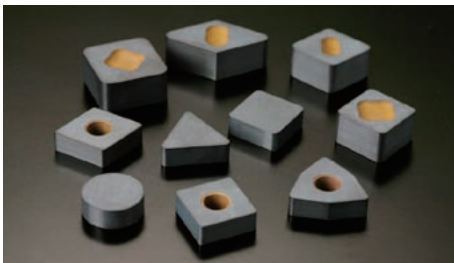


Grade Introduction

[Ceramics]

SX6

Premium Silicon Nitride



Features

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

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

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

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

SP9

High Speed machining with low cutting forces !



Features

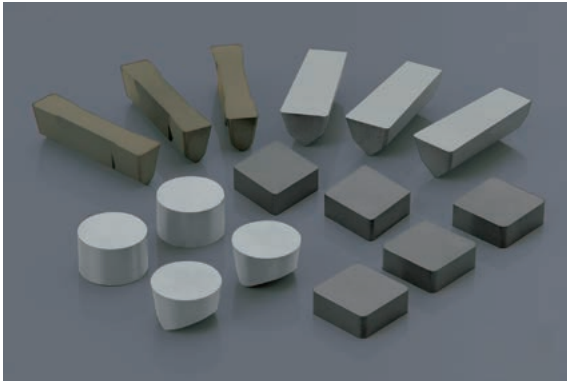
- Excellent wear-resistance and chipping resistance with CVD coated high-strength silicon nitride-based ceramic
- Achieves lower tool pressure with minimal edge preparation
- Also usable for finishing

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

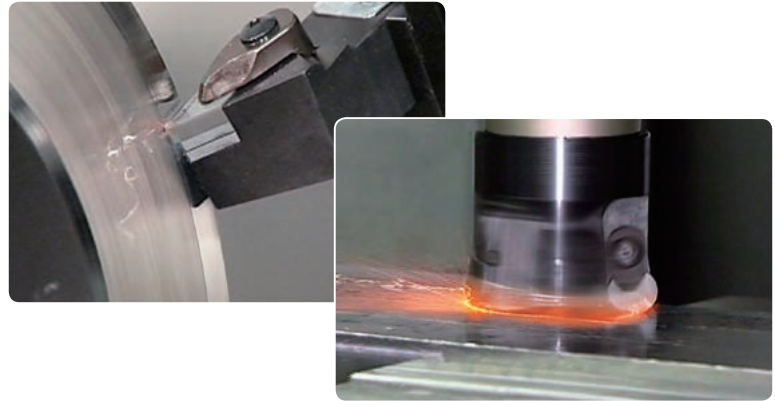
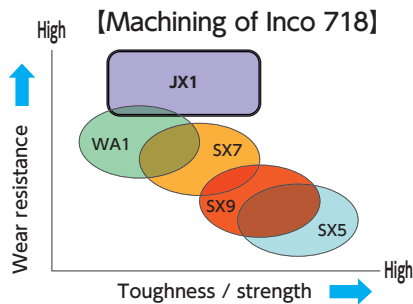
Brake rotor	
Gray cast iron	
1800 SFM	
.016 IPR	
DRY	
NTK : SP9	120 pcs
Competitor's silicon nitride	80 pcs

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

SiALON Ceramics



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

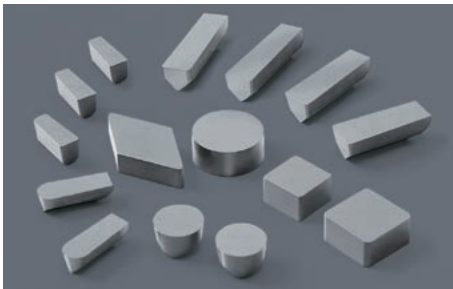


Grade Introduction

[Ceramics]

SX7

Can replace whisker 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

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

Seal (Inco 718 Finish)			
	Comp. carbide	Comp. whisker	SX7
Shape	VNGA333	←	←
Cutting speed (SFM)	160	650	800
Feed (IPR)	.0078	←	←
Depth of cut (inch)	.020	←	←
	WET	←	←
Tool life	1 pass	←	←
NTK : SX7	7 min / pc		
Competitor's whisker ceramic	15 min / pc		
Competitor's carbide	24 min / pc		

Turbine case (Waspaloy semi finish)	
RPGX45	
800 SFM	
.012 IPR	
Various DOC	
WET	
NTK : SX7	7.2 min
Competitor's whisker ceramic	5.3 min + Broken

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

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

Housing (Inco 718 with scale)

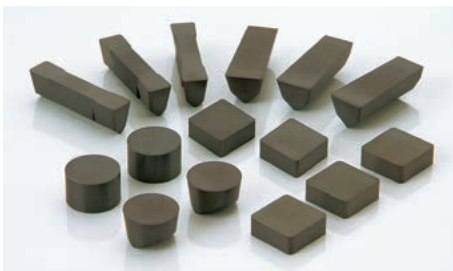
	Comp. whisker	SX9
Shape	RCGX45	←
Cutting speed (SFM)	600	←
Feed (IPR)	.005	.008
Depth of cut (inch)	.100	←
	WET	←
NTK : SX9  • High productivity		
Competitor's whisker ceramic 		

Ring (Inco 718 milling with scale)

	Comp. whisker	SX9
Shape	RNG45	←
Cutting speed (SFM)	1200	700
Feed (IPT)	.0027	.004
Depth of cut (inch)	.010	←
	DRY	←
NTK : SX9  10 pass with high productivity		
Competitor's whisker ceramic  5 pass		

SX5

Best grade for roughing Waspaloy with scale !





Features

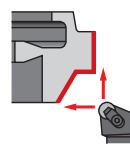


- Excellent notch wear resistance
- Toughest SiAlON grade on the market
- Better thermal shock resistance compared to whisker-reinforced ceramics
- Use SX5 where heavy scale or interruptions exist

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

Ring (Inco 718 with scale)

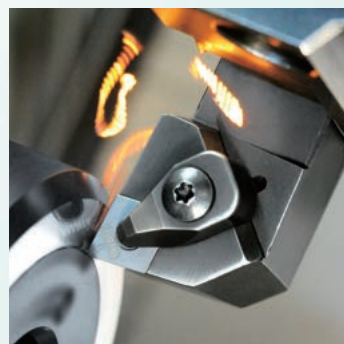
	Comp. whisker	SX5
Shape	RCGX45	←
Cutting speed (SFM)	850	800
Feed (IPR)	.004	.010
Depth of cut (inch)	.750-.100	←
	WET	←
NTK : SX5  1 pass with 2.5times higher productivity		
Competitor's whisker ceramic 		

Ring (Waspaloy with scale)

RCGX35	
650 SFM	
.008 IPR	
.750-.100 DOC	
WET	
NTK : SX5  1 pass • Small Chipping	
Competitor's SiAlON ceramic  1 pass • Was chipping a lot	

MEMO

D



BIDEMICS (Brazed) / CBN / PCD

- BIDEMICS D31
- CBN (EZ CUBE) D32
- PCD D34

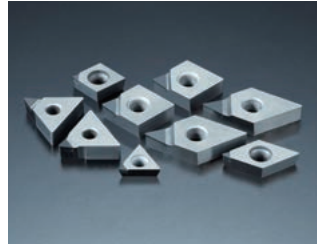
BIDEMICS (Brazed) / CBN / PCD

BIDEMICS

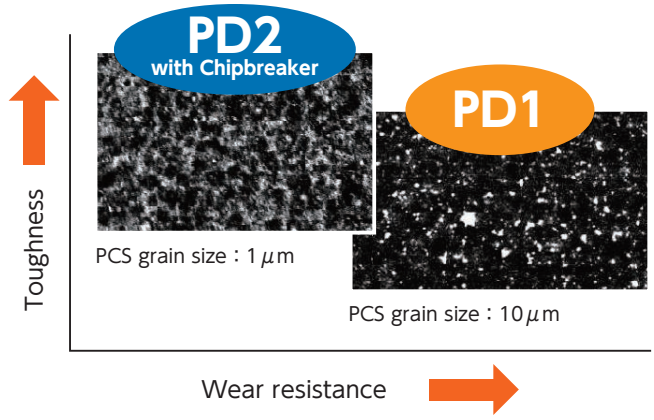
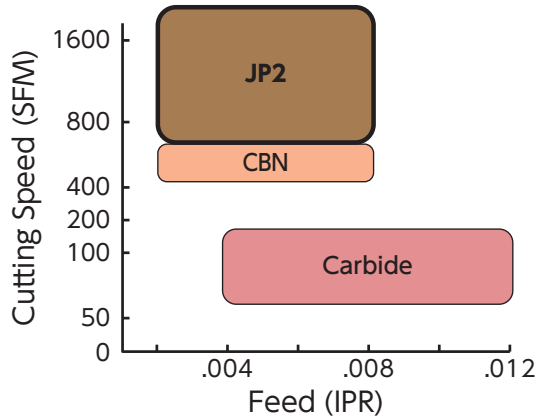


● High Temperature Alloy

PCD



● Non-ferrous material



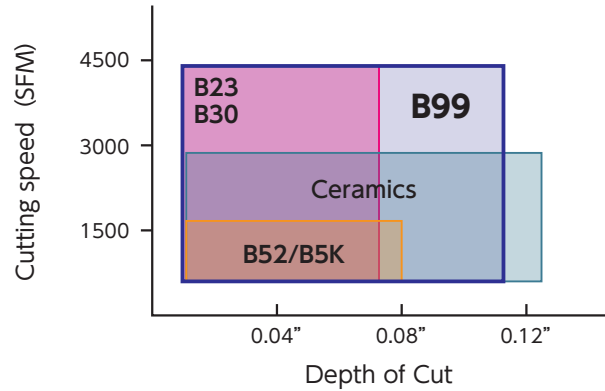
Grade Introduction

[BIDEMICS (Brazed) / CBN / PCD]

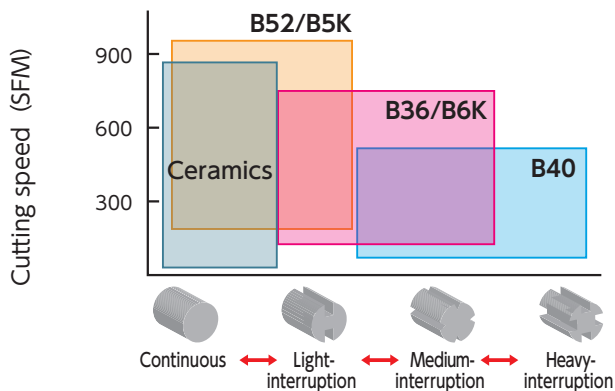
CBN Series



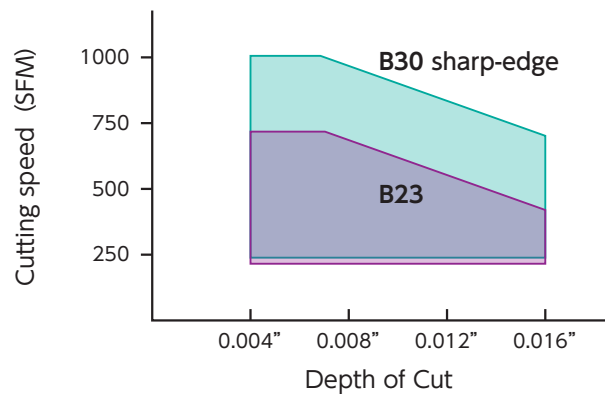
Gray / Ductile Cast Iron Applications



Hardened Material Applications



Sintered Alloy Applications



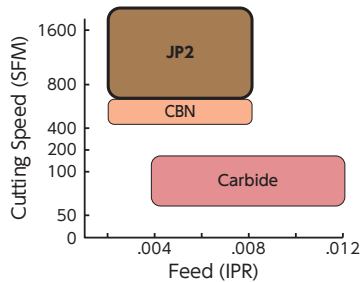
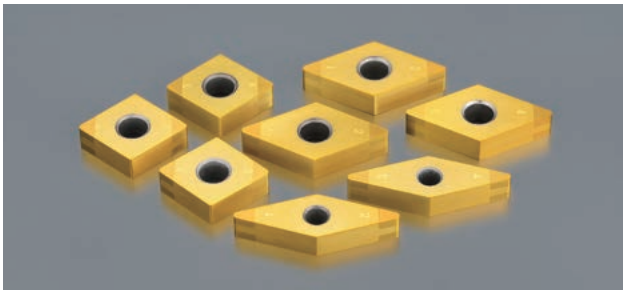
BIDEMICS



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

JP2

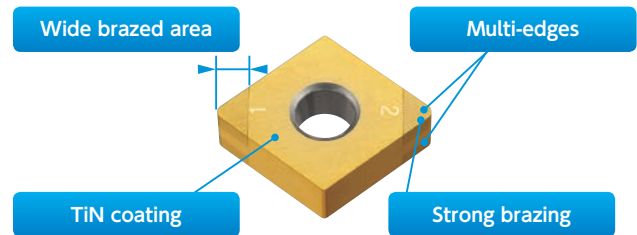
Ultra High-Speed Finishing of Super Alloys



Features

Patents Pending

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



Increase Productivity vs. Carbide

- 10 to 15 times higher speed capability

JP2	
CBN	
Carbide	

Disc (Inco718 Semi-finishing / Finishing)

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

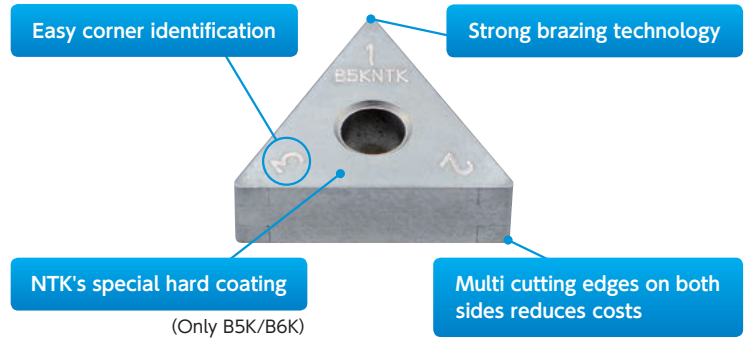
Superior Surface Finish

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

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

BIDEMICS (Brazed) / CBN / PCD

CBN series



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

NEW B99

Features

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

[Recommended cutting conditions]

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

B23

Features

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

[Recommended cutting conditions]

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

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

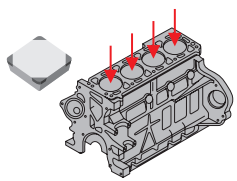
B30

Features

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

[Recommended cutting conditions]

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

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

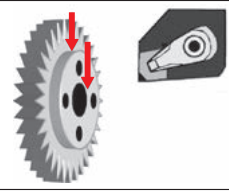
B6K / B36

Features

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

[Recommended cutting conditions]

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

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

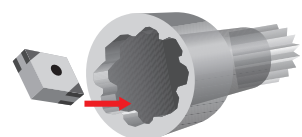
B40

Features

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

[Recommended cutting conditions]

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

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

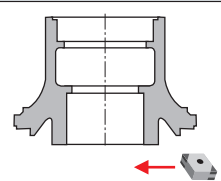
B5K / B52

Features

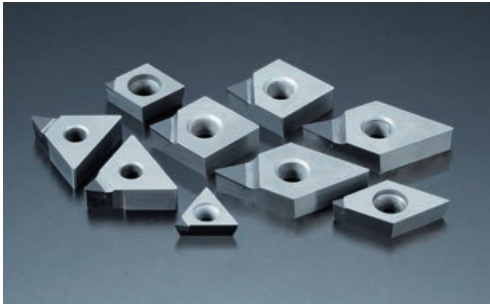
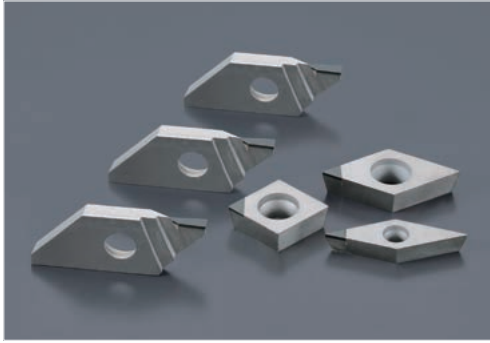
- **Excellent wear resistance due to optimum CBN content with special TiC binders**
- **Ideal for finishing ductile cast iron and continuous cuts for finishing hardened materials**

[Recommended cutting conditions]

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

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

PCD (Polycrystalline Diamond)



Features

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

[Recommended cutting conditions]

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

PD1

Features

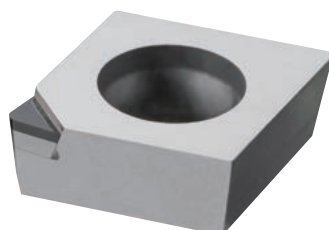
- **Sharp cutting edges**
- **Enables high precision and stable machining by controlling the potential for built-up edge**

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

NEW PD2

Features

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



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

D

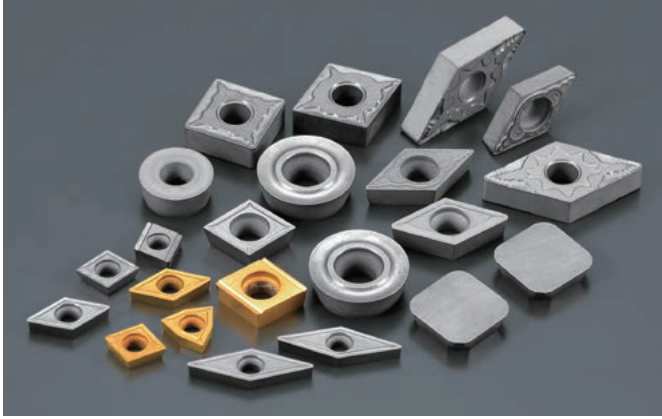


Cermet / PVD-coated Cermet

- Overview D36
- Cermet / PVD-coated Cermet D38

Cermet / PVD-coated Cermet

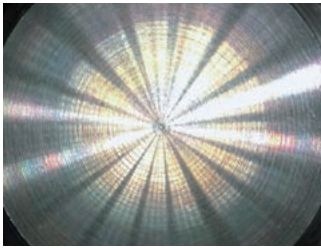
Cermet series



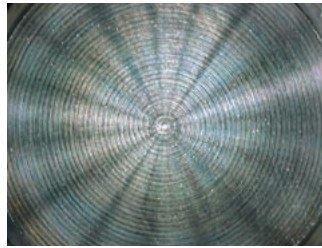
Cermet is a cutting tool material composed mainly of TiC (Titanium Carbide) and TiN (Titanium Nitride). The name, cermet, is derived from the words CERAMIC and METAL (representing carbide). As the name suggests, cutting performance is also in the mid-range of ceramic's and carbide's. The advantages of this material grade are high-quality and excellent surface finishes can be achieved with elevated cutting speeds. Cermets provide extended tool life.

Grade Introduction

[Cermet]



Surface finished with cermet



Surface finished with carbide

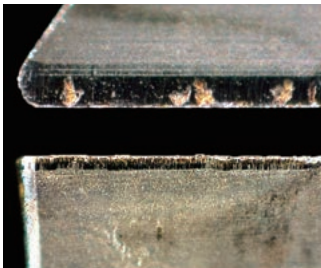
Features

High quality surface finish

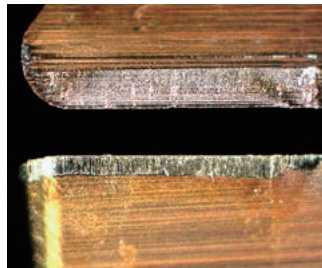
The main components, TiC and TiN, have good BUE resistance as they have low affinity with work materials. Thus, machining with cermets brings high quality surface finish over extended periods of time.

High speed cutting

The main components, TiC and TiN, are more resistant to wear and oxidation at high temperature than WC (tungsten carbide), which is the main component of carbide tools. Because of excellent wear and oxidation resistance, cermet grades are less reactive with work materials and make stable high speed machining possible.



Cermet



Carbide

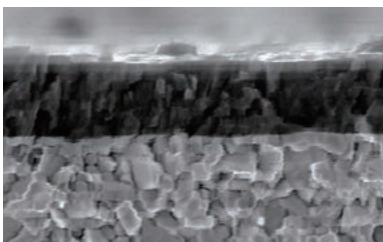
PVD-coated cermet series



PVD TiN or TiCN coated cermet grades bring improved wear resistance. Since the coating layer does not contain any binder components, the coating maximizes the wear resistance of the titanium which delivers excellent performance and the tool life.

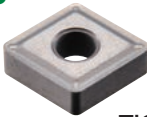
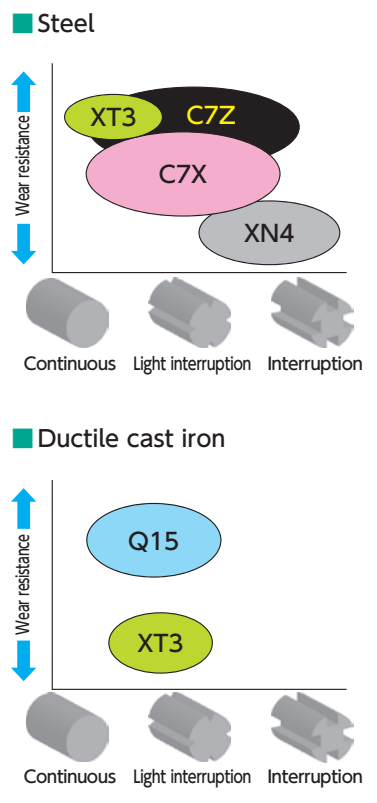

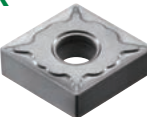
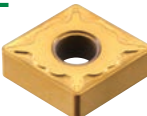

Features

PVD coating with superb hardness and surface smoothness provide excellent wear resistance and adhesion resistance.



Smooth coating layer offers excellent adhesion resistance

Outstanding coating bonding with substrate

Grade / Coating	Applications / Features	Physical properties*						Applications and ceramic property map
		Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K	Thermal conductivity W/m · K	
XT3  TiC+TiN base	P M K N • Well balanced between wear resistance and toughness	6.3	92.5	1,700	450	8.4	21	
Q15  TiC+TiN base+TiCN coat	P M K • Superior wear resistance and toughness	6.3	92.5	1,700	450	8.4	21	
C7X  TiCN base	P M K N • Good combination of heat resistance and toughness	7.0	91.5	1,800	440	8.2	31	
C7Z  TiCN base + TiN coat	P M K N • Perfect combination of heat resistance and toughness	7.0	91.5	1,800	440	8.2	31	
XN4  TiN base	P M • Excellent toughness	5.9	91.5	1,900	450	8.9	42	

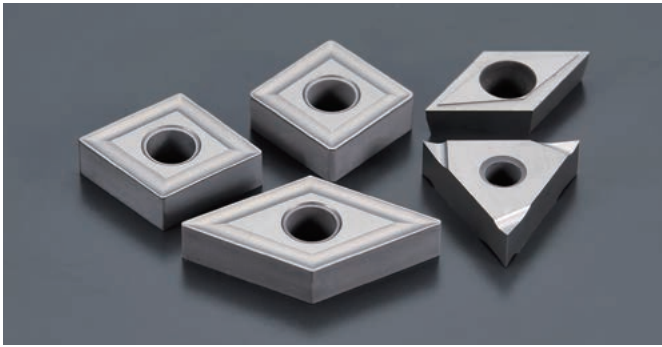
*For coated grades, the values of the base material are indicated.

Applications

Material	General steel Carbon steel , Alloy steel					Stainless steel Stainless steel , Cast steel					Cast iron Gray cast iron , Ductile cast iron			
	Finish ← → Rough					Finish ← → Rough					Finish ← → Rough			
Range	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30
Cermets	XT3		C7X			XT3					XT3			
				XN4				C7X						
PVD Coated cermets	Q15					Q15					Q15			
		C7Z						C7Z						

XT3

Well balanced combination of wear resistance and toughness !



Features

- Well-balanced combination of wear resistance and toughness
- Covers a wide range of steel cutting, from medium cutting to finishing of steel

Crank shaft	
1049	
250 SFM	
.002 IPR	
.001" DOC	
WET	
NTK : XT3	100 pcs
Competitor's cermet	60 pcs

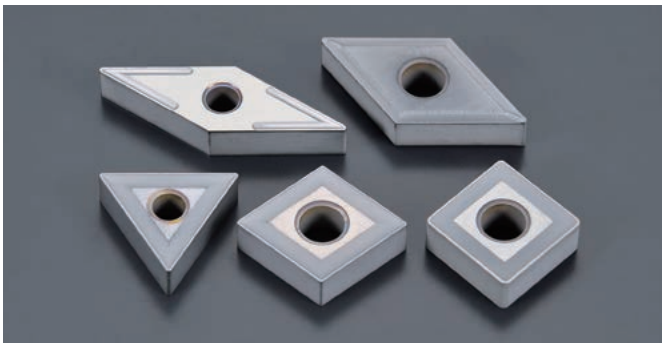
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels • Cast iron 	Conventional lathes	Wear resistance

Grade Introduction

[Cermet]

Q15

Coated cermet for high-speed finishing of ductile cast iron !



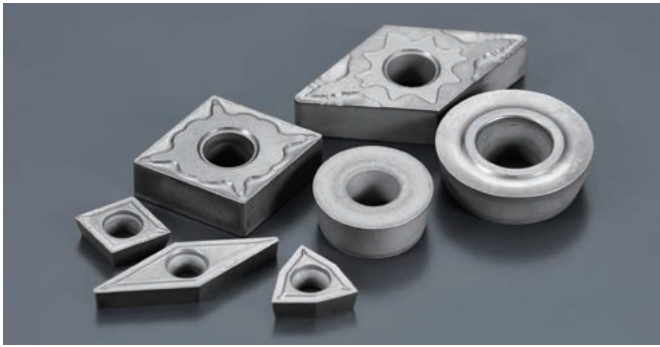
Features

- Further improved wear resistance and toughness from the TiCN-based coating
- The recommended grade for high-speed finishing of ductile cast iron

Differential case	
Ductile cast iron	
525 SFM	
.004 IPR	
.008" DOC	
WET	
NTK : Q15	35 pcs
Competitor's cermet	20 pcs

Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels • Cast iron • Ductile cast iron 	Conventional lathes	Wear resistance

C7X High-strength cermet grade that offers remarkable machining stability !

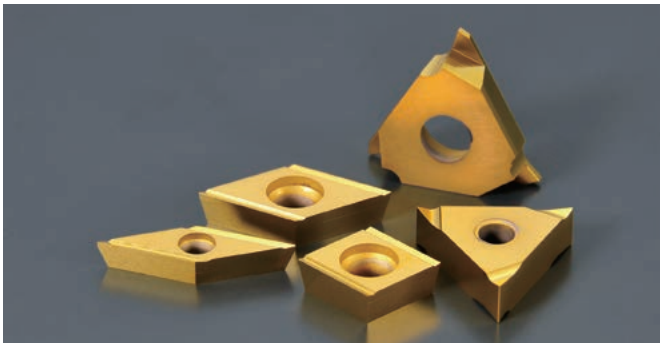


Features

- Overcomes the traditional weakness of conventional cermet grades with improved thermal shock resistance
- Excellent grade for grooving and bearing machining

AT clutch		
SS		
800 SFM		
.0008-.0016 IPR		
.060" DOC		
WET		
NTK : C7X	200 pcs	
Competitor's cermet	100 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels • Cast iron 	Swiss-type lathes Conventional lathes	Balance

C7Z Combining the advantages of thermal shock resistance and fracture resistance !

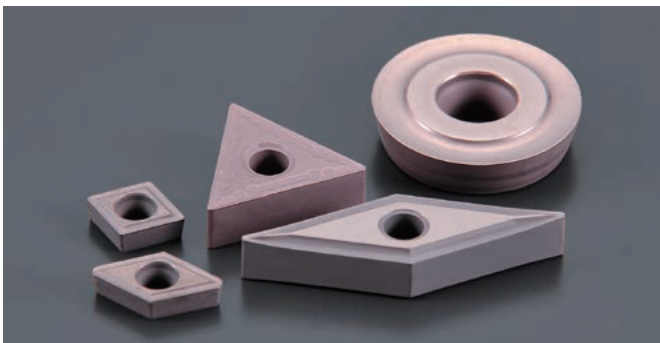


Features

- Further improvement in wear resistance and thermal shock resistance with a TiN-based coating
- Excellent performance in grooving and bearing machining
- The most recommended grade for high-speed machining of steel

Spring		
SS		
430 SFM		
.002 IPR		
.012" DOC		
WET		
NTK : C7Z	1600 pcs	
Competitor's cermet	1200 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels • Cast iron 	Swiss-type lathes Conventional lathes	Balance

XN4 Toughest cermet grade with excellent fracture resistance !



Features

- Allows for stable machining with longer tool life thanks to its excellent fracture resistance

Gear		
5120H		
360 SFM		
.004 IPR		
WET		
NTK : XN4		300 pcs
Competitor's cermet	200 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels 	Conventional lathes	Toughness

MEMO

D



Micro-grain Carbide, PVD / CVD-coated Carbide

- Overview D42
- PVD-coated Carbide D44
- Micro-grain Carbide D46
- CVD-coated Carbide D46
- PVD Coatings D47

Micro-grain Carbide and PVD/CVD-coated Carbide

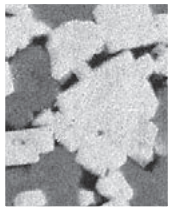
Micro-grain Carbide and PVD/CVD-coated Carbide



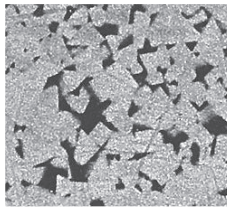
Excellence in precision machining and machining of hard-to-cut materials

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

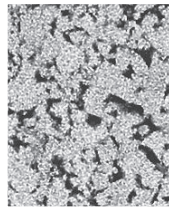
Carbide grade



General carbide structure



Micro-grain carbide structure

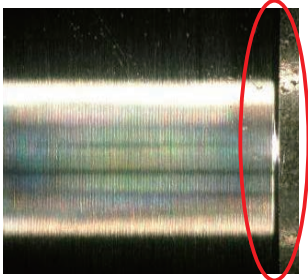


Super micro-grain carbide structure

The result of intensive research and development for improving carbide grades

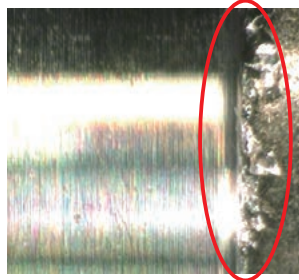
The NTK carbide grade series shows very stable performance under a wide range of conditions. NTK uses micro-grain carbide well balanced between wear resistance and toughness, as substrate.

Features Superior cutting performance



No burrs

Machined with our insert with a sharp cutting edge



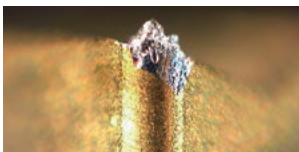
Burrs

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

Relentless pursuit of better cutting performance

NTK takes pride in its carbide grade series for their outstanding cutting performance as a result of grinding ultra sharp cutting edges. This outstanding cutting performance benefits in better burr control, lower tool pressure, stabilized dimensions and improved work hardening control.

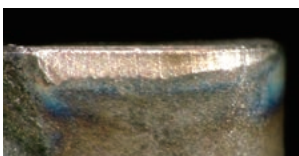
Features Precise analysis on insert wear patterns



Build-up edge



Chipping / fracture



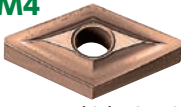
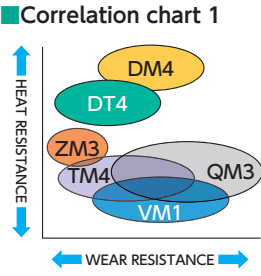


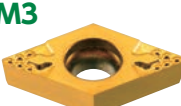



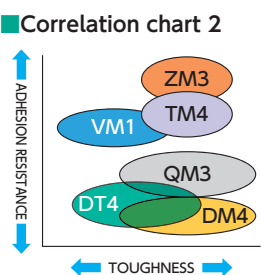
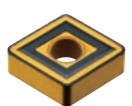
Flank wear



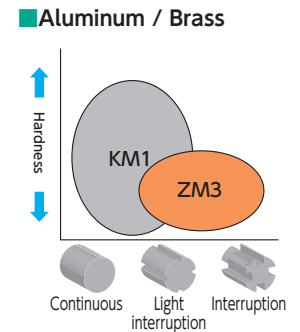
Wear on rake

Continuous research on insert tool life

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

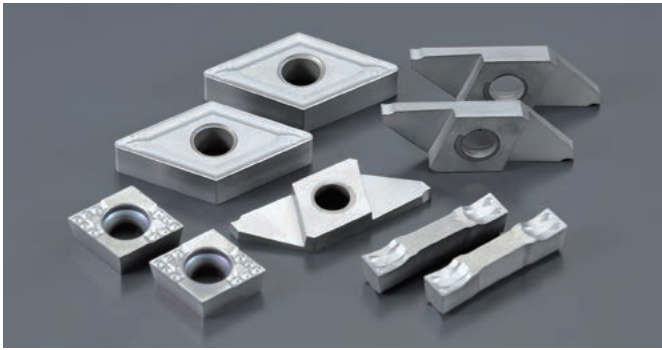
	Grade / Coating	Applications / Features	Physical properties*					Applications map	
			Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K		Thermal conductivity W/m·K
PVD coated	DM4  Micro-grain carbide + Thick TiN-TiCN-TiAlN coat	P M S H • Best oxidation resistance enable high temperature machining	14.4	91.0	3000	580	5.8	63	 <p>■ Correlation chart 1</p> <p>HEAT RESISTANCE ↑</p> <p>WEAR RESISTANCE ↔</p>
	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	
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	 <p>■ Correlation chart 2</p> <p>ADHESION RESISTANCE ↑</p> <p>TOUGHNESS ↔</p>
CVD coated	CP1  Carbide + Thick film Al ₂ O ₃ -TiCN coat	K • Good balance of wear resistance and toughness for cast iron machining	14.9	92.0	2400	640	—	—	

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



QM3

Superb wear resistance and fracture resistance in interrupted cutting !



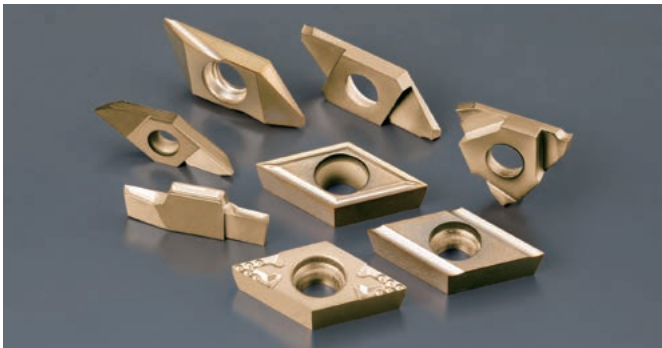
Features

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

Spindle		
4135		
330 SFM		
.0012 IPR		
.008" DOC		
WET		
NTK : QM3	600 pcs	
Competitor's PVD-coated carbide	300 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Heat resistant alloys 	Swiss-type lathes Conventional lathes	Wear resistance

NEW DT4

Excellent heat resistance for Swiss-type lathes !



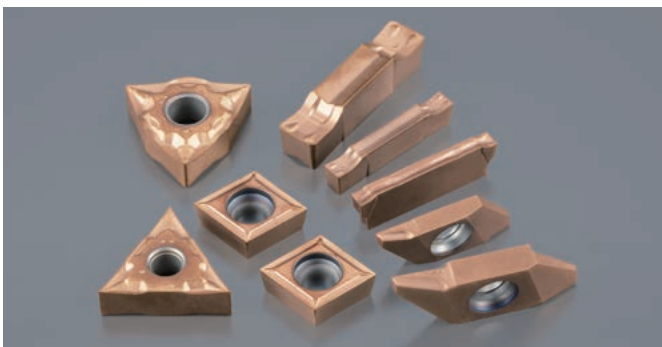
Features

- Excellent oxidation resistance for Swiss-type lathes

Pin		
440 CSS		
260 SFM		
.002 IPR		
.039" DOC		
WET		
NTK : DT4	1100 pcs	
Competitor's PVD-coated carbide	800 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Swiss-type lathes	Oxidation Heat resistance

NEW DM4

Excellent oxidation resistance !



Features

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

Case		
Inco 718		
130 SFM		
.001 IPR		
.008" DOC		
WET		
NTK : DM4	110 pcs	
Competitor's PVD-coated carbide	90 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Conventional lathes Swiss-type lathes	Oxidation Heat resistance

TM4

Next generation standard insert grade Swiss-type lathes !



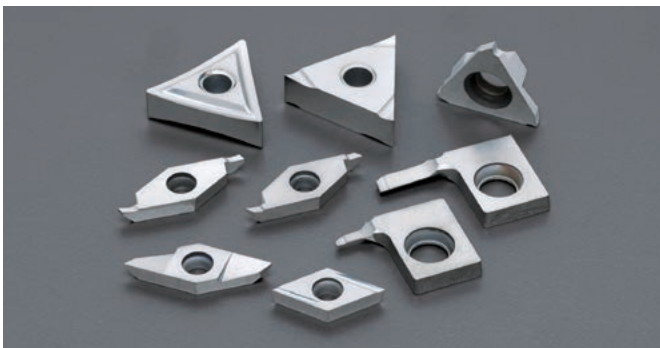
Features

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

Automobile parts		
304 SS		
260 SFM		
.0008 IPR		
.047" DOC		
WET		
NTK : TM4	950 pcs	
Competitor's PVD-coated carbide	500 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Balance

VM1

High precision machining of small diameter parts !



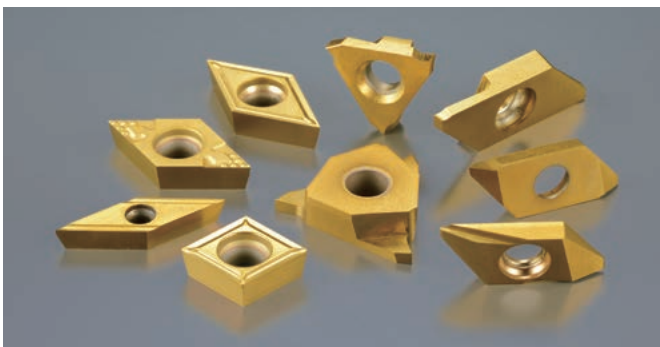
Features

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

Plug		
12L14		
460 SFM		
.0006 IPR		
.004" DOC		
WET		
NTK : VM1	800-1000 pcs	
Competitor's PVD-coated carbide	150 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Edge sharpness

ZM3

The best selling grade for automatic 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 automatic lathes

Case		
1010		
330 SFM		
.0047 IPR		
.012"-.015" DOC		
WET		
NTK : ZM3	6000 pcs	
Competitor's PVD-coated carbide	150 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Non-ferrous materials 	Swiss-type lathes Conventional lathes	Adhesion resistance

Micro-grain Carbide

KM1

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



Features

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

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



CVD-coated Carbide

CP1

For roughing cast iron and ductile cast iron !



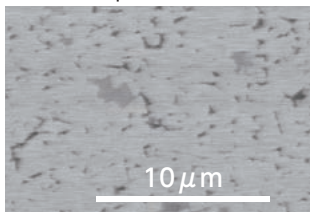
Features

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

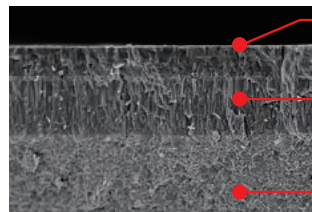
HUB		
Ductile Cast Iron		
660 SFM		
.0047 IPR		
.004" DOC		
WET		
NTK : CP1	200 pcs	
Competitor's CVD coated carbide	100 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Ductile cast iron • Gray cast iron 	Conventional lathes	Wear resistance

[Coating structure]

Photo of composition (COMP)×5000



Film structure



Coating of highly smooth micro-grain Al₂O₃

Coating of micro-grain pillar-shaped TiCN

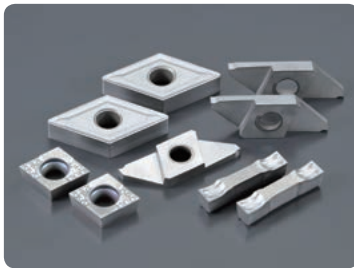
Substrate: ultra-hard carbide

Equivalent to HRA 91.3 Young's modulus : 640 GPa

PVD Coatings

QM3/Q15

Q-Coat



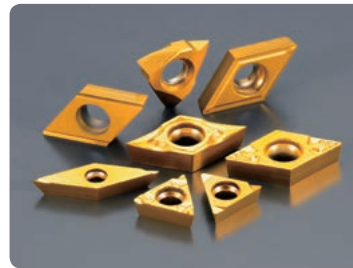
Best wear resistance

- stainless steel
- Carbon steel
- Alloy steel

→D38 · D44

TM4

TM-Coat



Best balance of wear resistance and adhesion resistance

- For small part machining in general

→D45

DM4

DM-Coat



Best heat resistance

- Heat resistant alloy
- Stainless steel
- Hardened material

→D44

DT4

DT-Coat



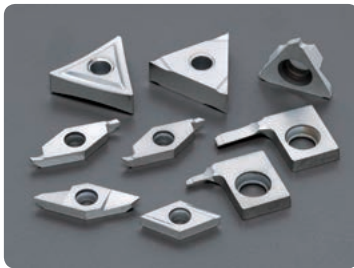
Best balance of heat resistance and sharp edges

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

→D44

VM1

V-Coat



Best edge sharpness

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

→D45

ZM3/C7Z

Z-Coat



Best adhesion resistance

- General purpose machining

→D39 · D45

Grade Introduction

[Carbide]

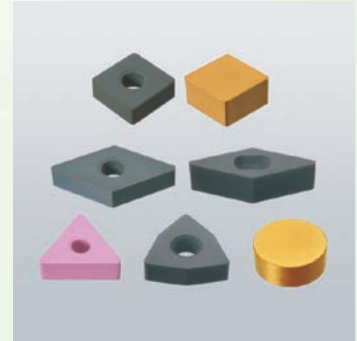
Coating Specifications

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

◎1st choice ○2nd choice

MEMO

E



Insert Item List

- **BIDEMICS / Ceramics** E2
- **BIDEMICS (Brazed) / CBN / PCD**... E22
- **Carbide / Cermet** E28

BIDEMICS / Ceramics

CCGW

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

	Steel	P																	
	Stainless Steel	M																	
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N																	
	Heat Resistant Alloy	S		●	●	●	●	●											
	Hardened Material	H					●							●	●	●	●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics														
				JX1	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC						
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4	
CCGW 21.51 T0225	CCGW 060204 T00525	1/4	.016											●				●	
CCGW 21.52 T0225	CCGW 060208 T00525	1/4	.031											●				●	
CCGW 32.51 T0425	CCGW 09T304 T01025	3/8	.016											●				●	
CCGW 32.52 T0425	CCGW 09T308 T01025	3/8	.031											●				●	
CCGW 431 T0420	CCGW 120404 T01020	1/2	.016						●										
CCGW 432 T0420	CCGW 120408 T01020	1/2	.031						●	●									

Holders → Q10
Boring bars → V26

CDH

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

	Steel	P																	
	Stainless Steel	M																	
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N																	
	Heat Resistant Alloy	S		●	●	●	●	●											
	Hardened Material	H					●							●	●	●	●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics														
				JX1	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC						
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4	
CDH 22 P2810	CDH 1207 P07010	1/2												●	●	●			
CDH 33 P6015	CDH 1909 P15015	3/4												○					
CDH 33 Q6010	CDH 1909 Q15010	3/4												●					
CDH 33 Q6010B	CDH 1909 Q15010B	3/4													●	●			
CDH 42 P8015	CDH 2512 P20015	1												●			●		
CDH 42 P12010	CDH 2512 P30010G	1												●	●				
CDH 43 P6010	CDH 2519 P15015	1												●					
CDH 515 P7110B	CDH 3209 P18010B	1-1/4												●					
CDH 515 P7110	CDH 3209 P18010	1-1/4												●					
CDH 515 P8015	CDH 3209 P20015	1-1/4												●			●		
CDH 515 Q7110	CDH 3209 Q18010	1-1/4												●	●	●			
CDH 53 P8015	CDH 3219 P20015	1-1/4												●			●		
CDH 53 Q9515	CDH 3219 Q24015	1-1/4												●	●				

Holders → F20

- : 1st Choice ● : Alternate choice
- : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List

[BIDEMICS / Ceramics]

CNG

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

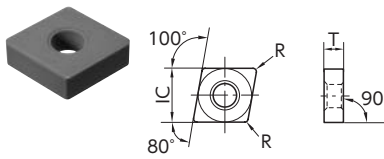
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics																		
					SiALON					Alumina		Alumina - TiC											
					SX7	SX9	SX5	WAI	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4					
CNG 431 T0425 CNG 431 T0525	CNGN 120404 T01025 CNGN 120404 T01225	1/2	.016																				
CNG 432 T0220 CNG 432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

Holders → F6 • F7
Boring bars → G5

Insert Item List
[BIDEMICS / Ceramics]

CNGA

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



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

Item Number	ISO Item Number	IC	R	Ceramics															
				SiAlON					Whisker		Silicon Nitride		Alumina		Alumina - TiC				
				JX1	SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4	
CNGA 431 T0220	CNGA 120404 T00520	1/2	.016						●										
CNGA 431 T0425	CNGA 120404 T01025	1/2	.016																
CNGA 431 T0525	CNGA 120404 T01225	1/2	.016																
CNGA 431 S0825	CNGA 120404 S02025	1/2	.016																
CNGA 431 Z0825	CNGA 120404 Z02025	1/2	.016																
CNGA 432 T0220	CNGA 120408 T00520	1/2	.031			●			●										
CNGA 432 T0320	CNGA 120408 T00820	1/2	.031		●														
CNGA 432 T0420	CNGA 120408 T01020	1/2	.031						●										
CNGA 432 T0425	CNGA 120408 T01025	1/2	.031																
CNGA 432 T0525	CNGA 120408 T01225	1/2	.031																
CNGA 432 T0820	CNGA 120408 T02020	1/2	.031						●										
CNGA 432 Z0820	CNGA 120408 Z02020	1/2	.031																
CNGA 432 S0825	CNGA 120408 S02025	1/2	.031																
CNGA 432 T0825	CNGA 120408 T02025	1/2	.031																
CNGA 432 Z0825	CNGA 120408 Z02025	1/2	.031																
CNGA 433 T0220	CNGA 120412 T00520	1/2	.047																
CNGA 433 T0320	CNGA 120412 T00820	1/2	.047		●														
CNGA 433 T0420	CNGA 120412 T01020	1/2	.047																
CNGA 433 T0425	CNGA 120412 T01025	1/2	.047																
CNGA 433 T0525	CNGA 120412 T01225	1/2	.047																
CNGA 433 T0820	CNGA 120412 T02020	1/2	.047																
CNGA 433 Z0820	CNGA 120412 Z02020	1/2	.047																
CNGA 433 S0825	CNGA 120412 S02025	1/2	.047																
CNGA 433 T0825	CNGA 120412 T02025	1/2	.047																
CNGA 433 Z0825	CNGA 120412 Z02025	1/2	.047																
CNGA 434 T0220	CNGA 120416 T00520	1/2	.063																
CNGA 434 T0420	CNGA 120416 T01020	1/2	.063																
CNGA 434 T0525	CNGA 120416 T01225	1/2	.063																
CNGA 434 T0820	CNGA 120416 T02020	1/2	.063																
CNGA 434 T0825	CNGA 120416 T02025	1/2	.063																
CNGA 542 T0825	CNGA 160608 T02025	5/8	.031																
CNGA 543 T0220	CNGA 160612 T00520	5/8	.047																
CNGA 543 T0420	CNGA 160612 T01020	5/8	.047																
CNGA 543 T0820	CNGA 160612 T02020	5/8	.047																
CNGA 543 T0825	CNGA 160612 T02025	5/8	.047																
CNGA 543 Z0825	CNGA 160612 Z02025	5/8	.047																
CNGA 544 T0220	CNGA 160616 T00520	5/8	.063																
CNGA 544 T0825	CNGA 160616 T02025	5/8	.063																
CNGA 544 Z0825	CNGA 160616 Z02025	5/8	.063																
CNGA 643 T0220	CNGA 190612 T00520	3/4	.047																
CNGA 643 T0420	CNGA 190612 T01020	3/4	.047																
CNGA 643 T0525	CNGA 190612 T01225	3/4	.047																
CNGA 643 Z0620	CNGA 190612 Z01520	3/4	.047																
CNGA 643 T0820	CNGA 190612 T02020	3/4	.047																
CNGA 643 T0825	CNGA 190612 T02025	3/4	.047																
CNGA 644 T0220	CNGA 190616 T00520	3/4	.063																
CNGA 644 T0825	CNGA 190616 T02025	3/4	.063																

Holders → F6 • F7 • Q37

Boring bars → G5

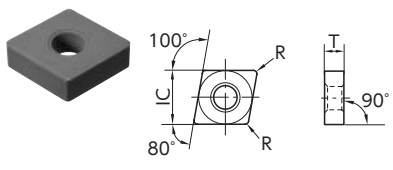
● : 1st Choice ● : Alternate choice
 ● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List

[BIDEMICS / Ceramics]

CNGA-WL with wiper for higher feed

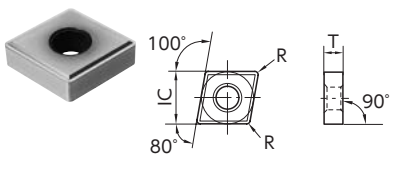
(inch)	IC	T
CNGA 43 WL	1/2	3/16

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

Holders → F6 • F7 • Q37
Boring bars → G5

CNGG with chipbreaker

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

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

Holders → F6 • F7 • Q37
Boring bars → G5

Insert Item List

[BIDEMICS / Ceramics]

BIDEMICS / Ceramics

CNGX

(inch)	IC	T
CNGX 43	1/2	3/16
CNGX 45	1/2	5/16

	Steel	P																			
	Stainless Steel	M																			
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Non-Ferrous Material	N																			
	Heat Resistant Alloy	S		●	●	●	●	●													
	Hardened Material	H							●					●	●	●	●	●	●		
Item Number	ISO Item Number	IC	R	Ceramics																	
				BIDEMICS	SiAlON					Whisker		Silicon Nitride		Alumina		Alumina - TiC					
				JX1	SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4			
CNGX 432 T0320	CNGX 120408 T00820	1/2	.031		●																
CNGX 432 T0420	CNGX 120408 T01020	1/2	.031							●											
CNGX 432 T0820	CNGX 120408 T02020	1/2	.031							●											
CNGX 433 T0220	CNGX 120412 T00520	1/2	.047		●																
CNGX 433 T0320	CNGX 120412 T00820	1/2	.047		●																
CNGX 433 T0420	CNGX 120412 T01020	1/2	.047																		
CNGX 433 T0820	CNGX 120412 T02020	1/2	.047							●											
CNGX 434 T0420	CNGX 120416 T01020	1/2	.063							●											
CNGX 434 T0820	CNGX 120416 T02020	1/2	.063							●											
CNGX 452 T0220	CNGX 120708 T00520	1/2	.031			●															
CNGX 452 T0320	CNGX 120708 T00820	1/2	.031		●																
CNGX 452 T0420	CNGX 120708 T01020	1/2	.031																		
CNGX 452 T0820	CNGX 120708 T02020	1/2	.031							●											
CNGX 452 T0825	CNGX 120708 T02025	1/2	.031							●											
CNGX 453 T0220	CNGX 120712 T00520	1/2	.047			●															
CNGX 453 T0320	CNGX 120712 T00820	1/2	.047		●																
CNGX 453 T0420	CNGX 120712 T01020	1/2	.047		●																
CNGX 453 T0820	CNGX 120712 T02020	1/2	.047			●				●											
CNGX 453 T0825	CNGX 120712 T02025	1/2	.047							●			●								
CNGX 453 S0830	CNGX 120712 S02030	1/2	.047																●		
CNGX 454 T0420	CNGX 120716 T01020	1/2	.063							●											
CNGX 454 T0425	CNGX 120716 T01025	1/2	.063																		
CNGX 454 T0820	CNGX 120716 T02020	1/2	.063			●				●											
CNGX 454 S0825	CNGX 120716 S02025	1/2	.063																		
CNGX 454 T0825	CNGX 120716 T02025	1/2	.063							●											
CNGX 454 S0830	CNGX 120716 S02030	1/2	.063																●		

Holders → F6

Boring bars → G5

DNG

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

	Steel	P																			
	Stainless Steel	M																			
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Non-Ferrous Material	N																			
	Heat Resistant Alloy	S		●	●	●	●	●													
	Hardened Material	H							●						●	●	●	●	●		
Item Number	ISO Item Number	IC	R	Ceramics																	
				BIDEMICS	SiAlON					Whisker		Silicon Nitride		Alumina		Alumina - TiC					
				JX1	SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4			
DNG 431 T0420	DNGN 150404 T01020	1/2	.016																		
DNG 432 T0220	DNGN 150408 T00520	1/2	.031							●											
DNG 432 T0420	DNGN 150408 T01020	1/2	.031							●											
DNG 432 T0425	DNGN 150408 T01025	1/2	.031																		
DNG 432 T0525	DNGN 150408 T01225	1/2	.031											○		●			○		
DNG 432 S0825	DNGN 150408 S02025	1/2	.031																○		
DNG 433 T0220	DNGN 150412 T00520	1/2	.047																		
DNG 433 T0420	DNGN 150412 T01020	1/2	.047																		
DNG 433 T0625	DNGN 150412 T01525	1/2	.047																		
DNG 433 T0825	DNGN 150412 T02025	1/2	.047																		
DNG 434 T0220	DNGN 150416 T00520	1/2	.063																		
DNG 434 T0420	DNGN 150416 T01020	1/2	.063																		
DNG 434 T0425	DNGN 150416 T01025	1/2	.063																		
DNG 453 T0825	DNGN 150712 T02025	1/2	.047																		
DNG 454 T0825	DNGN 150716 T02025	1/2	.063																		
DNG 543 T0825	DNGN 190612 T02025	5/8	.047																		

● : 1st Choice ● : Alternate choice
 ● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List [BIDEMICS / Ceramics]

DNGA

(inch)	IC	T	(inch)	IC	T
DNGA 33	3/8	3/16	DNGA 44	1/2	1/4
DNGA 43	1/2	3/16	DNGA 54	5/8	1/4

	Steel	P																						
	Stainless Steel	M																						
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
	Non-Ferrous Material	N																						
	Heat Resistant Alloy	S	●	●	●	●	●																	
	Hardened Material	H					●								●	●	●	●	●					
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics																			
					SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC										
					JX1	SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4					
DNGA 331 T0820	DNGA 110404 T02020	3/8	.016																●					
DNGA 431 T0220	DNGA 150404 T00520	1/2	.016							●									○	●				
DNGA 431 T0425	DNGA 150404 T01025	1/2	.016																			●		
DNGA 431 T0525	DNGA 150404 T01225	1/2	.016																				●	
DNGA 431 S0825	DNGA 150404 S02025	1/2	.016																				●	
DNGA 431 Z0825	DNGA 150404 Z02025	1/2	.016																				●	●
DNGA 432 T0220	DNGA 150408 T00520	1/2	.031				●	●	●															
DNGA 432 T0320	DNGA 150408 T00820	1/2	.031			●																		
DNGA 432 T0420	DNGA 150408 T01020	1/2	.031							●														
DNGA 432 T0425	DNGA 150408 T01025	1/2	.031																				●	
DNGA 432 T0525	DNGA 150408 T01225	1/2	.031																					●
DNGA 432 T0820	DNGA 150408 T02020	1/2	.031								●													●
DNGA 432 S0825	DNGA 150408 S02025	1/2	.031																					●
DNGA 432 T0825	DNGA 150408 T02025	1/2	.031					○																●
DNGA 432 Z0820	DNGA 150408 Z02020	1/2	.031								●													●
DNGA 432 Z0825	DNGA 150408 Z02025	1/2	.031																					●
DNGA 433 T0220	DNGA 150412 T00520	1/2	.047					●	●	●														
DNGA 433 T0320	DNGA 150412 T00820	1/2	.047																					
DNGA 433 T0420	DNGA 150412 T01020	1/2	.047								●													
DNGA 433 T0425	DNGA 150412 T01025	1/2	.047																				○	
DNGA 433 T0525	DNGA 150412 T01225	1/2	.047																					
DNGA 433 T0820	DNGA 150412 T02020	1/2	.047																					
DNGA 433 S0825	DNGA 150412 S02025	1/2	.047								●													
DNGA 433 T0825	DNGA 150412 T02025	1/2	.047					●																
DNGA 433 Z0825	DNGA 150412 Z02025	1/2	.047																					●
DNGA 434 T0220	DNGA 150416 T00520	1/2	.063								●													
DNGA 434 T0420	DNGA 150416 T01020	1/2	.063																					
DNGA 434 T0525	DNGA 150416 T01225	1/2	.063																					
DNGA 434 S0820	DNGA 150416 S02020	1/2	.063																					●
DNGA 436 T0420	DNGA 150424 T01020	1/2	.094								●													
DNGA 442 T0825	DNGA 150608 T02025	1/2	.031																					●
DNGA 542 T0820	DNGA 190608 T02020	5/8	.031																					●
DNGA 543 T0820	DNGA 190612 T02020	5/8	.047																					●
DNGA 544 T0825	DNGA 190616 T02025	5/8	.063																					●

Holders → F8 • F9 • Q38

Boring bars → G5

DNGG with chip-breaker

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

	Steel	P																							
	Stainless Steel	M																							
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Non-Ferrous Material	N																							
	Heat Resistant Alloy	S	●	●	●	●	●																		
	Hardened Material	H							●													●	●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics																				
					SiALON				Whisker	Silicon Nitride		Alumina		Alumina - TiC											
					JX1	SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4						
DNGG 432 Z0430 AG	DNGG 150408 Z01030 AG	1/2	.031																				●		
DNGG 433 Z0430 AG	DNGG 150412 Z01030 AG	1/2	.047																					○	

Holders → F8 • F9 • Q38

Boring bars → G5

BIDEMICS / Ceramics

DNGX

(inch)	IC	T
DNGX 1207	.394	5/16
DNGX 45	1/2	5/16

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

Holders → F8 • F9
Boring bars → G5

LNJ / LNM

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

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

● : 1st Choice ● : Alternate choice
● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List
[BIDEMICS / Ceramics]

RCGX

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

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

* To be released in November 2015. Holders → F17 • F18 • F19

RCGX10

(inch)	IC	T	θ
RCGX 101	3/16	.240	90
RCGX 102	1/4	.309	120
RCGX 103	3/8	.309	120
RCGX 104	1/2	.312	120

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

Holders → F18 • F19

BIDEMICS / Ceramics

RNG

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

				Steel		P												
				Stainless Steel		M												
Cast Iron		K			•	•	•	•	•	•	•	•	•	•	•	•	•	
Non-Ferrous Material		N																
Heat Resistant Alloy		S			•	•	•	•	•									
Hardened Material		H						•						•	•	•	•	
Item Number	ISO Item Number	IC	R	Ceramics														
				SiAlON					Whisker		Silicon Nitride		Alumina		Alumina - TiC			
				JX1	SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
RNG 32 T0220	RNGN 090300 T00525	3/8						•										
RNG 32 T0425	RNGN 090300 T01025	3/8												•				
RNG 32 T0525	RNGN 090300 T01225	3/8																•
RNG 33 T0320	RNGN 090400 T00820	3/8			•													
RNG 42 T0425	RNGN 120300 T01025	1/2												•				
RNG 43 E01	RNGN 120400 E002	1/2				•*												
RNG 43 E02	RNGN 120400 E004	1/2			•*													
RNG 43 T0220	RNGN 120400 T00520	1/2			•	•		•										
RNG 43 T0225	RNGN 120400 T00525	1/2			•	○		○										
RNG 43 T0320	RNGN 120400 T00820	1/2			•													
RNG 43 T0420	RNGN 120400 T01020	1/2			•	•		•		•								
RNG 43 T0425	RNGN 120400 T01025	1/2											•	○				
RNG 43 T0525	RNGN 120400 T01225	1/2													•			•*
RNG 43 T0820	RNGN 120400 T02020	1/2							•					•				
RNG 43 S0825	RNGN 120400 S02025	1/2															•	
RNG 43 T0825	RNGN 120400 T02025	1/2				○												
RNG 43 Z0825	RNGN 120400 Z02025	1/2														•		•
RNG 43 T2820	RNGN 120400 T07020	1/2												•				
RNG 45 E01	RNGN 120700 E002	1/2				•		•										
RNG 45 E02	RNGN 120700 E004	1/2			•	•												
RNG 45 E03	RNGN 120700 E007	1/2													○			
RNG 45 T0220	RNGN 120700 T00520	1/2				•		•										
RNG 45 T0225	RNGN 120700 T00525	1/2				•		○										
RNG 45 T0320	RNGN 120700 T00820	1/2			•	•												
RNG 45 T0420	RNGN 120700 T01020	1/2				•		•										
RNG 45 T0525	RNGN 120700 T01225	1/2																•*
RNG 45 Z0620	RNGN 120700 Z01520	1/2																
RNG 45 S0825	RNGN 120700 S02025	1/2															•	
RNG 45 T0825	RNGN 120700 T02025	1/2												•				
RNG 45 Z0825	RNGN 120700 Z02025	1/2														•		•
RNG 45 P2810	RNGN 120700 P07010	1/2												•				
RNG 55 T0220	RNGN 150700 T00520	5/8					•	•	•									
RNG 55 T0225	RNGN 150700 T00525	5/8						○										
RNG 55 T0320	RNGN 150700 T00820	5/8				•												
RNG 64 T0825	RNGN 190600 T02025	3/4												•				
RNG 64 P6010	RNGN 190600 P15010	3/4												•				
RNG 65 T0220	RNGN 190700 T00520	3/4					•	•	•									
RNG 65 T0225	RNGN 190700 T00525	3/4						○										
RNG 65 T0320	RNGN 190700 T00820	3/4				•												
RNG 65 T0420	RNGN 190700 T01020	3/4					•		•									
RNG 85 T0220	RNGN 250700 T00520	1					○	•	○									
RNG 85 S6015	RNGN 250700 S15015	1																
RNG 86 T0220	RNGN 250900 T00520	1																

* To be released in October 2015.

Holders → F16

Boring bars → G4

Cutters → I7

- : 1st Choice • : Alternate choice
- : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List [BIDEMICS / Ceramics]

RPG

(inch)	IC	T	(inch)	IC	T
RPG 21.5	1/4	3/32	RPG 43	1/2	3/16
RPG 32	3/8	1/8	RPG 65	3/4	5/16
RPG 42	1/2	1/8			

		Steel	P																		
		Stainless Steel	M																		
		Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Non-Ferrous Material	N																		
		Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Hardened Material	H					●													
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics																
					JX1	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC							
						SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
RPG 21.5 E02	RPGN 060200 E004	1/4			●																
RPG 21.5 T0220	RPGN 060200 T00520	1/4				●		●	●												
RPG 21.5 T0320	RPGN 060200 T00820	1/4				●															
RPG 21.5 T0420	RPGN 060200 T01020	1/4				●			●												
RPG 32 E02	RPGN 090300 E004	3/8				●															
RPG 32 T0220	RPGN 090300 T00520	3/8					●		●												
RPG 32 T0320	RPGN 090300 T00820	3/8				●															
RPG 32 T0420	RPGN 090300 T01020	3/8				●			●												
RPG 32 T0425	RPGN 090300 T01025	3/8															●				
RPG 42 T0525	RPGN 120300 T01225	1/2																			●
RPG 43 E01	RPGN 120400 E002	1/2					●														
RPG 43 E02	RPGN 120400 E004	1/2				●															
RPG 43 T0220	RPGN 120400 T00520	1/2					●		●												
RPG 43 T0225	RPGN 120400 T00525	1/2						○													
RPG 43 T0320	RPGN 120400 T00820	1/2				●															
RPG 43 T0420	RPGN 120400 T01020	1/2					●		●										●		
RPG 43 Z0620	RPGN 120400 Z01520	1/2							●												
RPG 43 Z0825	RPGN 120400 Z02025	1/2																	●		
RPG 65 T0220	RPGN 190700 T00520	3/4							●												

Cutters → I 6
 Boring bars → G4

RPGX

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

		Steel	P																			
		Stainless Steel	M																			
		Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Non-Ferrous Material	N																			
		Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Hardened Material	H					●												●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics																	
					JX1	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC								
						SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4			
RPGX 23 T0220	RPGX 060400 T00520	1/4						●	●													
RPGX 35 E02	RPGX 090700 E004	3/8			●*				●													
RPGX 35 T0220	RPGX 090700 T00520	3/8				●		●	●													
RPGX 35 T0320	RPGX 090700 T00820	3/8				●																
RPGX 35 T0420	RPGX 090700 T01020	3/8				●			●													
RPGX 45 E02	RPGX 120700 E004	1/2			●*				●													
RPGX 45 T0220	RPGX 120700 T00520	1/2					●	●	●													
RPGX 45 T0320	RPGX 120700 T00820	1/2			●				●													
RPGX 45 T0420	RPGX 120700 T01020	1/2					●		●													

* To be released in November 2015. Holders → F17 • F18 • F19

BIDEMICS / Ceramics

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

SCGW

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

SDCW

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

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

Cutters → I 17 • I 18 • I 19

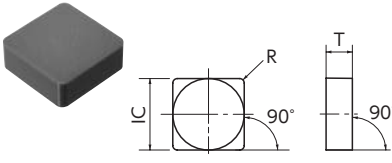
Insert Item List

[BIDEMICS / Ceramics]

- : 1st Choice ● : Stock
- : Alternate choice ○ : 1-2 week delivery
- R : Stock (Right-hand only) L : Stock (Left-hand only)

SNG3 / SNG4 / SNG55

(inch)	IC	T	(inch)	IC	T
SNG 32	3/8	1/8	SNG 45	1/2	5/16
SNG 33	3/8	3/16	SNG 55	5/8	5/16
SNG 43	1/2	3/16			



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

Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics															
					SiALON					Whisker	Silicon Nitride		Alumina		Alumina - TiC					
					JX1	SX7	SX9	SX5	WA1		SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
SNG 322 T0425	SNGN 090308 T01025	3/8	.031																	
SNG 322 T0525	SNGN 090308 T01225	3/8	.031																	
SNG 324 T0425	SNGN 090316 T01025	3/8	.063																	
SNG 324 T0525	SNGN 090316 T01225	3/8	.063																	
SNG 332 T0425	SNGN 090408 T01025	3/8	.031																	
SNG 431 T0425	SNGN 120404 T01025	1/2	.016																	
SNG 432 T0220	SNGN 120408 T00520	1/2	.031																	
SNG 432 T0420	SNGN 120408 T01020	1/2	.031																	
SNG 432 T0425	SNGN 120408 T01025	1/2	.031																	
SNG 432 T0525	SNGN 120408 T01225	1/2	.031																	
SNG 432 T0820	SNGN 120408 T02020	1/2	.031																	
SNG 432 S0825	SNGN 120408 S02025	1/2	.031																	
SNG 432 T0825	SNGN 120408 T02025	1/2	.031																	
SNG 433 T0220	SNGN 120412 T00520	1/2	.047																	
SNG 433 T0420	SNGN 120412 T01020	1/2	.047																	
SNG 433 T0425	SNGN 120412 T01025	1/2	.047																	
SNG 433 T0525	SNGN 120412 T01225	1/2	.047																	
SNG 433 T0820	SNGN 120412 T02020	1/2	.047																	
SNG 433 S0825	SNGN 120412 S02025	1/2	.047																	
SNG 433 T0825	SNGN 120412 T02025	1/2	.047																	
SNG 433 Z0825	SNGN 120412 Z02025	1/2	.047																	
SNG 434 T0220	SNGN 120416 T00520	1/2	.063																	
SNG 434 T0420	SNGN 120416 T01020	1/2	.063																	
SNG 434 T0425	SNGN 120416 T01025	1/2	.063																	
SNG 434 T0525	SNGN 120416 T01225	1/2	.063																	
SNG 434 T0820	SNGN 120416 T02020	1/2	.063																	
SNG 434 S0825	SNGN 120416 S02025	1/2	.063																	
SNG 434 T0825	SNGN 120416 T02025	1/2	.063																	
SNG 435 T0420	SNGN 120420 T01020	1/2	.079																	
SNG 435 T0425	SNGN 120420 T01025	1/2	.079																	
SNG 435 T0820	SNGN 120420 T02020	1/2	.079																	
SNG 435 T0825	SNGN 120420 T02025	1/2	.079																	
SNG 436 T0425	SNGN 120424 T01025	1/2	.094																	
SNG 436 T0625	SNGN 120424 T01525	1/2	.094																	
SNG 436 T0820	SNGN 120424 T02020	1/2	.094																	
SNG 438 T0525	SNGN 120432 T01225	1/2	.125																	
SNG 438 S0825	SNGN 120432 S02025	1/2	.125																	
SNG 452 T0220	SNGN 120708 T00520	1/2	.031																	
SNG 452 T0825	SNGN 120708 T02025	1/2	.031																	
SNG 453 T0220	SNGN 120712 T00520	1/2	.047																	
SNG 453 S0825	SNGN 120712 S02025	1/2	.047																	
SNG 453 T0825	SNGN 120712 T02025	1/2	.047																	
SNG 454 T0220	SNGN 120716 T00520	1/2	.063																	
SNG 454 Z0620	SNGN 120716 Z01520	1/2	.063																	
SNG 454 T0825	SNGN 120716 T02025	1/2	.063																	
SNG 554 T0820	SNGN 150716 T02020	5/8	.063																	

- SNG6 → E14

- Holders → F10 • F11

- Boring bars → G6

- Cutters → I 10 • I 12 • I 14

BIDEMICS / Ceramics

SNG6

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

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

SNG3 / 4 / 5 → E13

SNGA

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

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

Holders → F11

Boring bars → G6

SNGX

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

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

Holders → F10 • F11
Boring bars → G6

SPG

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

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

● : 1st Choice ● : Alternate choice
 ● : Stock ○ : 1-2 week delivery ■ : While stock lasts R : Stock (Right-hand only) L : Stock (Left-hand only)

BIDEMICS / Ceramics

TBGE

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

	Steel	P																		
	Stainless Steel	M																		
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N																		
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Hardened Material	H							●					●	●	●	●	●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics															
				JX1	SiAlON			Whisker	Silicon Nitride		Alumina		Alumina - TiC							
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
TBGE 521 T0225	TBGE 060104 T00525	5/32	.016											●						
TBGE 522 T0225	TBGE 060108 T00525	5/32	.031											○						

TNG2 / TNG3

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

	Steel	P																		
	Stainless Steel	M																		
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N																		
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Hardened Material	H							●					●	●	●	●	●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics															
				JX1	SiAlON			Whisker	Silicon Nitride		Alumina		Alumina - TiC							
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
TNG 221 T0225	TNGN 110304 T00525	1/4	.016											●						
TNG 222 T0225	TNGN 110308 T00525	1/4	.031										●	●						
TNG 321 T0425	TNGN 160304 T01025	3/8	.016											●						
TNG 322 T0425	TNGN 160308 T01025	3/8	.031										●	●						
TNG 322 T0525	TNGN 160308 T01225	3/8	.031											●				●		
TNG 322 T0825	TNGN 160308 T02025	3/8	.031											●						
TNG 331 T0425	TNGN 160404 T01025	3/8	.016						●		●			●						
TNG 332 T0420	TNGN 160408 T01020	3/8	.031						○		●		●	○				○	●	
TNG 332 T0425	TNGN 160408 T01025	3/8	.031						○		○		●	●	●			○	●	
TNG 332 T0525	TNGN 160408 T01225	3/8	.031								○		●	●	●			○	●	
TNG 332 T0820	TNGN 160408 T02020	3/8	.031							○			●	●	●			○	●	
TNG 332 S0825	TNGN 160408 S02025	3/8	.031										●	●	●			○	●	
TNG 332 T0825	TNGN 160408 T02025	3/8	.031							○			●	●	●			○	●	
TNG 333 T0420	TNGN 160412 T01020	3/8	.047						●	●	●		●	●	●			○	●	
TNG 333 T0425	TNGN 160412 T01025	3/8	.047						○				●	●	●			○	●	
TNG 333 T0525	TNGN 160412 T01225	3/8	.047										●	●	●			○	●	
TNG 333 T0820	TNGN 160412 T02020	3/8	.047							●			●	●	●			○	●	
TNG 333 S0825	TNGN 160412 S02025	3/8	.047										●	●	●			○	●	
TNG 333 T0825	TNGN 160412 T02025	3/8	.047							○			●	●	●			○	●	
TNG 334 T0420	TNGN 160416 T01020	3/8	.063									●		○						
TNG 334 T0425	TNGN 160416 T01025	3/8	.063										●	○				○		
TNG 334 T0525	TNGN 160416 T01225	3/8	.063										●	●	●			○		
TNG 334 T0820	TNGN 160416 T02020	3/8	.063							○			●	●	●			○		
TNG 334 T0825	TNGN 160416 T02025	3/8	.063							○			●	●	●			○		
TNG 335 T0425	TNGN 160420 T01025	3/8	.079								○			○						
TNG 335 T0820	TNGN 160420 T02020	3/8	.079							○				○						
TNG 352 T0825	TNGN 160708 T02025	3/8	.031											○						
TNG 353 T0825	TNGN 160712 T02025	3/8	.047											○						

TNG4 / 5 → E17

Holders → F14

- : 1st Choice ● : Alternate choice
- : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List

[BIDEMICS / Ceramics]

TNG4 / TNG5

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

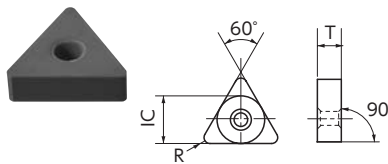
Item Number	ISO Item Number	IC	R	Ceramics															
				SiAlON	Whisker	Silicon Nitride	Alumina		Alumina - TiC										
				JX1	SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4	
TNG 431 T0425	TNGN 220404 T01025	1/2	.016																
TNG 432 T0220	TNGN 220408 T00520	1/2	.031			●	●	●			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

TNG2 / 3 → E16



TNGA

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

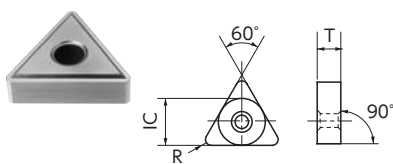


Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics																	
					SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC									
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4				
TNGA 321 T0425	TNGA 160304 T01025	3/8	.016																			
TNGA 322 T0525	TNGA 160308 T01225	3/8	.031																			
TNGA 331 T0425	TNGA 160404 T01025	3/8	.016																			
TNGA 331 S0825	TNGA 160404 S02025	3/8	.016																			
TNGA 331 Z0825	TNGA 160404 Z02025	3/8	.016																			
TNGA 332 T0425	TNGA 160408 T01025	3/8	.031																			
TNGA 332 T0525	TNGA 160408 T01225	3/8	.031																			
TNGA 332 T0820	TNGA 160408 T02020	3/8	.031																			
TNGA 332 S0825	TNGA 160408 S02025	3/8	.031																			
TNGA 332 T0825	TNGA 160408 T02025	3/8	.031																			
TNGA 332 Z0825	TNGA 160408 Z02025	3/8	.031																			
TNGA 333 T0425	TNGA 160412 T01025	3/8	.047																			
TNGA 333 T0525	TNGA 160412 T01225	3/8	.047																			
TNGA 333 T0820	TNGA 160412 T02020	3/8	.047																			
TNGA 333 S0825	TNGA 160412 S02025	3/8	.047																			
TNGA 333 T0825	TNGA 160412 T02025	3/8	.047																			
TNGA 333 Z0825	TNGA 160412 Z02025	3/8	.047																			
TNGA 334 T0825	TNGA 160416 T02025	3/8	.063																			
TNGA 431 T0425	TNGA 220404 T01025	1/2	.016																			
TNGA 432 T0220	TNGA 220408 T00520	1/2	.031																			
TNGA 432 T0525	TNGA 220408 T01225	1/2	.031																			
TNGA 432 S0825	TNGA 220408 S02025	1/2	.031																			
TNGA 432 T0825	TNGA 220408 T02025	1/2	.031																			
TNGA 433 T0825	TNGA 220412 T02025	1/2	.047																			
TNGA 433 Z0825	TNGA 220412 Z02025	1/2	.047																			
TNGA 434 T0525	TNGA 220416 T01225	1/2	.063																			
TNGA 434 T0825	TNGA 220416 T02025	1/2	.063																			

Holders → F14 • Q34

TNGG with chip-breaker

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



Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics																	
					SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC									
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4				
TNGG 332 Z0430 AG	TNGG 160408 Z01030 AG	3/8	.031																			
TNGG 333 Z0430 AG	TNGG 160412 Z01030 AG	3/8	.047																			

Holders → F14 • Q34

- : 1st Choice ● : Alternate choice
- : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List [BIDEMICS / Ceramics]

TP

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

	Steel	P																
	Stainless Steel	M																
	Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N																
	Heat Resistant Alloy	S	●	●	●	●	●											
	Hardened Material	H					●							●	●	●	●	●
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics													
				JX1	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC					
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4
TP 41 T0225		1/4	.016											●				
TP 42 T0225		1/4	.031											●				

TPG / TPGE

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

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

Insert Item List

[BIDEMICS / Ceramics]

BIDEMICS / Ceramics

VNG

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

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

VNGA

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

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

Holders → F12 • F13

- : 1st Choice ● : Alternate choice
- : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

WNGA

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

				Steel	P															
				Stainless Steel	M															
				Cast Iron	K		●	●	●	●	●	●	●	●	●	●	●	●	●	
				Non-Ferrous Material	N															
				Heat Resistant Alloy	S	●	●	●	●	●										
				Hardened Material	H				●					●	●	●	●	●	●	
Item Number	ISO Item Number	IC	R	BIDEMICS	Ceramics															
				JX1	SiALON			Whisker	Silicon Nitride		Alumina		Alumina - TiC							
					SX7	SX9	SX5	WA1	SX6	SP9	HC1	HW2	HC6	HC2	HC5	HC7	ZC7	ZC4		
WNGA 331 T0525	WNGA 060404 T01225	3/8	.016																●	
WNGA 332 T0525	WNGA 060408 T01225	3/8	.031																	●
WNGA 333 T0525	WNGA 060412 T01225	3/8	.047																	●
WNGA 431 T0220	WNGA 080404 T00520	1/2	.016						●											●
WNGA 431 Z0825	WNGA 080404 Z02025	1/2	.016																	●
WNGA 432 T0220	WNGA 080408 T00520	1/2	.031				●	●	●											●
WNGA 432 T0420	WNGA 080408 T01020	1/2	.031								●									●
WNGA 432 T0525	WNGA 080408 T01225	1/2	.031												●					●
WNGA 432 T0820	WNGA 080408 T02020	1/2	.031								●					●				●
WNGA 432 Z0825	WNGA 080408 Z02025	1/2	.031																	●
WNGA 433 T0220	WNGA 080412 T00520	1/2	.047				●	●	●											●
WNGA 433 T0420	WNGA 080412 T01020	1/2	.047								●									●
WNGA 433 T0525	WNGA 080412 T01225	1/2	.047												●					●
WNGA 433 T0820	WNGA 080412 T02020	1/2	.047													●				●
WNGA 434 T0420	WNGA 080416 T01020	1/2	.063				●													●
WNGA 434 T0820	WNGA 080416 T02020	1/2	.063								●									●

Holders → F15
 Boring bars → G6

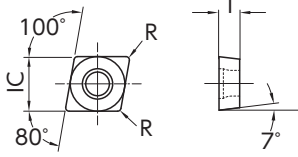
Insert Item List

[BIDEMICS / Ceramics]

BIDEMICS (Brazed) / CBN / PCD

CC. W

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



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

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)							PCD		
								Coated	Solid CBN	Coated							PD1	PD2	
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30			
	CCGW 21.51 PD	CCGW 060204 PD	S0415	1/4	.016	2	.091					●							
	CCGW 32.508 PD	CCGW 09T302 PD	S0415	3/8	.008	2	.091					●							
	CCGW 32.508 PD	CCGW 09T302 PD	S0635	3/8	.008	2	.091							●					
	CCGW 32.51 PD	CCGW 09T304 PD	S0415	3/8	.016	2	.091					●							
	CCGW 32.51 PD	CCGW 09T304 PD	S0635	3/8	.016	2	.091							●					
	CCGW 32.52 PD	CCGW 09T308 PD	S0415	3/8	.031	2	.087						●						
	CCMW 32.504	CCMW 09T301	None	3/8	.004	1	—											○	
	CCMW 32.508	CCMW 09T302	None	3/8	.008	1	—											○	
	CCMW 32.51	CCMW 09T304	None	3/8	.016	1	—											○	
	CCMW 32.52	CCMW 09T308	None	3/8	.031	1	—											○	
	CCMT 32.508 PF	CCMT 09T302 PF	None	3/8	.008	1	—												●
	CCMT 32.51 PF	CCMT 09T304 PF	None	3/8	.016	1	—												

Holders → Q10
Boring bars → V26


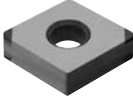
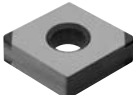
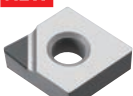
- : 1st Choice ● : Alternate choice
- : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List

[BIDEMICS (Brazed) / CBN / PCD]

CN. A 43

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

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)							PCD		
								Coated	Solid CBN								PD1	PD2	
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30			
	NEW CNGA 431 BQ	CNGA 120404 BQ	T0220	1/2	.016	4	.157	●											
	CNGA 431 BQ E02	CNGA 120404 BQ ENB	Honed	1/2	.016	4	.157	●*											
	CNGA 432 BQ	CNGA 120408 BQ	T0220	1/2	.031	4	.157	●											
	CNGA 432 BQ E02	CNGA 120408 BQ ENB	Honed	1/2	.031	4	.157	●*											
	CNGA 433 BQ	CNGA 120412 BQ	T0220	1/2	.047	4	.157	●											
	CNGA 433 BQ E02	CNGA 120408 BQ ENB	Honed	1/2	.047	4	.157	●*											
	CNGA 4308 PQ	CNGA 120402 PQ	S0415	1/2	.008	4	.091			●	●								
	CNGA 4308 PQ	CNGA 120402 PQ	S0635	1/2	.008	4	.091							●					
	CNGA 431 PQ	CNGA 120404 PQ	S0415	1/2	.016	4	.091			●	●								
	CNGA 431 PQ	CNGA 120404 PQ	S0420	1/2	.016	4	.091								○				
	CNGA 431 PQ	CNGA 120404 PQ	T0420	1/2	.016	4	.091									○			
	CNGA 431 PQ	CNGA 120404 PQ	S0525	1/2	.016	4	.091					●		○					
	CNGA 431 PQ	CNGA 120404 PQ	S0635	1/2	.016	4	.091								●				
	CNGA 432 PQ	CNGA 120408 PQ	S0415	1/2	.031	4	.087			●	●								
	CNGA 432 PQ	CNGA 120408 PQ	S0420	1/2	.031	4	.087									○			
	CNGA 432 PQ	CNGA 120408 PQ	T0420	1/2	.031	4	.087										○		
	CNGA 432 PQ	CNGA 120408 PQ	S0525	1/2	.031	4	.087					●		○					
	CNGA 432 PQ	CNGA 120408 PQ	S0635	1/2	.031	4	.087												
	CNGA 433 PQ	CNGA 120412 PQ	S0415	1/2	.047	4	.106			●	●								
	CNGA 433 PQ	CNGA 120412 PQ	S0420	1/2	.047	4	.106									○			
CNGA 433 PQ	CNGA 120412 PQ	T0420	1/2	.047	4	.106										○			
CNMA 433 PQ	CNMA 120412 PQ	S0525	1/2	.047	4	.094							○						
CNGA 433 PQ	CNGA 120412 PQ	S0635	1/2	.047	4	.106													
 <p>with wiper</p>	CNGA 431 PQW	CNGA 120404 PQW	S0415	1/2	.016	4	.091				●								
	CNGA 431 PQW	CNGA 120404 PQW	S0635	1/2	.016	4	.091								●				
	CNGA 432 PQW	CNGA 120408 PQW	S0415	1/2	.031	4	.087				●								
	CNGA 432 PQW	CNGA 120408 PQW	S0635	1/2	.031	4	.087								●				
	CNGA 433 PQW	CNGA 120412 PQW	S0415	1/2	.047	4	.106					●							
CNGA 433 PQW	CNGA 120412 PQW	S0635	1/2	.047	4	.106								●					
 <p>with chipbreaker</p>	NEW CNMX 431 PF	CNMX 120404 PF	None	1/2	.016	1	—											●	
	CNMX 432 PF	CNMX 120408 PF	None	1/2	.031	1	—												●

* To be released in January 2016

Holdings → F6 • F7 • Q37

Boring bars → G5

Insert Item List

[BIDEMICS (Brazed) / CBN / PCD]

BIDEMICS (Brazed) / CBN / PCD

DC. W

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

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)							PCD	
								Coated	Solid CBN	Coated							PD1	PD2
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30		
	DCGW 21.58 PD	DCGW 070202 PD	S0415	1/4	.008	2	.094											
	DCGW 21.51 PD	DCGW 070204 PD	S0415	1/4	.016	2	.087											
	DCGW 21.51 PD	DCGW 070204 PD	S0635	1/4	.016	2	.087											
	DCGW 21.52 PD	DCGW 070208 PD	S0415	1/4	.031	2	.075											
	DCGW 32.508 PD	DCGW 11T302 PD	S0415	3/8	.008	2	.094											
	DCGW 32.508 PD	DCGW 11T302 PD	S0635	3/8	.008	2	.094											
	DCGW 32.51 PD	DCGW 11T304 PD	S0415	3/8	.016	2	.087											
	DCGW 32.51 PD	DCGW 11T304 PD	S0635	3/8	.016	2	.087											
	DCMW 32.504	DCMW 11T301	None	3/8	.004	1	—											
	DCMW 32.508	DCMW 11T302	None	3/8	.008	1	—											
	DCMW 32.51	DCMW 11T304	None	3/8	.016	1	—											
	DCMW 32.52	DCMW 11T308	None	3/8	.031	1	—											
	DCMT 32.508 PF	DCMT 11T302 PF	None	3/8	.008	1	—											
	DCMT 32.51 PF	DCMT 11T304 PF	None	3/8	.016	1	—											

Holders → Q16 • Q17 • Q18 • Q19

DN. A 43

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

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)							PCD	
								Coated	Solid CBN	Coated							PD1	PD2
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30		
	DNGA 431 BQ	DNGA 150404 BQ	T0220	1/2	.016	4	.157											
	DNGA 431 BQ E02	DNGA 150404 BQ ENB	Honed	1/2	.016	4	.157	*										
	DNGA 432 BQ	DNGA 150408 BQ	T0220	1/2	.031	4	.157											
	DNGA 432 BQ E02	DNGA 150408 BQ ENB	Honed	1/2	.031	4	.157	*										
	DNGA 433 BQ	DNGA 150412 BQ	T0220	1/2	.047	4	.157											
	DNGA 433 BQ E02	DNGA 150412 BQ ENB	Honed	1/2	.047	4	.157	*										
	DNGA 4308 PQ	DNGA 150402 PQ	S0415	1/2	.008	4	.094											
	DNGA 4308 PQ	DNGA 150402 PQ	S0635	1/2	.008	4	.094											
	DNGA 431 PQ	DNGA 150404 PQ	S0415	1/2	.016	4	.087											
	DNGA 431 PQ	DNGA 150404 PQ	S0525	1/2	.016	4	.087											
	DNGA 431 PQ	DNGA 150404 PQ	S0635	1/2	.016	4	.087											
	DNGA 432 PQ	DNGA 150408 PQ	S0415	1/2	.031	4	.075											
	DNGA 432 PQ	DNGA 150408 PQ	S0420	1/2	.031	4	.075											
	DNGA 432 PQ	DNGA 150408 PQ	T0420	1/2	.031	4	.075											
	DNGA 432 PQ	DNGA 150408 PQ	S0525	1/2	.031	4	.075											
	DNGA 432 PQ	DNGA 150408 PQ	S0635	1/2	.031	4	.075											
	DNGA 433 PQ	DNGA 150412 PQ	S0415	1/2	.047	4	.102											
	DNGA 433 PQ	DNGA 150412 PQ	S0420	1/2	.047	4	.102											
	DNGA 433 PQ	DNGA 150412 PQ	T0420	1/2	.047	4	.102											
	DNMA 433 PQ	DNMA 150412 PQ	S0525	1/2	.047	4	.087											
DNGA 433 PQ	DNGA 150412 PQ	S0635	1/2	.047	4	.102												
	DNMX 431 PF	DNMX 150404 PF	None	1/2	.016	1	—											
	DNMX 432 PF	DNMX 150408 PF	None	1/2	.031	1	—											

*To be released in January 2016

Holders → F8 • F9 • Q38

Boring bars → G5

Insert Item List

[BIDEMICS (Brazed) / CBN / PCD]

RNG

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

			Steel	P														
			Stainless Steel	M														
			Cast Iron	K				●	●	●				●	●			
			Non-Ferrous Material	N												●	●	
			Heat Resistant Alloy	S				●										
			Hardened Material	H					●	●	●	●	●	●				
Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS	Solid CBN	CBN (Brazed)						PCD		
								Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2
	RNG 32 Z0520	RNGN 090300 Z01220	Z0520	3/8	—	—	—		●									
	RNG 43 Z0520	RNGN 120400 Z01220	Z0520	1/2	—	—	—		●									

Holders → F16
Boring bars → G4

SN. A 43

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

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

Holders → F11
Boring bars → G6

SPG 32

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

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

● : 1st Choice ● : Alternate choice
● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

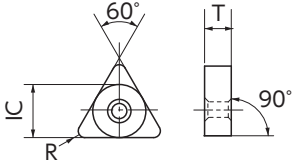
Insert Item List

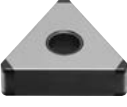

[BIDEMICS (Brazed) / CBN / PCD]

BIDEMICS (Brazed) / CBN / PCD

TN. A 33

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

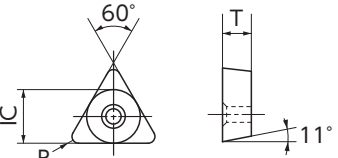



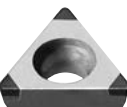

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)								PCD		
								Coated	Solid CBN	Coated		Coated				Coated		PD1	PD2	
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30				
	TNGA 331C PH	TNGA 160401 PH	S0415	3/8	.004	6	.083													
	TNGA 3308 PH	TNGA 160402 PH	S0415	3/8	.008	6	.087													
	TNGA 3308 PH	TNGA 160402 PH	S0635	3/8	.008	6	.087													
	TNGA 331 PH	TNGA 160404 PH	S0415	3/8	.016	6	.079													
	TNGA 331 PH	TNGA 160404 PH	T0420	3/8	.016	6	.079													
	TNGA 331 PH	TNGA 160404 PH	S0525	3/8	.016	6	.079													
	TNGA 331 PH	TNGA 160404 PH	S0635	3/8	.016	6	.079													
	TNGA 332 PH	TNGA 160408 PH	S0415	3/8	.031	6	.067													
	TNGA 332 PH	TNGA 160408 PH	S0420	3/8	.031	6	.067													
	TNGA 332 PH	TNGA 160408 PH	T0420	3/8	.031	6	.067													
	TNGA 332 PH	TNGA 160408 PH	S0525	3/8	.031	6	.067													
	TNGA 332 PH	TNGA 160408 PH	S0635	3/8	.031	6	.067													
	TNGA 333 PH	TNGA 160412 PH	S0415	3/8	.047	6	.091													
	TNGA 333 PH	TNGA 160412 PH	S0420	3/8	.047	6	.091													
TNGA 333 PH	TNGA 160412 PH	T0420	3/8	.047	6	.091														
TNMA 333 PH	TNMA 160412 PH	S0525	3/8	.047	6	.091														
TNGA 333 PH	TNGA 160412 PH	S0635	3/8	.047	6	.091														
	TNMX 331 PF	TNMX 160404 PF	None	3/8	.016	1	—													
	TNMX 332 PF	TNMX 160408 PF	None	3/8	.031	1	—													

Holders → F14 • Q34

TPG

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



Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)								PCD		
								Coated	Solid CBN	Coated		Coated				Coated		PD1	PD2	
								JP2	B99	B5K	B52	B6K	B36	B40	B23	B30				
	TPG 221 PT	TPGN 110304 PT	S0420	1/4	.016	3	.079													
	TPG 222 PT	TPGN 110308 PT	S0420	1/4	.031	3	.067													
	TPG 321 PT	TPGN 160304 PT	S0420	3/8	.016	3	.079													
	TPG 322 PT	TPGN 160308 PT	S0420	3/8	.031	3	.067													
	TPGW 2208 PT	TPGW 110302 PT	S0415	1/4	.008	3	.087													
	TPGW 221 PT	TPGW 110304 PT	S0415	1/4	.016	3	.079													
	TPGW 221 PT	TPGW 110304 PT	T0615	1/4	.016	3	.079													
	TPGW 221 PT	TPGW 110304 PT	S0635	1/4	.016	3	.079													
	TPGW 222 PT	TPGW 110308 PT	S0415	1/4	.031	3	.067													
	TPGW 222 PT	TPGW 110308 PT	S0635	1/4	.031	3	.067													
	TPMT 7308 PF	TPMT 090202 PF	None	7/32	.008	1	—													
	TPMT 731 PF	TPMT 090204 PF	None	7/32	.016	1	—													
	TPMT 2208 PF	TPMT 110302 PF	None	1/4	.008	1	—													
	TPMT 221 PF	TPMT 110304 PF	None	1/4	.016	1	—													

Holders (TPGW) → V31

Insert Item List

[BIDEMICS (Brazed) / CBN / PCD]

VB/VC

(inch)	IC	T
VB.. 22	1/4	1/8
VB.. 33	3/8	3/16
VC.. 22	1/4	1/8
VC.. 33	3/8	3/16

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)								PCD	
								Coated	Solid CBN	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2
	VBGW 2208 PD	VBGW 110302 PD	S0415	1/4	.008	2	.102												
	VBGW 221 PD	VBGW 110304 PD	S0415	1/4	.016	2	.098												
	VBGW 332 PD	VBGW 160408 PD	S0415	3/8	.031	2	.063												
	VCGW 221 PD	VCGW 110304 PD	S0415	1/4	.016	2	.098												
	VCGW 221 PD	VCGW 110304 PD	S0635	1/4	.016	2	.098												
	VCGW 222 PD	VCGW 110308 PD	S0415	1/4	.031	2	.063												
	VCGW 222 PD	VCGW 110308 PD	S0635	1/4	.031	2	.063												
	VCGW 331 PD	VCGW 160404 PD	S0415	3/8	.016	2	.098												
	VCGW 331 PD	VCGW 160404 PD	S0635	3/8	.016	2	.098												
	VCMW 2204	VCMW 110301	None	1/4	.004	1	—												
	VCMW 2208	VCMW 110302	None	1/4	.008	1	—												
	VCMW 221	VCMW 110304	None	1/4	.016	1	—												

Holders(VBGW33) → Q24

Holders(VCGW22) → Q26 · Q27 · Q28

VNGA 33

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

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	BIDEMICS		CBN (Brazed)								PCD	
								Coated	Solid CBN	B99	B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2
	VNGA 331 BQ	VNGA 160404 BQ	T0220	3/8	.016	4	.157	●											
	VNGA 331 BQ E02	VNGA 160404 BQ ENB	Honed	3/8	.016	4	.157	●*											
	VNGA 332 BQ	VNGA 160408 BQ	T0220	3/8	.031	4	.157	●											
	VNGA 332 BQ E02	VNGA 160408 BQ ENB	Honed	3/8	.031	4	.157	●*											
	VNGA 333 BQ	VNGA 160412 BQ	T0220	3/8	.047	4	.157	●											
	VNGA 333 BQ E02	VNGA 160412 BQ ENB	Honed	3/8	.047	4	.157	●*											
	VNGA 3308 PQ	VNGA 160402 PQ	S0635	3/8	.008	4	.102												
	VNGA 331 PQ	VNGA 160404 PQ	S0415	3/8	.016	4	.098												
	VNGA 331 PQ	VNGA 160404 PQ	S0525	3/8	.016	4	.098												
	VNGA 331 PQ	VNGA 160404 PQ	S0635	3/8	.016	4	.098												
	VNGA 331 PQ	VNGA 160404 PQ	T01020	3/8	.016	4	.098												
	VNGA 332 PQ	VNGA 160408 PQ	S0415	3/8	.031	4	.063												
	VNGA 332 PQ	VNGA 160408 PQ	S0525	3/8	.031	4	.063												
VNGA 332 PQ	VNGA 160408 PQ	S0635	3/8	.031	4	.063													
VNGA 333 PQ	VNGA 160412 PQ	S0635	3/8	.047	4	.106													

*To be released in January 2016

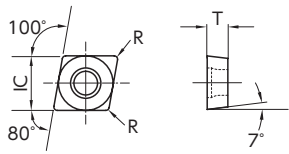
Holders → F12 · F13

- : 1st Choice
- * : Stock
- : Alternate choice
- : 1-2 week delivery
- R : Stock (Right-hand only)
- L : Stock (Left-hand only)

Carbide / Cermet

80 degree Diamond Positive type (CC..)

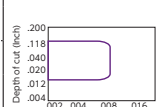
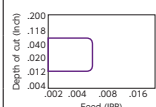
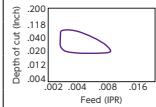
(inch)	IC	T
CC...21.5	1/4	3/32
CC...32.5	3/8	5/32



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

● : 1st Choice
● : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide						CVD	
					XT3	C7X	XN4	Q15	C7Z	PVD Coated			ZM3	KM1	CP1		
										QM3	DT4	DM4					TM4	VM1
	CCGT 21.501 FNAM3	CCGT 060200 FNAM3	1/4	.001						●	●			○			
	CCGT 21.504M FNAM3	CCGT 060201M FNAM3	1/4	.003						●							
	CCGT 21.504 FNAM3	CCGT 060201 FNAM3	1/4	.004	●												
	CCGT 21.508M FNAM3	CCGT 060202M FNAM3	1/4	.007						●	●						
	CCGT 21.508 FNAM3	CCGT 060202 FNAM3	1/4	.008										○	○		
	CCGT 21.508 FNAM3	CCGT 060202 FNAM3	1/4	.008	●												
	CCGT 21.51M FNAM3	CCGT 060204M FNAM3	1/4	.015						●	●						
	CCGT 21.51 FNAM3	CCGT 060204 FNAM3	1/4	.016	●											○	
	CCGT 32.501 FNAM3	CCGT 09T300 FNAM3	3/8	.001						●	●			○	○		
	CCGT 32.504M FNAM3	CCGT 09T301M FNAM3	3/8	.003						●	●			○	○		
	CCGT 32.504 FNAM3	CCGT 09T301 FNAM3	3/8	.004	●												
	CCGT 32.508M FNAM3	CCGT 09T302M FNAM3	3/8	.007						●	●			○	○		
	CCGT 32.508 FNAM3	CCGT 09T302 FNAM3	3/8	.008						●							
	CCGT 32.508 FNAM3	CCGT 09T302 FNAM3	3/8	.008	●												
	CCGT 32.51M FNAM3	CCGT 09T304M FNAM3	3/8	.015						●	●			○	○		
	CCGT 32.51 FNAM3	CCGT 09T304 FNAM3	3/8	.016						●					○		
	CCGT 32.51 FNAM3	CCGT 09T304 FNAM3	3/8	.016	●												
	CCGT 32.52 FNAM3	CCGT 09T308 FNAM3	3/8	.031						●							
	CCGT 32.52 FNAM3	CCGT 09T308 FNAM3	3/8	.031	●												
	CCMT 21.508 FNAM3	CCMT 060202 FNAM3	1/4	.008										○			
	CCMT 21.508 AM3	CCMT 060202 ENBAM3	1/4	.008	○				○								
	CCMT 21.51 FNAM3	CCMT 060204 FNAM3	1/4	.016										○			
	CCMT 21.51 AM3	CCMT 060204 ENBAM3	1/4	.016	●				○								
CCMT 32.508 FNAM3	CCMT 09T302 FNAM3	3/8	.008										○				
CCMT 32.508 AM3	CCMT 09T302 ENBAM3	3/8	.008	○				○									
CCMT 32.51 FNAM3	CCMT 09T304 FNAM3	3/8	.016										○				
CCMT 32.51 AM3	CCMT 09T304 ENBAM3	3/8	.016	●				○									
CCMT 32.52 FNAM3	CCMT 09T308 FNAM3	3/8	.031						●				○				
CCMT 32.52 AM3	CCMT 09T308 ENBAM3	3/8	.031	●				○									
CCMT 32.53 AM3	CCMT 09T312 ENBAM3	3/8	.047	○				○									
NEW	CCGT 32.504M YL	CCGT 09T301M YL	3/8	.003									●	○			
	CCGT 32.508M YL	CCGT 09T302M YL	3/8	.007									●	○			
	CCGT 32.51M YL	CCGT 09T304M YL	3/8	.015									●	○			
	CCGT 21.504M CL	CCGT 060201M CL	1/4	.003						●	●		○	●			
	CCGT 21.508M CL	CCGT 060202M CL	1/4	.007						●	●		○	●			
	CCGT 32.501 CL	CCGT 09T300 CL	3/8	.001							○						
	CCGT 32.504M CL	CCGT 09T301M CL	3/8	.003						●	●		○	●			
	CCGT 32.508M CL	CCGT 09T302M CL	3/8	.007						●	●		○	●			
	CCGT 32.51M CL	CCGT 09T304M CL	3/8	.015						●	●		○	●			



**To be released in November 2015.

● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

Insert Item List

[Carbide / Cermet]

Shape	Item Number	ISO Item Number	IC	R	Material Compatibility										● : 1st Choice ● : Alternate choice			
					Steel	P	Stainless Steel	M	Cast Iron	K	Non-Ferrous Material	N	Heat Resistant Alloy	S		Hardened Material	H	
					Cermert					Carbide								
						PVD Coated		PVD Coated					CVD					
						XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1	ZM3	KM1	CP1
	CCGT 21.501 AZ7*	CCGT 060200 AZ7	1/4	.001														
	CCGT 21.504M AZ7*	CCGT 060201M AZ7	1/4	.003														
	CCGT 21.508M AZ7*	CCGT 060202M AZ7	1/4	.007														
	CCGT 32.501 AZ7*	CCGT 09T300 AZ7	3/8	.001														
	CCGT 32.504M AZ7*	CCGT 09T301M AZ7	3/8	.003														
	CCGT 32.508M AZ7*	CCGT 09T302M AZ7	3/8	.007														
	CCGT 32.51M AZ7*	CCGT 09T304M AZ7	3/8	.015														
	CCGT 21.504 AF1	CCGT 060201 ENBAF1	1/4	.004	●													
	CCGT 21.508 AF1	CCGT 060202 ENBAF1	1/4	.008	●													
	CCGT 21.51 AF1	CCGT 060204 ENBAF1	1/4	.016	●													
	CCGT 21.51 FNAF1	CCGT 060204 FNAF1	1/4	.016	●													
	CCGT 21.52 AF1	CCGT 060208 ENBAF1	1/4	.031	●													
	CCGT 32.508 AF1	CCGT 09T302 ENBAF1	3/8	.008	○													
	CCGT 32.508 FNAF1	CCGT 09T302 FNAF1	3/8	.008	●													
	CCGT 32.51 FNAF1	CCGT 09T304 FNAF1	3/8	.016	●													
	CCGT 32.51 AF1	CCGT 09T304 ENBAF1	3/8	.016	○													
CCGT 32.52 FNAF1	CCGT 09T308 FNAF1	3/8	.031	●														
CCGT 32.52 AF1	CCGT 09T308 ENBAF1	3/8	.031	○														
	CCMT 21.51 AM5	CCMT 060204 ENBAM5	1/4	.016			○											
	CCMT 32.51 AM5	CCMT 09T304 ENBAM5	3/8	.016			○											
	CCMT 32.52 AM5	CCMT 09T308 ENBAM5	3/8	.031			○											
	CCGT 21.508 ENBFM	CCGT 060202 ENBFM	1/4	.008	○													
	CCGT 21.51 ENBFM	CCGT 060204 ENBFM	1/4	.016	○													
	CCMT 21.508 ENBZR	CCMT 060202 ENBZR	1/4	.008		○			○									
	CCMT 21.51 ENBZR	CCMT 060204 ENBZR	1/4	.016		○			○									
	CCMT 32.508 ENBZR	CCMT 09T302 ENBZR	3/8	.008		○			○									
	CCMT 32.51 ENBZR	CCMT 09T304 ENBZR	3/8	.016		○			○									
	CCMT 32.52 ENBZR	CCMT 09T308 ENBZR	3/8	.031		○			○									

* To be replaced by version which has 0.2mm higher edge.

Holders → Q10

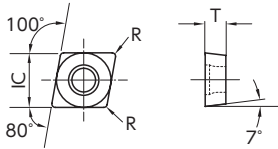
Boring bars → V26

Insert Item List

[Carbide / Cermert]






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

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



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

• : 1st Choice
 • : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD	Graph						
					PVD Coated					PVD Coated												
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1			ZM3	KM1	CP1			
	CCGT 21.501 R $\frac{1}{4}$ S	CCGT 060200 R $\frac{1}{4}$ S	1/4	.001								R	(R)									
	CCGT 21.504M R $\frac{1}{4}$ S	CCGT 060201M R $\frac{1}{4}$ S	1/4	.003								R	(R)									
	CCGT 21.504 R $\frac{1}{4}$ S	CCGT 060201 R $\frac{1}{4}$ S	1/4	.004																		
	CCGT 21.508M R $\frac{1}{4}$ S	CCGT 060202M R $\frac{1}{4}$ S	1/4	.007																		
	CCGT 21.508 R $\frac{1}{4}$ S	CCGT 060202 R $\frac{1}{4}$ S	1/4	.008																		
	CCGT 21.51 R $\frac{1}{4}$ S	CCGT 060204 R $\frac{1}{4}$ S	1/4	.016									R									
	CCGT 32.501 R $\frac{3}{8}$ S	CCGT 09T300 R $\frac{3}{8}$ S	3/8	.001									R	R		R	RL	R				
	CCGT 32.504M R $\frac{3}{8}$ S	CCGT 09T301M R $\frac{3}{8}$ S	3/8	.003									R	R		R	RL	R				
	CCGT 32.504 R $\frac{3}{8}$ S	CCGT 09T301 R $\frac{3}{8}$ S	3/8	.004																		
	CCGT 32.508M R $\frac{3}{8}$ S	CCGT 09T302M R $\frac{3}{8}$ S	3/8	.007																		
	CCGT 32.508 R $\frac{3}{8}$ S	CCGT 09T302 R $\frac{3}{8}$ S	3/8	.008																		
	CCGT 32.51M R $\frac{3}{8}$ S	CCGT 09T304M R $\frac{3}{8}$ S	3/8	.015																		
	CCGT 32.51 R $\frac{3}{8}$ S	CCGT 09T304 R $\frac{3}{8}$ S	3/8	.016									R									
	CCMT 21.504 T R $\frac{1}{4}$ AS	CCMT 060201 T R $\frac{1}{4}$ AS	1/4	.004																		
	CCMT 21.508 T R $\frac{1}{4}$ AS	CCMT 060202 T R $\frac{1}{4}$ AS	1/4	.008																		
	CCMT 21.51 T R $\frac{1}{4}$ AS	CCMT 060204 T R $\frac{1}{4}$ AS	1/4	.016																		
	CCMT 32.504 T R $\frac{3}{8}$ AS	CCMT 09T301 T R $\frac{3}{8}$ AS	3/8	.004																		
	CCMT 32.508 T R $\frac{3}{8}$ AS	CCMT 09T302 T R $\frac{3}{8}$ AS	3/8	.008																		
CCMT 32.51 T R $\frac{3}{8}$ AS	CCMT 09T304 T R $\frac{3}{8}$ AS	3/8	.016																			
	CCGT 21.501 R $\frac{1}{4}$ U	CCGT 060200 R $\frac{1}{4}$ U	1/4	.001																		
	CCGT 21.504 R $\frac{1}{4}$ U	CCGT 060201 R $\frac{1}{4}$ U	1/4	.004																		
	CCGT 21.508 R $\frac{1}{4}$ U	CCGT 060202 R $\frac{1}{4}$ U	1/4	.008																		
	CCGT 32.501 R $\frac{3}{8}$ U1	CCGT 09T300 R $\frac{3}{8}$ U1	3/8	.001																		
	CCGT 32.504 R $\frac{3}{8}$ U1	CCGT 09T301 R $\frac{3}{8}$ U1	3/8	.004																		
	CCGT 32.508 R $\frac{3}{8}$ U1	CCGT 09T302 R $\frac{3}{8}$ U1	3/8	.008																		
	CCET 21.502 R $\frac{1}{4}$ KHG	CCET 0602005 R $\frac{1}{4}$ KHG	1/4	.002																		
	CCET 21.503 R $\frac{1}{4}$ KHG	CCET 0602008 R $\frac{1}{4}$ KHG	1/4	.003																		
	CCET 21.507 R $\frac{1}{4}$ KHG	CCET 0602018 R $\frac{1}{4}$ KHG	1/4	.007																		
	CCET 21.508 R $\frac{1}{4}$ KHG	CCET 060202 R $\frac{1}{4}$ KHG	1/4	.008																		
	CCET 32.502 R $\frac{3}{8}$ KHG	CCET 09T3005 R $\frac{3}{8}$ KHG	3/8	.002																		
	CCET 32.503 R $\frac{3}{8}$ KHG	CCET 09T3008 R $\frac{3}{8}$ KHG	3/8	.003																		
	CCGT 21.508 F R $\frac{1}{4}$ F1	CCGT 060202 F R $\frac{1}{4}$ F1	1/4	.008																		
	CCGT 21.51 F R $\frac{1}{4}$ F1	CCGT 060204 F R $\frac{1}{4}$ F1	1/4	.016																		
	CCGT 32.508 F R $\frac{3}{8}$ F1	CCGT 09T302 F R $\frac{3}{8}$ F1	3/8	.008																		
	CCGT 32.51 F R $\frac{3}{8}$ F1	CCGT 09T304 F R $\frac{3}{8}$ F1	3/8	.016																		
	CCGW 21.501 FN	CCGW 060200 FN	1/4	.001																		
	CCGW 21.501 H	CCGW 060200 H	1/4	.001																		
	CCGW 21.504 FN	CCGW 060201 FN	1/4	.004																		
	CCGW 21.504 H	CCGW 060201 H	1/4	.004																		
	CCGW 21.508 H	CCGW 060202 H	1/4	.008																		
	CCGW 21.51 FN	CCGW 060204 FN	1/4	.016																		
	CCGW 21.52 FN	CCGW 060208 FN	1/4	.031																		
	CCGW 32.500 V	CCGW 09T30 V	3/8	0																		
	CCGW 32.501 FN	CCGW 09T300 FN	3/8	.001																		
	CCGW 32.501 H	CCGW 09T300 H	3/8	.001																		
	CCGW 32.504 FN	CCGW 09T301 FN	3/8	.004																		
	CCGW 32.504 H	CCGW 09T301 H	3/8	.004																		
	CCGW 32.504 P	CCGW 09T301 P	3/8	.004																		
	CCGW 32.508M P	CCGW 09T302M P	3/8	.007																		
CCGW 32.508 H	CCGW 09T302 H	3/8	.008																			
CCGW 32.508 P	CCGW 09T302 P	3/8	.008																			

Holders → Q10

Boring bars → V26

● : Stock ○ : 1-2 week delivery ■ : While stock lasts
 R : Stock (Right-hand only) L : Stock (Left-hand only) ® : 1-2 week delivery (Right-hand only) ④ : 1-2 week delivery (Left-hand only)

80 degree Diamond Negative type (CN..)

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD		
					PVD Coated					PVD Coated							
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1			ZM3	KM1	CP1
	CNMG 432 G	CNMG 120408 G	1/2	.031													
	CNMG 433 G	CNMG 120412 G	1/2	.047													
	CNMG 434 G	CNMG 120416 G	1/2	.063													
	CNMG 431 G	CNMG 120404 ENBG	1/2	.016	●		●										
	CNMG 431 TNG	CNMG 120404 TNG	1/2	.016				○									
	CNMG 432 G	CNMG 120408 ENBG	1/2	.031	●			○									
	CNMG 432 TNG	CNMG 120408 TNG	1/2	.031					○								
	CNGG 4304 3/4 N1	CNGG 120401 3/4 N1	1/2	.004	●												
	CNGG 4308 3/4 N1	CNGG 120402 3/4 N1	1/2	.008	R												
	CNGG 431 3/4 N1	CNGG 120404 3/4 N1	1/2	.016	●												
	CNGG 432 3/4 N1	CNGG 120408 3/4 N1	1/2	.031	●												
	CNGG 431 FNUL	CNGG 120404 FNUL	1/2	.016							●	○					
	CNGG 432 FNUL	CNGG 120408 FNUL	1/2	.031							●	○					
	CNMG 431 WM	CNMG 120404 ENWM	1/2	.016		●			○								
	CNMG 432 WM	CNMG 120408 ENWM	1/2	.031		●			○								
	CNMG 432 WR	CNMG 120408 ENBWR	1/2	.031			●										
	CNMG 432 WV	CNMG 120408 ENWV	1/2	.031		●			○								
	CNMG 432 ENBZ5	CNMG 120408 ENBZ5	1/2	.031				○									
	CNMG 432 Z5	CNMG 120408 TNBZ5	1/2	.031						○	○						
	CNMG 431 ZF1	CNMG 120404 ENBZF1	1/2	.016	●		●	○									
	CNMG 432 ZF1	CNMG 120408 ENBZF1	1/2	.031	●		●	○									
	CNMG 433 ZF1	CNMG 120412 ENBZF1	1/2	.047	●			○									
	CNGG 4304 FNZF1	CNGG 120401 FNZF1	1/2	.004	●												
	CNGG 4308 FNZF1	CNGG 120402 FNZF1	1/2	.008	●												
	CNGG 431 FNZF1	CNGG 120404 FNZF1	1/2	.016	●												
	CNGG 432 FNZF1	CNGG 120408 FNZF1	1/2	.031	●												
	CNGG 431 FNZP	CNGG 120404 FNZP	1/2	.016						●	●			●			
	CNMP 432 ZP	CNMG 120408 ENBZP	1/2	.031	●												
	CNGG 432 FNZP	CNGG 120408 FNZP	1/2	.031						●	●			●			
	CNMG 432 ZW1	CNMG 120408 ENBZW1	1/2	.031	●		●										
	CNMG 433 ZW1	CNMG 120412 ENBZW1	1/2	.047	●		●										
	CNGA 431	CNGA 120404 TN	1/2	.016	●												
	CNGA 432	CNGA 120408 TN	1/2	.031	●												
	CNGA 433	CNGA 120412 TN	1/2	.047	●												

● : 1st Choice
○ : Alternate choice

Insert Item List

[Carbide / Cermet]

Holders → F6 • F7 • Q37

Boring bars → G5

Carbide / Cermet

80 degree Diamond Positive type (CP..)

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD			
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated						
										QM3	DT4	DM4	TM4	VM1		ZM3	KM1	CP1
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	
<p>● : 1st Choice ● : Alternate choice</p>																		
	CPGT 21.504	FNAM3	CPGT 060201	FNXAM3	1/4	.004	●	●										
	CPGT 21.508	FNAM3	CPGT 060202	FNXAM3	1/4	.008	●	●										
	CPGT 21.51	FNAM3	CPGT 060204	FNXAM3	1/4	.016	●	●										
	CPGT 32.504	FNAM3	CPGT 09T301	FNXAM3	3/8	.004	●	●										
	CPGT 32.508	FNAM3	CPGT 09T302	FNXAM3	3/8	.008	●	●										
	CPGT 32.51	FNAM3	CPGT 09T304	FNXAM3	3/8	.016	●	●										
	CPGT 32.52	FNAM3	CPGT 09T308	FNXAM3	3/8	.031	●	●										
	CPGH 32.504	AF1	CPGH 09T301	ENBAF1	3/8	.004	●											
	CPGH 32.508	AF1	CPGH 09T302	ENBAF1	3/8	.008	●											
	CPGH 32.51	AF1	CPGH 09T304	ENBAF1	3/8	.016	●											
	CPGH 32.52	AF1	CPGH 09T308	ENBAF1	3/8	.031	●											
	CPGH 21.504	AM5	CPGH 060201	ENBAM5	1/4	.004	●											
	CPGH 21.508	AM5	CPGH 060202	ENBAM5	1/4	.008	●	○										
	CPGH 21.508	FNAM5	CPGH 060202	FNAM5	1/4	.008	●					○						
	CPGH 21.51	AM5	CPGH 060204	ENBAM5	1/4	.016	●											
	CPGH 21.51	FNAM5	CPGH 060204	FNAM5	1/4	.016	●											
	CPGH 21.52	AM5	CPGH 060208	ENBAM5	1/4	.031	●											
	CPGP 2.51.508	ENBAM5	CPGP 080202	ENBAM5	5/16	.008	○						○					
	CPGP 2.51.508	FNAM5	CPGP 080202	FNAM5	5/16	.008	○							○				
	CPGM 3208	ENBAM5	CPGM 090302	ENBAM5	3/8	.008	○								○			
	CPGM 3208	FNAM5	CPGM 090302	FNAM5	3/8	.008	○									○		
	CPGM 321	ENBAM5	CPGM 090304	ENBAM5	3/8	.016	○									○		
	CPGM 321	FNAM5	CPGM 090304	FNAM5	3/8	.016	○									○		
	CPGM 322	ENBAM5	CPGM 090308	ENBAM5	3/8	.031	○									○		
	CPGM 322	FNAM5	CPGM 090308	FNAM5	3/8	.031	○									○		
CPMH 21.51	AM5	CPMH 060204	AM5	1/4	.016		●											
CPMH 2.51.51	AM5	CPMH 080204	AM5	5/16	.016		●											
CPMH 2.51.52	AM5	CPMH 080208	AM5	5/16	.031		●											
CPMH 321	AM5	CPMH 090304	AM5	3/8	.016		●											
CPMH 322	AM5	CPMH 090308	AM5	3/8	.031		●											
	CPGP 6208	F $\frac{R}{L}$ A1	CPGH 040102	F $\frac{R}{L}$ A1	.187	.008												
	CPGP 621	F $\frac{R}{L}$ A1	CPGH 040104	F $\frac{R}{L}$ A1	.187	.016												
	CPGP 21.508	F $\frac{R}{L}$ A	CPGH 060202	F $\frac{R}{L}$ A	1/4	.008												
	CPGP 21.51	F $\frac{R}{L}$ A	CPGH 060204	F $\frac{R}{L}$ A	1/4	.016												
	CPGH 2.51.508	F $\frac{R}{L}$ A	CPGH 080202	F $\frac{R}{L}$ A	5/16	.008												
	CPGH 2.51.51	F $\frac{R}{L}$ A	CPGH 080204	F $\frac{R}{L}$ A	5/16	.016												
	CPGP 6208	T $\frac{R}{L}$ A1	CPGH 040102	T $\frac{R}{L}$ A1	.187	.008	L	L										
	CPGP 621	T $\frac{R}{L}$ A1	CPGH 040104	T $\frac{R}{L}$ A1	.187	.016	L	L										
	CPGP 21.508	T $\frac{R}{L}$ A	CPGH 060202	T $\frac{R}{L}$ A	1/4	.008	L	L										
	CPGP 21.51	T $\frac{R}{L}$ A	CPGH 060204	T $\frac{R}{L}$ A	1/4	.016	L	L										
CPGH 2.51.51	T $\frac{R}{L}$ A	CPGH 080204	T $\frac{R}{L}$ A	5/16	.016	L	L											
	CPGP 6204	FRF1	CPGH 040101	F $\frac{R}{L}$ F1	.187	.004												
	CPGP 6208	FRF1	CPGH 040102	F $\frac{R}{L}$ F1	.187	.008												
	CPGP 621	FRF1	CPGH 040104	F $\frac{R}{L}$ F1	.187	.016												
	CPGP 21.504	F $\frac{R}{L}$ F1	CPGH 060201	F $\frac{R}{L}$ F1	1/4	.004												
	CPGP 21.508	FRF1	CPGH 060202	F $\frac{R}{L}$ F1	1/4	.008												
CPGP 21.51	FRF1	CPGH 060204	F $\frac{R}{L}$ F1	1/4	.016													

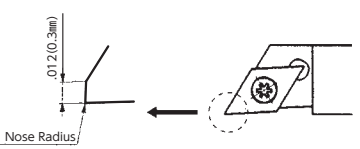
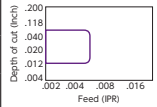
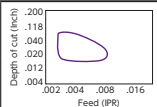
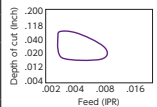
Boring bars → V25

- : Stock ○ : 1-2 week delivery
- R : Stock (Right-hand only) L : Stock (Left-hand only) ® : 1-2 week delivery (Right-hand only) ℒ : 1-2 week delivery (Left-hand only)

55 degree Diamond Positive type (DC..)

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD					
					XT3	C7X	XN4	Q15	C7Z	PVD Coated										
										QM3	DT4	DM4	TM4	VM1		ZM3	KM1	CP1		
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●		
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●		
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●		
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●		
					● : 1st Choice					● : Alternate choice										
	DCGT 21.501	FNAM3	DCGT 070200	FNAM3	1/4	.001						●	●							
	DCGT 21.504M	FNAM3	DCGT 070201	MFNAM3	1/4	.003						●	●							
	DCGT 21.504	FNAM3	DCGT 070201	FNAM3	1/4	.004									○	○				
	DCGT 21.504	FNAM3	DCGT 070201	FNXAM3	1/4	.004		●							○	○				
	DCGT 21.508M	FNAM3	DCGT 070202	MFNAM3	1/4	.007						●	●							
	DCGT 21.508	AM3	DCGT 070202	ENBAM3	1/4	.008		●												
	DCGT 21.508	FNAM3	DCGT 070202	FNAM3	1/4	.008									○	○				
	DCGT 21.508	FNAM3	DCGT 070202	FNXAM3	1/4	.008		●												
	DCGT 21.51M	FNAM3	DCGT 070204	MFNAM3	1/4	.015						●	●							
	DCGT 21.51	AM3	DCGT 070204	ENBAM3	1/4	.016		●												
	DCGT 21.51	FNAM3	DCGT 070204	FNAM3	1/4	.016									○	○				
	DCGT 21.51	FNAM3	DCGT 070204	FNXAM3	1/4	.016		●												
	DCGT 32.501	FNAM3	DCGT 11T300	FNAM3	3/8	.001						●	●		○	○		●		
	DCGT 32.504M	FNAM3	DCGT 11T301	MFNAM3	3/8	.003						●	●		○	○		○		
	DCGT 32.504	FNAM3	DCGT 11T301	FNXAM3	3/8	.004		●												
	DCGT 32.508M	FNAM3	DCGT 11T302	MFNAM3	3/8	.007						●	●		○	○		○		
	DCGT 32.508	AM3	DCGT 11T302	ENBAM3	3/8	.008		●												
	DCGT 32.508	FNAM3	DCGT 11T302	FNAM3	3/8	.008						●	●		○	○		○		
	DCGT 32.508	FNAM3	DCGT 11T302	FNXAM3	3/8	.008		●												
	DCGT 32.51M	FNAM3	DCGT 11T304	MFNAM3	3/8	.015						●	●		○	○		○		
	DCGT 32.51	FNAM3	DCGT 11T304	FNAM3	3/8	.016						●	●		○	○		○		
	DCGT 32.51	FNAM3	DCGT 11T304	FNXAM3	3/8	.016		●												
	DCGT 32.52	FNAM3	DCGT 11T308	FNAM3	3/8	.031						●	●							
	DCGT 32.52	AM3	DCGT 11T308	ENBAM3	3/8	.031		●												
	DCGT 32.52	FNAM3	DCGT 11T308	FNXAM3	3/8	.031		●												
	DCMT 21.508	AM3	DCMT 070202	ENBAM3	1/4	.008		○			○									
	DCMT 21.508	FNAM3	DCMT 070202	FNAM3	1/4	.008								○						
	DCMT 21.51	AM3	DCMT 070204	ENBAM3	1/4	.016		●	○		○									
	DCMT 21.51	FNAM3	DCMT 070204	FNAM3	1/4	.016								○						
	DCMT 21.52	AM3	DCMT 070208	ENBAM3	1/4	.031			○											
DCMT 32.508	AM3	DCMT 11T302	ENBAM3	3/8	.008		○			○										
DCMT 32.508	FNAM3	DCMT 11T302	FNAM3	3/8	.008								○							
DCMT 32.51	AM3	DCMT 11T304	ENBAM3	3/8	.016		●	●		○										
DCMT 32.51	FNAM3	DCMT 11T304	FNAM3	3/8	.016								○							
DCMT 32.52	AM3	DCMT 11T308	ENBAM3	3/8	.031		●	●		○										
DCMT 32.52	FNAM3	DCMT 11T308	FNAM3	3/8	.031								○							
DCMT 32.53	AM3	DCMT 11T312	ENBAM3	3/8	.047		○			○										
NEW 	DCGT 32.502	AM3-WP*	TFD 11FR05	AM3	3/8	.002						●								
wiper insert	DCGT 32.506	AM3-WP*	TFD 11FR15	AM3	3/8	.006						●								
NEW 	DCGT 32.504M	YL	DCGT 11T301M	YL	3/8	.005						●	○							
	DCGT 32.508M	YL	DCGT 11T302M	YL	3/8	.007						●	○							
	DCGT 32.51M	YL	DCGT 11T304M	YL	3/8	.015						●	○							



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

Holders → Q16 • Q17 • Q18 • Q19

Insert Item List

[Carbide / Cermet]

55 degree Diamond Positive type (DC.. ,continued)

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide						CVD				
					XT3	C7X	XN4	Q15	C7Z	PVD Coated			PVD Coated							
										QM3	DT4	DM4	TM4	VM1	ZM3		KM1	CP1		
	Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
● : 1st Choice																				
○ : Alternate choice																				
	DCGT 21.504M CL	DCGT 070201M CL	1/4	.003							●	○								
	DCGT 21.508M CL	DCGT 070202M CL	1/4	.007							●	○								
	DCGT 21.51M CL	DCGT 070204M CL	1/4	.015							●	○								
	DCGT 32.504M CL	DCGT 11T301M CL	3/8	.003							●	○		●						
	DCGT 32.508M CL	DCGT 11T302M CL	3/8	.007							●	○		●						
	DCGT 32.51M CL	DCGT 11T304M CL	3/8	.015							●	○		●						
	DCGT 21.504M AMX	DCGT 070201M AMX	1/4	.003																
	DCGT 21.508M AMX	DCGT 070202M AMX	1/4	.007																
	DCGT 32.504M AMX	DCGT 11T301M AMX	3/8	.003																
	DCGT 32.508M AMX	DCGT 11T302M AMX	3/8	.007																
	DCGT 32.51M AMX	DCGT 11T304M AMX	3/8	.015																
	DCGT 21.501 AZ7*	DCGT 070200 AZ7	1/4	.001							○	○								
DCGT 21.504M AZ7*	DCGT 070201M AZ7	1/4	.003							○	○									
DCGT 21.508M AZ7*	DCGT 070202M AZ7	1/4	.007							○	○									
DCGT 32.501 AZ7*	DCGT 11T300 AZ7	3/8	.001							○	○									
DCGT 32.504M AZ7*	DCGT 11T301M AZ7	3/8	.003							○	○									
DCGT 32.508M AZ7*	DCGT 11T302M AZ7	3/8	.007							○	○									
DCGT 32.51M AZ7*	DCGT 11T304M AZ7	3/8	.015							○	○									
DCGT 32.52 AZ7*	DCGT 11T308 AZ7	3/8	.031							○	○									
	DCGT 32.508 AF3	DCGT 11T302 ENBAF3	3/8	.008	●															
	DCGT 32.51 AF3	DCGT 11T304 ENBAF3	3/8	.016	●															
	DCGT 32.508 FM	DCGT 11T302 ENBFM	3/8	.008	○															
	DCGT 32.51 FM	DCGT 11T304 ENBFM	3/8	.016	○															
	DCGT 32.52 FM	DCGT 11T308 ENBFM	3/8	.031	●															
	DCMT 21.508 ENBZR	DCMT 070202 ENBZR	1/4	.008		○														
	DCMT 21.51 ENBZR	DCMT 070204 ENBZR	1/4	.016		○														
	DCMT 32.508 ENBZR	DCMT 11T302 ENBZR	3/8	.008		○														
	DCMT 32.51 ENBZR	DCMT 11T304 ENBZR	3/8	.016		○														
	DCMT 32.52 ENBZR	DCMT 11T308 ENBZR	3/8	.031		○														
	DCGT 21.501 R _L S	DCGT 070200 R _L S	1/4	.001							R				RL	RL				
	DCGT 21.504M R _L S	DCGT 070201M R _L S	1/4	.003							R	R			RL	RL				
	DCGT 21.504 R _L S	DCGT 070201 R _L S	1/4	.004							Ⓜ									
	DCGT 21.508M R _L S	DCGT 070202M R _L S	1/4	.007							R	R								
	DCGT 21.508 R _L S	DCGT 070202 R _L S	1/4	.008							RL				RL	RL				
	DCGT 21.51 R _L S	DCGT 070204 R _L S	1/4	.016											Ⓜ					
	DCGT 32.501 R _L S	DCGT 11T300 R _L S	3/8	.001							R	R		R	RL	R				
	DCGT 32.504M R _L S	DCGT 11T301M R _L S	3/8	.003							R	R		R	RL	R				
	DCGT 32.504 R _L S	DCGT 11T301 R _L S	3/8	.004							Ⓜ				RL	R				
	DCGT 32.508M R _L S	DCGT 11T302M R _L S	3/8	.007							R	R		Ⓜ	RL	R				
	DCGT 32.508 R _L S	DCGT 11T302 R _L S	3/8	.008							Ⓜ				RL	R				
	DCGT 32.51M R _L S	DCGT 11T304M R _L S	3/8	.015							Ⓜ					R				
	DCGT 32.51 R _L S	DCGT 11T304 R _L S	3/8	.016							R									
	DCMT 21.504 T _R L AS	DCMT 070201 T _R L AS	1/4	.004							RL									
	DCMT 21.508 T _R L AS	DCMT 070202 T _R L AS	1/4	.008							RL									
DCMT 21.51 T _R L AS	DCMT 070204 T _R L AS	1/4	.016							RL										
DCMT 32.504 T _R L AS	DCMT 11T301 T _R L AS	3/8	.004							RL										
DCMT 32.508 T _R L AS	DCMT 11T302 T _R L AS	3/8	.008							RL										
DCMT 32.51 T _R L AS	DCMT 11T304 T _R L AS	3/8	.016							RL										

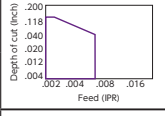
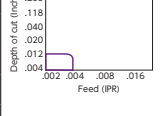
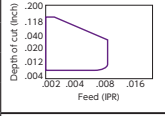
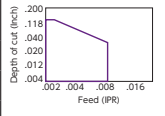
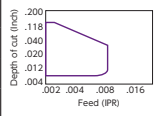
* To be replaced by version which has 0.2mm higher edge.

** To be released in November 2015.

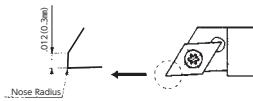
● : Stock ○ : 1-2 week delivery Ⓜ : Mirror finish

R : Stock (Right-hand only) L : Stock (Left-hand only) Ⓜ : 1-2 week delivery (Right-hand only) Ⓜ : 1-2 week delivery (Left-hand only)

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD	● : 1st Choice ● : Alternate choice	
					XT3	C7X	XN4	Q15	C7Z	PVD Coated							
										Q16	Q17	Q18	Q19	Q20			Q21	Q22	Q23	Q24
Steel Stainless Steel Cast Iron Non-Ferrous Material Heat Resistant Alloy Hardened Material					P	●	●	●	●	●	●	●	●	●	●	●	●
					M	●	●	●	●	●	●	●	●	●	●	●	
					K	●	●	●	●	●	●	●	●	●	●	●	
					N	●	●	●	●	●	●	●	●	●	●	●	
					S	●	●	●	●	●	●	●	●	●	●	●	
					H	●	●	●	●	●	●	●	●	●	●	●	
	DCGT 21.502 R/4 S-WP*	TFD 07F R/4 05	1/4	.002						R				R	R/L		
	DCGT 21.506 R/4 S-WP*	TFD 07F R/4 15	1/4	.006						R				R	R/L		
	DCGT 32.502 R/4 S-WP*	TFD 11F R/4 05	3/8	.002						R				R	R		
	DCGT 32.506 R/4 S-WP*	TFD 11F R/4 15	3/8	.006						R				R	R		
	DCGT 21.501 R/4 U	DCGT 070200 R/4 U	1/4	.001										R	R		
	DCGT 21.504 R/4 U	DCGT 070201 R/4 U	1/4	.004										R	R		
	DCGT 21.508 R/4 U	DCGT 070202 R/4 U	1/4	.008										R	R/L		
	DCGT 32.501 R/4 U1	DCGT 11T300 R/4 U1	3/8	.001										R	R/L		
	DCGT 32.504 R/4 U1	DCGT 11T301 R/4 U1	3/8	.004						R				R	R/L		
	DCGT 32.508 R/4 U1	DCGT 11T302 R/4 U1	3/8	.008						R				R	R/L		
	DCGT 32.51 R/4 U1	DCGT 11T304 R/4 U1	3/8	.016						R				R	R/L		
	DCGT 21.502 R/4 U-WP*	TFD 07F R/4 05U	1/4	.002						R				R	R		
	DCGT 21.506 R/4 U-WP*	TFD 07F R/4 15U	1/4	.006						R				R	R		
	DCGT 32.502 R/4 U1-WP*	TFD 11F R/4 05U1	3/8	.002						R				R	R		
	DCGT 32.506 R/4 U1-WP*	TFD 11F R/4 15U1	3/8	.006						R				R	R		
	DCET 21.502 R/4 KHG	DCET 0702005 R/4 KHG	1/4	.002										R/L			
	DCET 21.503 R/4 KHG	DCET 0702008 R/4 KHG	1/4	.003										R/L			
	DCET 21.507 R/4 KHG	DCET 0702018 R/4 KHG	1/4	.007										R/L			
	DCET 21.508 R/4 KHG	DCET 070202 R/4 KHG	1/4	.008										R/L			
	DCET 32.502 R/4 KHG	DCET 11T3005 R/4 KHG	3/8	.002								R	R/L				
	DCET 32.503 R/4 KHG	DCET 11T3008 R/4 KHG	3/8	.003								R	R/L				
	DCET 32.507 R/4 KHG	DCET 11T3018 R/4 KHG	3/8	.007								R	R/L				
	DCET 32.508 R/4 KHG	DCET 11T302 R/4 KHG	3/8	.008								R	R/L				
	DCET 21.503 UHG	DCET 0702008 R/4 UHG	1/4	.003										R			
	DCET 32.503 UHG	DCET 11T3008 R/4 UHG	3/8	.003										R			
	DCGW 21.500 V	DCGW 07020 V	1/4	0										O			
	DCGW 21.501 FN	DCGW 070200 FN	1/4	.001										O			
	DCGW 21.501 H	DCGW 070200 H	1/4	.001										O	●		
	DCGW 21.504 FN	DCGW 070201 FN	1/4	.004										O	●		
	DCGW 21.504 H	DCGW 070201 H	1/4	.004										O	●		
	DCGW 21.508 H	DCGW 070202 H	1/4	.008										O	●		
	DCGW 32.500 V	DCGW 11T30 V	3/8	0										O			
	DCGW 32.501 FN	DCGW 11T300 FN	3/8	.001										O			
	DCGW 32.501 H	DCGW 11T300 H	3/8	.001										O	●		
	DCGW 32.504 FN	DCGW 11T301 FN	3/8	.004										O	●		
	DCGW 32.504 H	DCGW 11T301 H	3/8	.004										O	●		
	DCGW 32.508 H	DCGW 11T302 H	3/8	.008										O	●		
	DCGW 21.502RH-WP*	TFD 07FR05H	1/4	.002										O			
	DCGW 32.502RH-WP*	TFD 11FR05H	3/8	.006										O			



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



Holders → Q16 • Q17 • Q18 • Q19

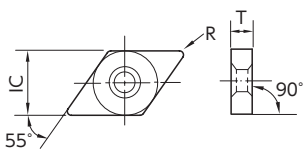
Insert Item List

[Carbide / Cermet]

Carbide / Cermet

55 degree Diamond Negative type (DN..)

(inch)	IC	T
DN..43	1/2	3/16
DN..44	1/2	1/4



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

● : 1st Choice
○ : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD	Graph		
					PVD Coated					PVD Coated								
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1			ZM3	KM1	CP1
	DNMG 431 G	DNMG 150404 G	1/2	.016													○	
	DNMG 432 G	DNMG 150408 G	1/2	.031													○	
	DNMG 433 G	DNMG 150412 G	1/2	.047													○	
	DNMG 431 G	DNMG 150404 ENBG	1/2	.016	●		●											
	DNMG 431 G	DNMG 150404 TNG	1/2	.016				○										
	DNMG 432 G	DNMG 150408 ENBG	1/2	.031	●		●											
	DNMG 432 G	DNMG 150408 TNG	1/2	.031				○										
	DNMG 433 G	DNMG 150412 ENBG	1/2	.047	●													
	DNMG 433 G	DNMG 150412 TNG	1/2	.047				○										
	DNMG 441 G	DNMG 150604 ENBG	1/2	.016				○										
	DNGG 432 R6	DNGG 150408 ENBR6	1/2	.031	●													
	DNGG 4304 1/2 RN1	DNGG 150401 T 1/2 RN1	1/2	.004	R L													
	DNGG 431 1/2 RN1	DNGG 150404 T 1/2 RN1	1/2	.016	R L													
	DNGG 432 1/2 RN1	DNGG 150408 T 1/2 RN1	1/2	.031	R L													
	DNMG 431 WM	DNMG 150404 ENWM	1/2	.016		●			○									
	DNMG 432 WM	DNMG 150408 ENWM	1/2	.031		●			○									
	DNMG 432 WR	DNMG 150408 ENBWR	1/2	.031				○										
	DNMG 433 WR	DNMG 150412 ENBWR	1/2	.047				●										
	DNMG 432 WV	DNMG 150408 ENWV	1/2	.031		●			○									
	DNMG 432 Z5	DNMG 150408 TNBZ5	1/2	.031						○		○						
	DNMG 431 ZF1	DNMG 150404 ENBZF1	1/2	.016	●		●		○									
	DNMG 432 ZF1	DNMG 150408 ENBZF1	1/2	.031	●		●		○									
	DNMG 441 ZF1	DNMG 150604 ENBZF1	1/2	.016	○		○											
	DNMG 442 ZF1	DNMG 150608 ENBZF1	1/2	.031	●		○											

Holders → F8 · F9 · Q38

Boring bars → G5

● : Stock ○ : 1-2 week delivery

Insert Item List

[Carbide / Cermet]

		Steel		P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		Stainless Steel		M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Cast Iron		K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-Ferrous Material		N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Heat Resistant Alloy		S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Hardened Material		H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD					
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated								
										QM3	DM4	TM4	DT4	VM1		ZM3	KM1	CP1		
	DNGG 4304 FNZF1	DNGG 150401 FNZF1	1/2	.004	●															
	DNGG 4308 FNZF1	DNGG 150402 FNZF1	1/2	.008	●															
	DNGG 431 FNZF1	DNGG 150404 FNZF1	1/2	.016	●															
	DNGG 432 FNZF1	DNGG 150408 FNZF1	1/2	.031	●															
	DNGG 431 FNZP	DNGG 150404 FNZP	1/2	.016						●	●									
	DNGG 432 FNZP	DNGG 150408 FNZP	1/2	.031						●	●									
	DNMG 431 ZW1	DNMG 150404 ENBZW1	1/2	.016			○													
	DNMG 432 ZW1	DNMG 150408 ENBZW1	1/2	.031			●													
	DNMG 442 ZW1	DNMG 150608 ENBZW1	1/2	.031	○		○													
	DNGA 431	DNGA 150404 TN	1/2	.016	●															
	DNGA 432	DNGA 150408 TN	1/2	.031	●															
	DNGA 433	DNGA 150412 TN	1/2	.047	○															

● : 1st Choice
○ : Alternate choice

Holders → F8 • F9 • Q38
 Boring bars → G5

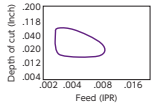


Insert Item List

[Carbide / Cermet]

Carbide / Cermet

55 degree Diamond Positive type (DP..)

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

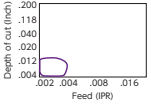


Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide											
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated						CVD			
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1			CP1		
	DPGT 21.504 FNAM3	DPGT 070201 FNAM3	1/4	.004	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 21.508 AM3	DPGT 070202 ENBAM3	1/4	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 21.508 FNAM3	DPGT 070202 FNAM3	1/4	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 21.51 AM3	DPGT 070204 ENBAM3	1/4	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 21.51 FNAM3	DPGT 070204 FNAM3	1/4	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 32.504 FNAM3	DPGT 11T301 FNAM3	3/8	.004	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 32.508 AF3	DPGT 11T302 ENBAF3	3/8	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 32.508 FNAM3	DPGT 11T302 FNAM3	3/8	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 32.51 AF3	DPGT 11T304 ENBAF3	3/8	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 32.51 FNAM3	DPGT 11T304 FNAM3	3/8	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DPGT 21.504 R _L S	DPGT 070201 R _L S	1/4	.004	R																

Insert Item List

[Carbide / Cermet]

75 degree Diamond Positive type (ER..)

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide											
					XT3	C7X	XN4	Q15	C7Z	PCD Coated		PVD Coated						CVD			
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1			CP1		
	ERGP 52Y F _R L A2	ERGHT 30102 F _R L A2	5/32	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	ERGP 521 F _R L A2	ERGHT 30104 F _R L A2	5/32	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	ERGP 5204 F _R L F1	ERGHT 30101 F _R L F1	5/32	.004																	
	ERGP 52Y F _R L F1	ERGHT 30102 F _R L F1	5/32	.008																	
	ERGP 521 F _R L F1	ERGHT 30104 F _R L F1	5/32	.016																	

Holders → V24

● : Stock ○ : 1-2 week delivery
 R : Stock (Right-hand only) L : Stock (Left-hand only) ● : 1-2 week delivery (Right-hand only) ○ : 1-2 week delivery (Left-hand only)

Round type (RC.. / RN.. / RP..)

(inch)	IC	T	(inch)	IC	T
RC..43	1/2	3/16	RP..08	.315	3/32
RN..32	3/8	1/8	RP..10	.394	7/64
RN..43	1/2	1/4	RP..12	.472	1/8
RP..06	.236	3/32	RP..16	.630	3/16
			RP..20	.787	3/16

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD		
					PVD Coated					PVD Coated							
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1			ZM3	KM1	CP1
	RCM _X 43M0 GM	RCMX 1204M0 ENBGM	1/2	—	●	●	●	●	●	●	●	●	●	●	●	●	
	RCM _X 43M0 GB	RCMX 1204M0 GB	1/2	—	○	○	○	○	○	○	○	○	○	○	○	○	
	RNMG 32 F	RNMG 090300 ENBF	3/8	—	○	○	○	○	○	○	○	○	○	○	○		
	RNMG 43 G	RNMG 120400 ENBG	1/2	—	○	○	●	○	○	○	○	○	○	○	○		○
	RPMT 0602M0 GB	RPMT 0602M0 GB	.236	—	○	○	○	○	○	○	○	○	○	○	○		
	RPMT 0802M0 GB	RPMT 0802M0 GB	.315	—	○	○	○	○	○	○	○	○	○	○	○		○
	RPMT 10T2M0 GB	RPMT 10T2M0 GB	.394	—	○	○	○	○	○	○	○	○	○	○	○		○
	RPMT 1203M0 GB	RPMT 1203M0 GB	.472	—	○	○	○	○	○	○	○	○	○	○	○		○
	RPMT 1604M0 GB	RPMT 1604M0 GB	.630	—	○	○	○	○	○	○	○	○	○	○	○		○
	RPMT 2004M0 GB	RPMT 2004M0 GB	.787	—	○	○	○	○	○	○	○	○	○	○	○		○
	RPMX 1203M0 GB	RPMX 1203M0 GB	.472	—	○	○	○	○	○	○	○	○	○	○	○		○

90 degree Square Positive type (SC.. / SD.. / SE..)

(inch)	IC	T	H	(inch)	IC	T	H
SC..32	3/8	5/32	.173	SD..53	5/8	3/16	—
SD..42	1/2	1/8	—	SE..42	1/2	1/8	—
SD..43	1/2	3/16	—	SE..53	5/8	3/16	—

Shape	Item Number	ISO Item Number	IC	R [A]	Cermet					Carbide					CVD		
					PVD Coated					PVD Coated							
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1			ZM3	KM1	CP1
	SCMT 32.52 AM3	SCMT 09T308 ENBAM3	3/8	.031	●	○	○	○	○	○	○	○	○	○	○		
	SCMT 32.52 AM5	SCMT 09T308 ENBAM5	3/8	.031	○	○	○	○	○	○	○	○	○	○	○		○
	SDKN 42 AEN	SDKN 1203 AEN	1/2	[.047]	○	○	○	○	○	○	○	○	○	○	○	—	
	SDKN 53 A	SDKN 1504 AETN	5/8	[.047]	○	○	○	○	○	○	○	○	○	○	○		○
	SDC 42 A3	SDCN 1203 AE	1/2	[.047]	●	○	○	○	○	○	○	○	○	○	○	—	
	SEK 42 AFN	SEKN 1203 AFN	1/2	[.094]	○	○	○	○	○	○	○	○	○	○	○		○
	SECN 42 AFTN	SECN 1203 AFTN	1/2	[.094]	●	○	○	○	○	○	○	○	○	○	○		○
	SECN 53 AFTN	SECN 1504 AFTN	5/8	[.094]	●	○	○	○	○	○	○	○	○	○	○		○
	SDCW 432 T0420		1/2	.031	●	○	○	○	○	○	○	○	○	○	○	—	
	SDCW 433 T0420		1/2	.047	●	○	○	○	○	○	○	○	○	○	○		○
	SDCW 434 T0420		1/2	.063	●	○	○	○	○	○	○	○	○	○	○		○

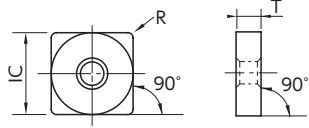
※AE, EE, and PE come with wipers.

Cutters (SDCW) → I 17 • I 18 • I 19

Carbide / Cermet

90 degree Square Negative type (SN..)

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



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

● : 1st Choice
○ : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide					CVD	Graph
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated				
										QM3	DT4	DM4	TM4	VM1			ZM3	KM1	CP1
	SNMG 432 G	SNMG 120408 G	1/2	.031												
	SNMG 433 G	SNMG 120412 G	1/2	.047												
	SNMG 434 G	SNMG 120416 G	1/2	.063												
	SNMG 322 K	SNMG 090308 K	3/8	.031												
	SNMG 322 G	SNMG 090308 ENBG	3/8	.031			○									
	SNMG 432 G	SNMG 120408 ENBG	1/2	.031	●		●									
	SNMG 432 G	SNMG 120408 TNG	1/2	.031	●			○								
	SNMG 433 G	SNMG 120412 ENBG	1/2	.047	●		●									
	SNMG 433 G	SNMG 120412 TNG	1/2	.047	●			○								
	SNMG 434 G	SNMG 120416 ENBG	1/2	.063	●			○								
	SNMG 432 WM	SNMG 120408 ENWM	1/2	.031		○		○								
	SNMG 432 WR	SNMG 120408 ENBWR	1/2	.031			●									
	SNMG 432 Z5	SNMG 120408 ENBZ5	1/2	.031			○									
	SNMG 433 Z5	SNMG 120412 TNBZ5	1/2	.047					○	○						
	SNMG 432 ZF1	SNMG 120408 ENBZF1	1/2	.031	●		●									
	SNMG 433 ZF1	SNMG 120412 ENBZF1	1/2	.047	●											
	SNMG 432 ZW1	SNMG 120408 ENBZW1	1/2	.031			●									
	SNMG 433 ZW1	SNMG 120412 ENBZW1	1/2	.047			●									
	SNGG 321 3/4 B	SNGG 090304 T 3/4 B	3/8	.016	Ⓛ											
	SNGG 322 3/4 B	SNGG 090308 T 3/4 B	3/8	.031	ⓇⓁ											
	SNGG 431 3/4 B	SNGG 120404 T 3/4 B	1/2	.016	ⓇⓁ											
	SNGG 322 3/4 N1	SNGG 090308 3/4 N1	3/8	.031	R L											
	SNGG 432 3/4 N1	SNGG 120408 3/4 N1	1/2	.031	R											
	SNGG 432 3/4 C	SNGG 120408T 3/4 C	1/2	.031	ⓇⓁ	Ⓡ										
	SNG 322	SNGN 090308 TN	3/8	.031	○											
	SNG 432 T0420	SNGN 120408 T01020	1/2	.031	●											
	SNG 432 T0425	SNGN 120408 T01025	1/2	.031	○	○										
	SNG 433 T0420	SNGN 120412 T01020	1/2	.047	●											
SNG 434 T0420	SNGN 120416 T01020	1/2	.063	●												

Holders → F10 • F11

Boring bars → G6

Cutters (SNG) → I 10 • I 12 • I 14

● : Stock ○ : 1-2 week delivery

R : Stock (Right-hand only) L : Stock (Left-hand only) Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only)

Insert Item List

[Carbide / Cermet]

■ 90 degree Square Positive type (SP..)

(inch)	IC	T	(inch)	IC	T
SP..22	1/4	1/8	SP..43	1/2	3/16
SP..32	3/8	1/8	SP..53	5/8	3/16
SP..42	1/2	1/8	SP..63	3/4	3/16
			SP..73	7/32	3/32

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide										
					PVD Coated					PVD Coated							CVD			
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1	ZM3	KM1	CP1			
	SPGR 322 AF1	SPGR 090308 ENBAF1	3/8	.031	●															
	SPGR 422 AF1	SPGR 120308 ENBAF1	1/2	.031	●															
	SPGR 322 QZ	SPGR 090308 ENBQZ	3/8	.031			○													
	SPMH 326 T 3/4 BH1	SPMH 090324 T 3/4 BH1	3/8	.094	⓪															—
	SPMH 328 T 3/4 H1	SPMH 090332 T 3/4 AH1	3/8	.126	⓪															—
	SPMR 4310 3/4 H2	SPMR 120440 T 3/4 H2	1/2	.157	⓪															—
	SPG 321	SPGN 090304 TN	3/8	.016	○															—
	SPG 322	SPGN 090308 TN	3/8	.031	○															—
	SPG 422	SPGN 120308 TN	1/2	.031	○	○														—
	SPG 433	SPGN 120412	3/8	.047	●															—
	SPC 422	SPCN 120308	1/2	.031	●															—
	SPC 433	SPCN 120412	1/2	.047	●															—
	SPC 633	SPCN 190412	1/2	.047	●															—
	SPC 634	SPCN 190416	1/2	.063	●															—
	SPCE 732	SPCE 050208	7/32	.031	●															—
	SPCE 032	SPCE 070208	5/16	.031	●															—
	SPEB 222	SPEB 060308	1/4	.031	●															—
	SPKN 42 EDT 3/4	SPKN 1203 EDT 3/4	1/2			R	L													—
	SPKN 53 EDT 3/4	SPKN 1504 EDT 3/4	5/8			R														—
	SPME 032	SPME 070208	1/4	.031				●												—
	SPM 322	SPMN 090308	3/8	.031				●												—
	SPM 422	SPMN 120308	1/2	.031				●												—
	SPM 4310	SPMN 120440 TN	1/2	.157	○															—
	SPM 632	SPMN 190408 TN	3/4	.031				○												—

● : 1st Choice
○ : Alternate choice

Insert Item List

[Carbide / Cermet]

Carbide / Cermet

60 degree Triangle Positive type (TB.. / TC.. / TE..)

(inch)	IC	T	(inch)	IC	T
TB..52	5/32	1/16	TC..52	5/32	1/16
TC..21	1/4	3/32	TC..73	7/32	3/32
TC..32	3/8	5/32	TE..43	1/2	3/16

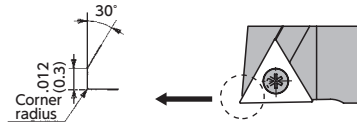
		Steel		P	Stainless Steel		M	Cast Iron		K	Non-Ferrous Material		N	Heat Resistant Alloy		S	Hardened Material		H	
																				● : 1st Choice ○ : Alternate choice
Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide										
					XT3	C7X	XN4	PVD Coated		QM3	DT4	DM4	TM4	VM1	ZM3	KM1	CP1			
								Q15	C7Z											

Insert Item List

[Carbide / Cermet]

● : Stock ○ : 1-2 week delivery
 R : Stock (Right-hand only) L : Stock (Left-hand only) ® : 1-2 week delivery (Right-hand only) ℓ : 1-2 week delivery (Left-hand only)

Shape	Item Number	ISO Item Number	IC	R	Cermet							Carbide							
					PVD Coated							PVD Coated							CVD
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1	ZM3	KM1	CP1		
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	
					● : 1st Choice ● : Alternate choice														



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

Holders(TC) → V31

60 degree Triangle Negative type (TN..)

(inch)	IC	T	(inch)	IC	T
TN..22	1/4	1/8	TN..33	3/8	3/16
TN..32	3/8	1/8	TN..43	1/2	3/16

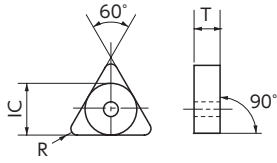
Shape	Item Number	ISO Item Number	IC	R	Cermet							Carbide							
					PVD Coated							PVD Coated							CVD
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1	ZM3	KM1	CP1		
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	
					● : 1st Choice ● : Alternate choice														

Holders → F14 • Q34

Carbide / Cermet

60 degree Triangle Negative type (TN..)

(inch)	IC	T	(inch)	IC	T
TN..22	1/4	1/8	TN..33	3/8	3/16
TN..32	3/8	1/8	TN..43	1/2	3/16



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

● : 1st Choice
● : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide							CVD	
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated						
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1		CP1
	TNGG 3308 F 3/8 C	TNGG 160402 F 3/8 C	3/8	.008														
	TNGG 332 T 3/8 C	TNGG 160408 T 3/8 C	3/8	.031	Ⓡ													
	TNGG 431 1/2 C	TNGG 220404 T 1/2 C	1/2	.016	R													
	TNGG 432 1/2 C	TNGG 220408 T 1/2 C	1/2	.031	R													
	TNMG 331 3/8 C	TNMG 160404 T 3/8 C	3/8	.016	Ⓡ		Ⓡ											
	TNMG 332 3/8 C	TNMG 160408 T 3/8 C	3/8	.031	Ⓡ													
	TNGG 3304 F 3/8 DA	TNGG 160401 F 3/8 DA	3/8	.004	Ⓡ								Ⓡ	Ⓡ				
	TNGG 331 3/8 L2	TNGG 160404 3/8 L2	3/8	.016	R													
	TNGG 332 3/8 L2	TNGG 160408 3/8 L2	3/8	.031	R													
	TNGG 321 3/8 N1	TNGG 160304 3/8 N1	3/8	.016	R													
	TNGG 322 3/8 N1	TNGG 160308 3/8 N1	3/8	.031	L													
	TNGG 3308 3/8 N1	TNGG 160402 T 3/8 N1	3/8	.008	Ⓡ													
	TNGG 331 3/8 N1	TNGG 160404 T 3/8 N1	3/8	.016	R													
	TNGG 332 R1	TNGG 160408 ENBR1	3/8	.031	●													
	TNGG 3304 F 3/8 U2	TNGG 160401 F 3/8 U2	3/8	.004	Ⓡ								Ⓡ	Ⓡ				
	TNGG 3308 F 3/8 U2	TNGG 160402 F 3/8 U2	3/8	.008	Ⓡ								Ⓡ	Ⓡ				
	TNGG 331 F 3/8 U2	TNGG 160404 F 3/8 U2	3/8	.016	Ⓡ								Ⓡ	Ⓡ				
	TNGG 332 F 3/8 U2	TNGG 160408 F 3/8 U2	3/8	.031										Ⓡ	Ⓡ			
	TNGG 3304M FNUL	TNGG 160401M FNUL	3/8	.003									●	●				
	TNGG 3308M FNUL	TNGG 160402M FNUL	3/8	.007									●	●				
	TNGG 331M FNUL	TNGG 160404M FNUL	3/8	.015									●	●				
	TNGG 322 FNZF1	TNGG 160308 FNZF1	3/8	.031	●													
	TNGG 331 FNZF1	TNGG 160404 FNZF1	3/8	.016	●													
	TNGG 332 FNZF1	TNGG 160408 FNZF1	3/8	.031	●													
	TNGG 3308 FNZP	TNGG 160402 FNZP	3/8	.008						○			○					
	TNGG 331 FNZP	TNGG 160404 FNZP	3/8	.016						●			○					
	TNGG 332 FNZP	TNGG 160408 FNZP	3/8	.031						●			○					

Holders → F14 · Q34

● : Stock ○ : 1-2 week delivery

R : Stock (Right-hand only) L : Stock (Left-hand only)

Ⓡ : 1-2 week delivery (Right-hand only)

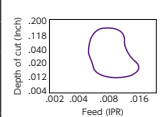
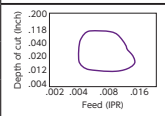
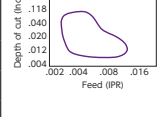
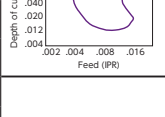
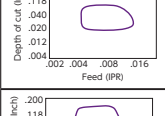
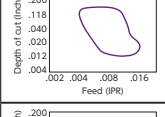
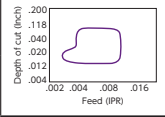
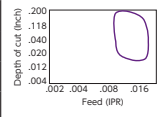
Ⓛ : 1-2 week delivery (Left-hand only)

Insert Item List

[Carbide / Cermet]

					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Shape	Item Number	ISO Item Number	IC	R	Cermets					Carbide							CVD					
					XT3	C7X	XN4	Q15	C7Z	Q15	DT4	DM4	TM4	VM1	ZM3	KM1		CP1				
	TNMG 332 G	TNMG 160408 G	3/8	.031																	○	
	TNMG 333 G	TNMG 160412 G	3/8	.047																		●
	TNMG 221 F	TNMG 110304 ENBF	1/4	.016	●																	
	TNMG 321 F	TNMG 160404 ENBF	3/8	.016	●																	
	TNMG 322 F	TNMG 160408 ENBF	3/8	.031	●																	
	TNMG 321 G	TNMG 160304 ENBG	3/8	.016			●															
	TNMG 322 G	TNMG 160308 ENBG	3/8	.031			●															
	TNMG 323 G	TNMG 160316 ENBG	3/8	.047			●															
	TNMG 331 G	TNMG 160404 ENBG	3/8	.016	●		●															
	TNMG 331 G	TNMG 160404 TNG	3/8	.016				○														
	TNMG 332 G	TNMG 160408 ENBG	3/8	.031	●		●															
	TNMG 332 G	TNMG 160408 TNG	3/8	.031				○														
	TNMG 333 G	TNMG 160412 ENBG	3/8	.047	●			○														
	TNMG 333 G	TNMG 160412 TNG	3/8	.047				○														
TNMG 431 G	TNMG 220404 ENBG	1/2	.016	●		●																
TNMG 432 G	TNMG 220408 ENBG	1/2	.031	●		●																
TNMG 433 G	TNMG 220412 ENBG	1/2	.047	●			○															
	TNMG 331 WM	TNMG 160404 ENWM	3/8	.016	●				○													
	TNMG 332 WM	TNMG 160408 ENWM	3/8	.031	●				○													
	TNMG 332 WR	TNMG 160408 ENBWR	3/8	.031			●															
	TNMG 332 WV	TNMG 160408 ENWV	3/8	.031	●				○													
	TNMG 331 Z5	TNMG 160404 TNBZ5	3/8	.016						○		○										
	TNMG 332 Z5	TNMG 160408 ENBZ5	3/8	.031							○											
	TNMG 332 Z5	TNMG 160408 TNBZ5	3/8	.031								○										
	TNMG 322 ZF1	TNMG 160308 ENBZF1	3/8	.031	●																	
	TNMG 323 ZF1	TNMG 160312 ENBZF1	3/8	.047	●																	
	TNMG 331 ZF1	TNMG 160404 ENBZF1	3/8	.016	●		●		○													
	TNMG 332 ZF1	TNMG 160408 ENBZF1	3/8	.031	●		●		○													
	TNMG 333 ZF1	TNMG 160412 ENBZF1	3/8	.047	●																	
TNMG 432 ZF1	TNMG 220408 ENBZF1	1/2	.031	●																		
	TNMP 331 ZP	TNMG 160404 ENBZP	3/8	.016	●																	
	TNMP 332 ZP	TNMG 160408 ENBZP	3/8	.031	●																	
	TNMP 432 ZP	TNMG 220408 ENBZP	1/2	.031	●																	
	TNMG 321 ZW1	TNMG 160304 ENBZW1	3/8	.016			●															
	TNMG 322 ZW1	TNMG 160308 ENBZW1	3/8	.031	●		●															
	TNMG 331 ZW1	TNMG 160404 ENBZW1	3/8	.016			●															
	TNMG 332 ZW1	TNMG 160408 ENBZW1	3/8	.031	●		●															
	TNMG 432 ZW1	TNMG 220408 ENBZW1	1/2	.031			●															

● : 1st Choice
● : Alternate choice



Holders → F14 • Q34

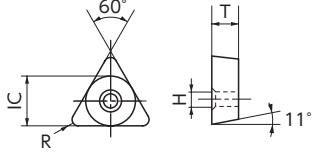
Insert Item List

[Carbide / Cermet]

Carbide / Cermet

60 degree Triangle Positive type (TP..)

(inch)	IC	T	(inch)	IC	T
TP..22	1/4	1/8	TP..63	3/16	3/32
TP..32	3/8	1/8	TP..73	7/32	3/32
TP..43	1/2	3/16			



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

● : 1st Choice
 ● : Alternate choice

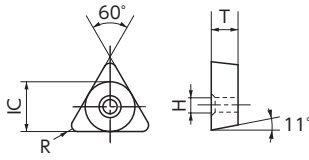
Insert Item List

[Carbide / Cermet]

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide							CVD				
					XT3	C7X	XN4	Q15	C7Z	PVD Coated			PVD Coated								
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1		CP1			
	TP 404	TPGA 110201	1/4	.004	●															—	
	TP 41	TPGA 110204	1/4	.016	●																—
	TP 42	TPGA 110208	1/4	.031	●														—		
	TP 62	TPGA 160308	3/8	.031	●																
	TPC 2204	TPCN 110301	1/4	.004	●															—	
	TPC 3204	TPCN 160301	3/8	.004	●																—
	TPC 322	TPCN 160308	3/8	.016	●																
	TPC 432	TPCN 220408	1/2	.016	●																
	TPGN 220412	TPCN 220412	1/2	.047	●																
	TPG 221	TPGN 110304 TN	1/4	.016	●																
	TPG 222	TPGN 110308 TN	1/4	.031	●	○														—	
	TPG 321 FN	TPGN 160304 FN	3/8	.016	●																
	TPG 321	TPGN 160304 TN	3/8	.016	●																
	TPG 322 FN	TPGN 160308 FN	3/8	.031	●																
	TPG 322	TPGN 160308 TN	3/8	.031	○	●															
	TPG 431	TPGN 220404 TN	1/2	.016	●																
	TPG 432	TPGN 220408 TN	1/2	.031	●																
	TPG 433	TPGN 220412 TN	1/2	.047	●																
	TPG 435	TPGN 220420 TN	1/2	.079	○																
	TPGE 731	TPGE 090204	7/32	.016	●																
TPGE 732	TPGE 090208	7/32	.031	●																	
	TPGD 63Y	TPGB 080202 TN	3/16	.008	○															—	
	TPGD 631	TPGB 080204 TN	3/16	.016	○																
	TPGD 73Y	TPGB 090202 TN	7/32	.008	○																
	TPGD 731	TPGB 090204 TN	7/32	.016	○																
	TPGH 6308 F ^R / _L B3	TPGH 080202 F ^R / _L B3	3/16	.008	L									L		L					
	TPGH 631 F ^R / _L B3	TPGH 080204 F ^R / _L B3	3/16	.016										L		L					
	TPGH 631 ^R / _L B3	TPGH 080204 T ^R / _L B3	3/16	.016	L																
	TPGH 7308 F ^R / _L B2	TPGH 090202 F ^R / _L B2	7/32	.008											L		L				
	TPGH 731 F ^R / _L B2	TPGH 090204 F ^R / _L B2	7/32	.016											L		L				
	TPGH 731 ^R / _L B2	TPGH 090204 T ^R / _L B2	7/32	.016	R L																
	TPGH 732 ^R / _L B2	TPGH 090208 F ^R / _L B2	7/32	.031											L		L				
	TPGH 2204 ^R / _L B3	TPGH 110301 T ^R / _L B3	1/4	.004	L																
TPGH 221 ^R / _L B3	TPGH 110304 T ^R / _L B3	1/4	.016	L																	
TPGH 222 ^R / _L B3	TPGH 110308 T ^R / _L B3	1/4	.031	L																	
	TPGH 6308 F ^R / _L F1	TPGH 080202 F ^R / _L F1	3/16	.008										R		R					
	TPGH 631 F ^R / _L F1	TPGH 080204 F ^R / _L F1	3/16	.016										R		R					
	TPGH 7304 F ^R / _L F1	TPGH 090201 F ^R / _L F1	7/32	.004											R		R				
	TPGH 7308 F ^R / _L F1	TPGH 090202 F ^R / _L F1	7/32	.008											R		R				
	TPGH 731 F ^R / _L F1	TPGH 090204 F ^R / _L F1	7/32	.016											R		R				
	TPGH 732 F ^R / _L F1	TPGH 090208 F ^R / _L F1	7/32	.031											R		R				
	TPGH 2208 F ^R / _L F1	TPGH 110302 F ^R / _L F1	1/4	.008											R		R				
	TPGH 221 F ^R / _L F1	TPGH 110304 F ^R / _L F1	1/4	.016											R		R				
TPGH 222 F ^R / _L F1	TPGH 110308 F ^R / _L F1	1/4	.031											R		R					

● : Stock ○ : 1-2 week delivery
 R : Stock (Right-hand only) L : Stock (Left-hand only) ® : 1-2 week delivery (Right-hand only) ④ : 1-2 week delivery (Left-hand only)

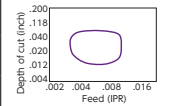
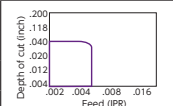
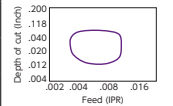
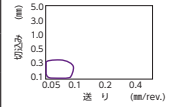
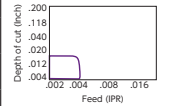
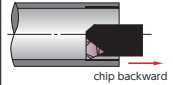
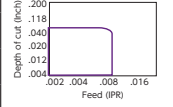
HOLDERS ➡ V30



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

● : 1st Choice
● : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide						
					PVD Coated					PVD Coated						CVD
					XT3	C7X	XN4	Q15	C7Z	QM3	DT4	DM4	TM4	VM1	ZM3		KM1	CP1
	TPGH 6308 $\frac{3}{8}$ L F1	TPGH 080202 T $\frac{3}{8}$ L F1	3/16	.008		Ⓟ				Ⓟ						
	TPGH 631 $\frac{3}{8}$ L F1	TPGH 080204 T $\frac{3}{8}$ L F1	3/16	.016		Ⓟ				Ⓟ						
	TPGP 7308 $\frac{3}{8}$ L F1	TPGH 090202 T $\frac{3}{8}$ L F1	7/32	.008		Ⓟ				Ⓟ						
	TPGP 731 $\frac{3}{8}$ L F1	TPGHP 090204 T $\frac{3}{8}$ L F1	7/32	.016		Ⓟ				Ⓟ						
	TPGP 2208 $\frac{3}{8}$ L F1	TPGH 110302 T $\frac{3}{8}$ L F1	1/4	.008		Ⓟ				Ⓟ						
	TPGP 221 $\frac{3}{8}$ L F1	TPGH 110304 T $\frac{3}{8}$ L F1	1/4	.016		Ⓟ				Ⓟ						
	TPGP 222 $\frac{3}{8}$ L F1	TPGH 110308 T $\frac{3}{8}$ L F1	1/4	.031		Ⓟ				Ⓟ						
	TPGP 7308 $\frac{3}{8}$ L FG	TPGH 090202 $\frac{3}{8}$ L FG	7/32	.008						Ⓟ			R			
	TPGP 731 $\frac{3}{8}$ L FG	TPGH 090204 $\frac{3}{8}$ L FG	7/32	.016						Ⓟ			R			
	TPGH 2208 $\frac{3}{8}$ L FG	TPGH 110302 $\frac{3}{8}$ L FG	1/4	.008						Ⓟ			R			
	TPGH 221 $\frac{3}{8}$ L FG	TPGH 110304 $\frac{3}{8}$ L FG	1/4	.016						Ⓟ			R			
	TPGP 7308 F $\frac{3}{8}$ L K	TPGH 090202 F $\frac{3}{8}$ L K	1/4	.008									L			
	TPGP 7318 F $\frac{3}{8}$ L K	TPGH 090204 F $\frac{3}{8}$ L K	1/4	.016									L			
	TPGP 7328 F $\frac{3}{8}$ L K	TPGH 090208 F $\frac{3}{8}$ L K	1/4	.031									L			
	TPGR 221 AF1	TPGR 110304 ENBAF1	1/4	.016	●											
	TPGR 221 FNAF1	TPGR 110304 FNAF1	1/4	.016	●											
	TPGR 222 AF1	TPGR 110308 ENBAF1	1/4	.031	●											
	TPGR 321 AF1	TPGR 160304 ENBAF1	3/8	.016	●											
	TPGR 321 FNAF1	TPGR 160304 FNAF1	3/8	.016	●											
	TPGR 322 AF1	TPGR 160308 ENBAF1	3/8	.031	●											
	TPGR 322 FNAF1	TPGR 160308 FNAF1	3/8	.031	●											
	TPGR 431 AF1	TPGR 220404 ENBAF1	1/2	.016	●											
	TPGS 731 $\frac{3}{8}$ L P1	TPGS 090204 $\frac{3}{8}$ L P1	7/32	.016	R	L										
	TPGR 221 $\frac{3}{8}$ L P1	TPGR 110304 $\frac{3}{8}$ L P1	1/4	.016	R	L										
	TPGR 321 $\frac{3}{8}$ L P1	TPGR 160304 $\frac{3}{8}$ L P1	3/8	.016	R	L										
	TPGR 322 $\frac{3}{8}$ L P1	TPGR 160308 $\frac{3}{8}$ L P1	3/8	.031	R	L										
	TPKN 32 PDTR	TPKN 1603 PDTR	3/8	.012		●										
	TPKN 43 PDTR	TPKN 2204 PDTR	1/2	.016		●										
	TPM 221	TPMN 110304	1/4	.016			●									
	TPM 222	TPMN 110308	1/4	.031			●									
	TPM 321	TPMN 160304	3/8	.016			●									
	TPM 322	TPMN 160308	3/8	.031			●									
	TPMR 221 A283	TPMR 110304 A283	1/4	.016			●									
	TPMR 321 A283	TPMR 160304 A283	3/8	.016			●									
	TPMR 322 A305	TPMR 160308 A305	3/8	.031			●									




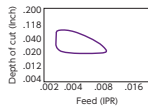

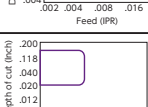










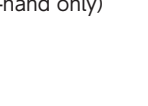
Holders → V30

Insert Item List
[Carbide / Cermet]

Carbide / Cermet

35 degree Diamond Positive type (VB..)

(inch)	IC	T
VB..21	1/4	3/32
VB..22	1/4	1/8
VB..33	3/8	3/16

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide										
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated			CVD					
										Q15	C7Z	Q15	C7Z	Q15		C7Z	Q15	C7Z		
	VBGT 21.508 FNAM3	VBGT 110202 FNXAM3	1/4	.008	●	●	●	●	●	●	●	●	●	●	●	●				
	VBGT 21.51 FNAM3	VBGT 110204 FNXAM3	1/4	.016	●	●	●	●	●	●	●	●	●	●	●					
	VBGT 2208 FNAM3	VBGT 110302 FNXAM3	1/4	.008	●	●	●	●	●	●	●	●	●	●	●					
	VBGT 221 FNAM3	VBGT 110304 FNXAM3	1/4	.016	●	●	●	●	●	●	●	●	●	●	●					
	VBGT 3304 AM3	VBGT 160401 AM3	3/8	.004	●	○														
	VBGT 3308 AM3	VBGT 160402 AM3	3/8	.008	●	○														
VBMT 331 AM3	VBMT 160404 ENBAM3	3/8	.016	○																
	VBGT 331 GA	VBGT 160404 ENBGA	3/8	.016	●															
	VBGT 332 GA	VBGT 160408 ENBGA	1/32	.031	●															
	VBGT 333 GA	VBGT 160412 ENBGA	3/8	.047	●															
	VBGT 3308 FNYL*	VBGT 160402 FNYL	3/8	.008						●	●	○								
	VBGT 331 FNYL	VBGT 160404 FNYL	3/8	.016						●	●	○								
	VBGT 332 FNYL*	VBGT 160408 FNYL	3/8	.031						●	●	○								

*To be released in August 2015.

HOLDERS → Q24

● : Stock ○ : 1-2 week delivery ■ : While stock lasts M : Mirror finish
 R : Stock (Right-hand only) L : Stock (Left-hand only) ® : 1-2 week delivery (Right-hand only) ℒ : 1-2 week delivery (Left-hand only)

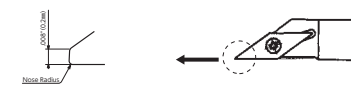
Insert Item List

[Carbide / Cermet]

35 degree Diamond Positive type (VC..)

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide									
					XT3	C7X	XN4	Q15	C7Z	PVD Coated			PVD Coated					CVD	
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1			CP1
	VCGT 21.508 MCL	VCGT 110202 MCL	1/4	.007															
	VCET 2203 3/4 UHG	VCET 1103008 3/4 UHG	1/4	.003															
	VCGT 2201 FNAM3	VCGT 110300 FNAM3	1/4	.001															
	VCGT 2204M FNAM3	VCGT 110301M FNAM3	1/4	.003															
	VCGT 2204 FNAM3	VCGT 110301 FNAM3	1/4	.004															
	VCGT 2208M FNAM3	VCGT 110302M FNAM3	1/4	.007															
	VCGT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008															
	VCGT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008															
	VCGT 221M FNAM3	VCGT 110304M FNAM3	1/4	.015															
	VCGT 221 FNAM3	VCGT 110304 FNAM3	1/4	.016															
	VCMT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008															
VCMT 221 FNAM3	VCGT 110304 FNAM3	1/4	.016																
NEW 	VCGT 2204M YL	VCGT 110301M YL	1/4	.003															
	VCGT 2208M YL	VCGT 110302M YL	1/4	.007															
	VCGT 221M YL	VCGT 110304M YL	1/4	.015															
	VCGT 2204M CL	VCGT 110301M CL	1/4	.003															
	VCGT 2208M CL	VCGT 110302M CL	1/4	.007															
	VCGT 2201 AZ7**	VCGT 110300 AZ7	1/4	.001															
	VCGT 2204M AZ7**	VCGT 110301M AZ7	1/4	.003															
	VCGT 2208M AZ7**	VCGT 110302M AZ7	1/4	.007															
	VCGT 221M AZ7**	VCGT 110304M AZ7	1/4	.015															
	VCMT 2204 T 3/4 AS	VCMT 110301 T 3/4 AS	1/4	.004															
	VCMT 2208 T 3/4 AS	VCMT 110302 T 3/4 AS	1/4	.008															
	VCMT 221 T 3/4 AS	VCMT 110304 T 3/4 AS	1/4	.016															
	VCGT 2202 3/4 S-WP*	TFV 11F 3/4 055X	1/4	.002															
	VCGT 2204 3/4 S-WP*	TFV 11F 3/4 105X	1/4	.004															
	VCGT 2201 3/4 U	VCGT 110300 3/4 U	1/4	.001															
	VCGT 2204M 3/4 U	VCGT 110301M 3/4 U	1/4	.003															
	VCGT 2204 3/4 U	VCGT 110301 3/4 U	1/4	.004															
	VCGT 2208M 3/4 U	VCGT 110302M 3/4 U	1/4	.007															
	VCGT 2208 3/4 U	VCGT 110302 3/4 U	1/4	.008															
	VCGT 2202 3/4 U-WP*	TFV 11F 3/4 05U	1/4	.002															
	VCGT 2204 3/4 U-WP*	TFV 11F 3/4 10U	1/4	.004															
	VCGW 2201 H	VCGW 110300 H	1/4	.001															-
	VCGW 2204 H	VCGW 110301 H	1/4	.004															
	VCGW 2208 H	VCGW 110302 H	1/4	.008															



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

HOLDERS → Q26 • Q27 • Q28

* * To be replaced by version which has 0.2mm higher edge.

Insert Item List

[Carbide / Cermet]

80 degree Hexagon type (WC.. / WP.. / WN..)

(inch)	IC	T
WC..52	5/32	1/16
WC..21	1/4	3/32
WN..43	1/2	3/16
WP..21	1/4	3/32

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide											
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated						CVD			
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1			CP1		
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	● : 1st Choice ● : Alternate choice
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●			
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●			
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●			
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●			
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●			
					Cermet					Carbide											
										PVD Coated		PVD Coated					CVD				
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1	CP1				
	WCGT 521 QB	WCGT 020104 QB	5/32	.016		○															
	WCGT 21.504 FNAM3	WCGT 040201 FNAM3	1/4	.004		●															
	WCGT 21.508 FNAM3	WCGT 040202 FNAM3	1/4	.008		●															
	WCGT 21.51 FNAM3	WCGT 040204 FNAM3	1/4	.016		●															
	WNMG 432 G	WNMG 080408 G	1/2	.031																	
	WNMG 433 G	WNMG 080412 G	1/2	.047																	
	WNMG 432 WR	WNMG 080408 ENWR	1/2	.031		●	●		○												
	WNMG 432 WV	WNMG 080408 ENWV	1/2	.031		●			○												
	WNMG 432 Z5	WNMG 080408 TNBZ5	1/2	.031						○		○									
	WNMG 433 Z5	WNMG 080412 TNBZ5	1/2	.047						○		○									
	WNGG 431 FNZP	WNGG 080404 FNZP	1/2	.016						●		●									
	WNGG 432 FNZP	WNGG 080408 FNZP	1/2	.031						●		●									
	WNGG 431 FNUL	WNGG 080404 FNUL	1/2	.016								●	○								
	WNGG 432 FNUL	WNGG 080408 FNUL	1/2	.031								●	○								
	WPGT 21.504 FNAM3	WPGT 040201 FNAM3	1/4	.004		●															
	WPGT 21.508 FNAM3	WPGT 040202 FNAM3	1/4	.008		●															
	WPGT 21.51 FNAM3	WPGT 040204 FNAM3	1/4	.016		●															

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

MEMO

F



General Turning Toolholders

- **Holder Identification System..... F2**
- **Selection Guide F4**
- **For CN.. Inserts F6**
- **For DN.. Inserts F8**
- **For SN.. Inserts F10**
- **For VN.. Inserts F12**
- **For TN.. Inserts F14**
- **For WN.. Inserts..... F15**
- **For RN.. Inserts F16**
- **For RCGX / RPGX.. Inserts F17**
- **For CDH.. Inserts F20**

General Turning Toolholders








Holder Identification System

1 Clamping System

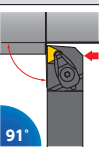
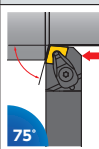
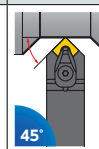
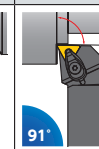
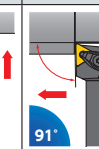
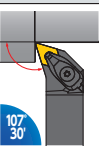
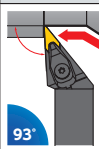
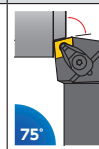
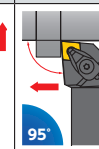
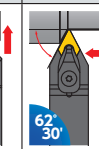
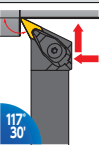
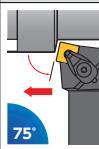
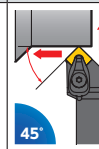
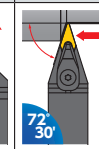
B) Clamp-on
 C)
 V)

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

2 Insert Shape

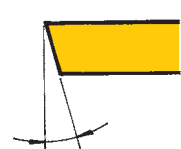
C  80° Diamond	D  55° Diamond	R  Round	S  Square
T  Triangular	V  35° Diamond	W  Trigon	

3 Approach Angle

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

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

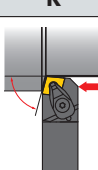
4 Insert Relief Angle



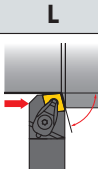
N : 0°
 B : 5°
 C : 7°
 P : 11°
 D : 15°
 E : 20°

5 Hand of Tool

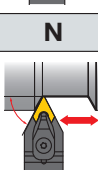
R



L

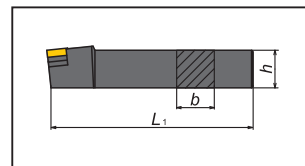


N



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








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



In case of $b = h$, the number will represent the number of sixteenths of b and h .

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

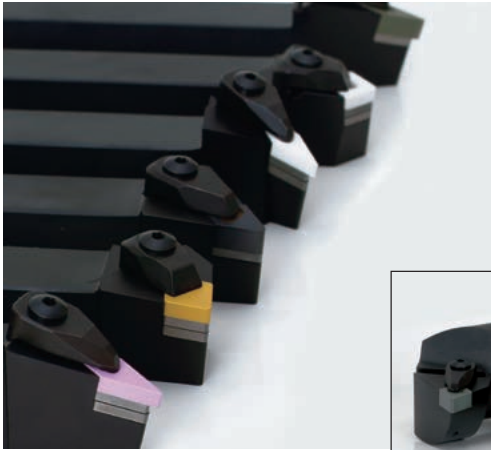
7 Insert Size

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

8 Length of toolholder (L_1) (inch)

B	C	D	E
4.500	5.000	6.000	7.000

Multi Clamp Toolholders

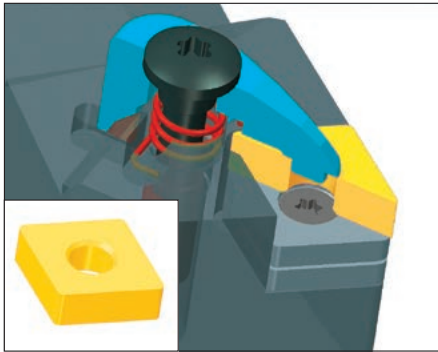


Features

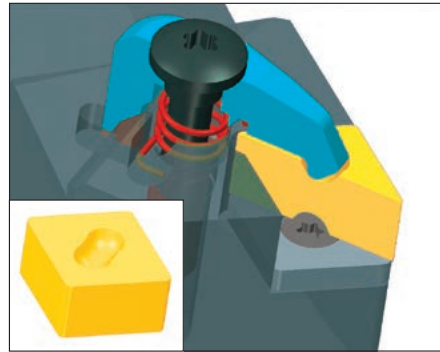
- Three clamping configurations available with one toolholder just by changing a clamp
- Clamp screw also accessible from bottom of the toolholder
Dramatically improved accessibility when using toolholder up-side down



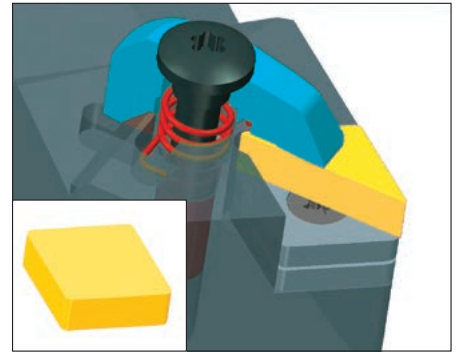
Double-clamp type



Dimple-clamp type

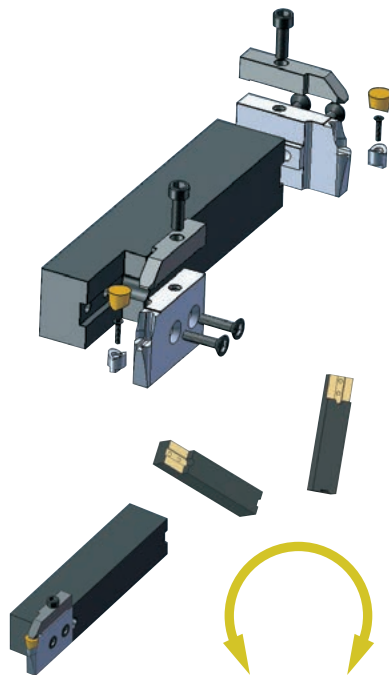


Clamp-on type



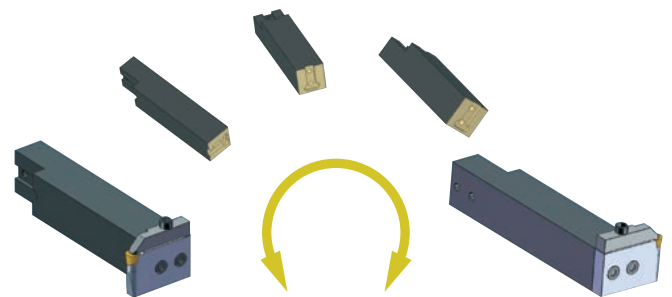
General Turning Toolholders

BRV Toolholder System



Features

- BRV toolholder is a modular tooling system designed for ceramic V-bottom inserts for profiling
This system provides excellent index repeatability and rigid clamping
- The BRV toolholder can be used in four configurations to cut the cost for preparing separate toolholders



Selection Guide

For General Turning

Lead Angle		95°	75° (Using 100° Corner)	91°	91°	95°
Tooling						
Insert shape						
Perfect for Ceramic Insert	Multi Clamp	WCLN →F6	WCBN →F7	WTGN →F14	WTFN →F14	WWLN WWLN-2 →F15
	Clamp On	CCLN →F6				
For Insert in General	Lever Lock	PCLN →Q37				

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

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

General Turning Toolholders

Lead Angle		-		-		-		-	
Tooling									
Insert shape		RNG		RCGX / RPGX				CDH	
Perfect for Ceramic Insert	Clamp On	CRGN	→F16	VRAO	→F18	VRAON	→F19		
	BRV			BRV	→F17				
	Screw On							HRCD	→F20

For Swiss-type Lathes (With no offset)

Lead Angle		95°	93°	62° 30'	91°	93°	72° 30'								
Tooling															
Insert shape		CC.T / CC.W		DC.T / DC.W		VB.T / VC.T / VC.W									
No offset	Screw On	SCLC	→Q10	SDJC	→Q16	SDNCN	→Q16	SVAC-N	→Q25 • 26	SVJC	→Q26	SVJB	→Q24	SVVCR-N	→Q27

Lead Angle		99°	91°	100°			
Tooling							
Insert shape		VP.T	TC.T / TC.W	TN..			
No offset	Screw On	SVXP-N	→Q31	STAC-N	→Q33	PTXN	→Q34

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

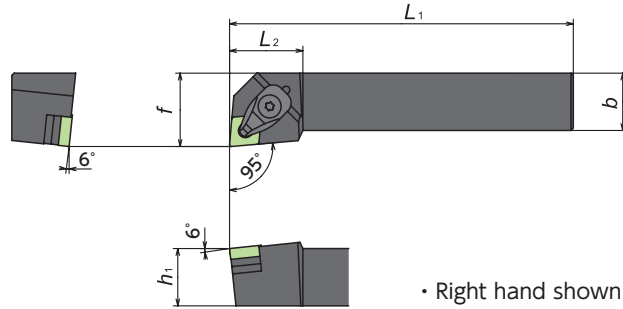
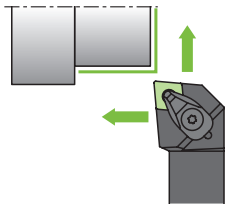


General Turning Toolholders

General Turning Toolholders

CN.. Inserts

WCLN



• Right hand shown

● Inch / Metric Holders

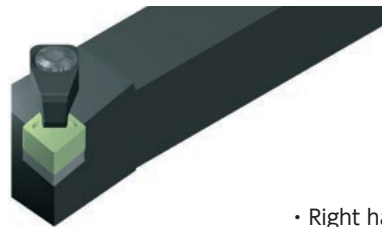
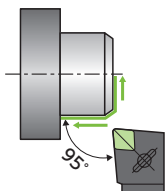
Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WCLN [®] 16-4D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.25	—	
WCLN [®] 20-4D	●	●	1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.25	—	
WCLN [®] 2525M12	○	○	—	25	—	25	—	150	—	25	—	32	—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

● Spare Parts

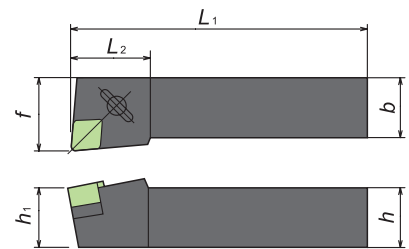
	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard								

Inserts (CNG) → E3
 Inserts (CNGA) → E4 • E5 • E23 • E31
 Inserts (CNGX) → E6

CCLN



• Right hand shown



● Inch Holders

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

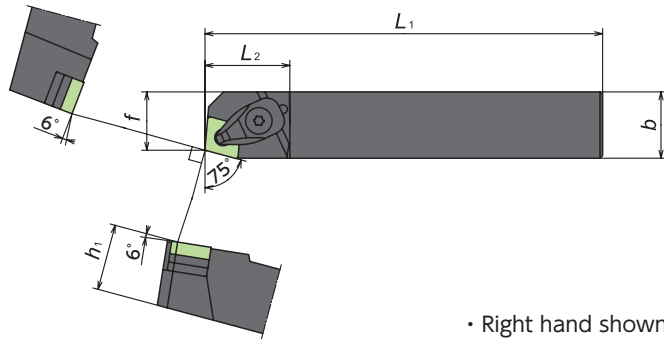
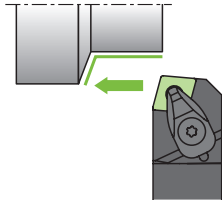
● Spare Parts

	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard						

● : Stock ○ : 1-2 week delivery OP : Optional parts

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

WCBN



• Right hand shown

Inch / Metric Holders

Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WCBN _{1/2} 16-4D	●*	●*	1.00	—	1.00	—	6.00	—	1.00	—	.88	—	1.25	—	 CNGA 43 CNGA 45 CNG 43 CNG 45
WCBN _{1/2} 20-4D			1.25	—	1.25	—	6.00	—	1.25	—	1.13	—	1.25	—	
WCBN _{1/2} 2525M12	○	○	—	25	—	25	—	150	—	25	—	22	—	32	

*To be released in September 2015.

Spare Parts

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

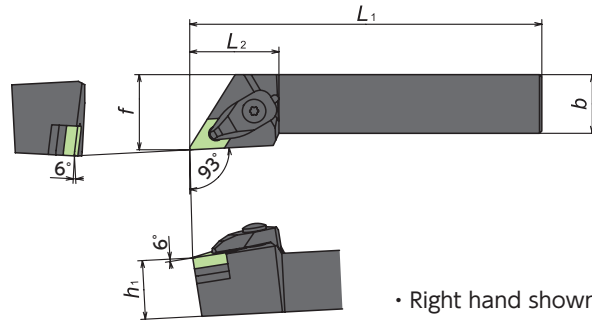
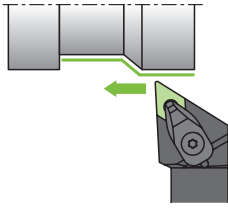
Inserts (CNG) → E3
Inserts (CNGA) → E4 • E5 • E23 • E31

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

General Turning Toolholders

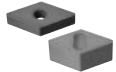
DN.. Inserts

WDJN

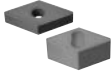









• Right hand shown

● Inch / Metric Holders

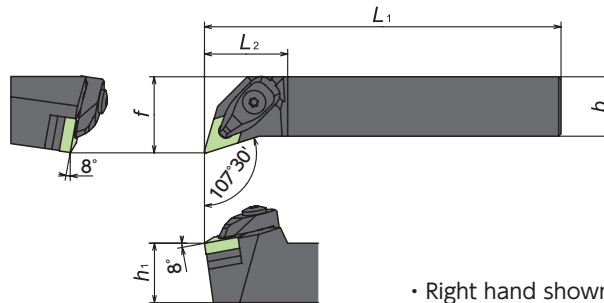
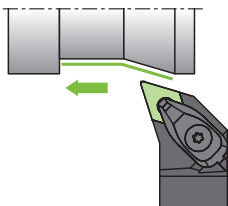
Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	
WDJN _{1/2} 16-4D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.50	—	 DNGA 43 (DNGA 45) (DNGX 45)
WDJN _{1/2} 20-4D	●	●	1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.50	—	
WDJN _{1/2} 2525M15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

● Spare Parts

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

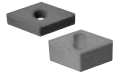
Inserts (DNGA) → E7 • E24
 Inserts (DNGX) → E8 • E36 • E37

WDHN



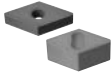







• Right hand shown

● Inch / Metric Holders

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

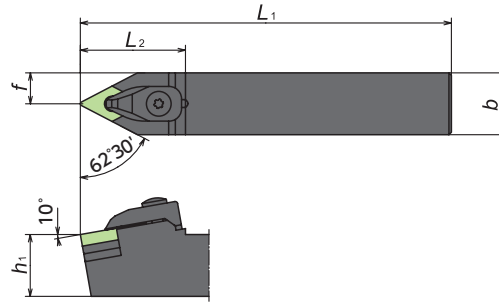
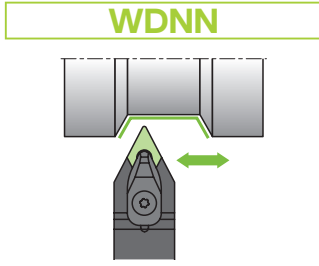
* To be released in September 2015.

● Spare Parts

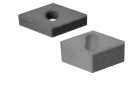
	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 DNGA 43 DNGA 45 DNGX 45	 DC6DN HC6DN (OP)	 ADN423×2 ADN423×1 ADN423×1	 AOS-6*30W	 LLR-T20	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

Inserts (DNGA) → E7 • E24
 Inserts (DNGX) → E8 • E36 • E37

● : Stock ○ : 1-2 week delivery OP : Optional parts

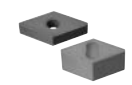

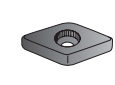



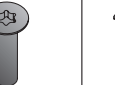



● Inch / Metric Holders

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

* To be released in September 2015.

● Spare Parts

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

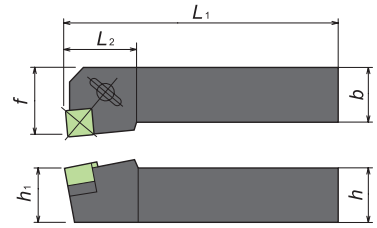
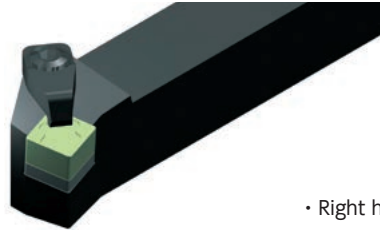
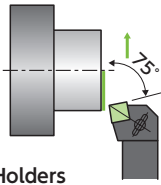
Inserts (DNGA) → E7 • E24
 Inserts (DNGX) → E8 • E36 • E37

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

General Turning Toolholders

SN.. Inserts

CSKN

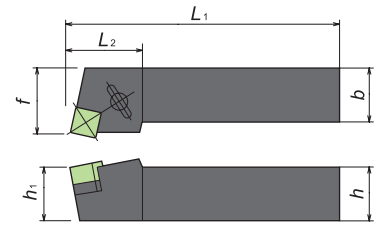
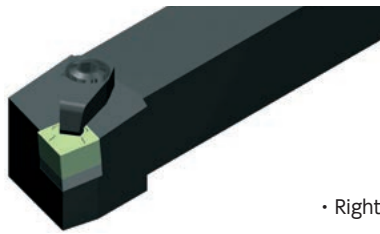
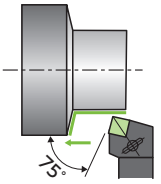


• Right hand shown

● Inch Holders

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

CSRN

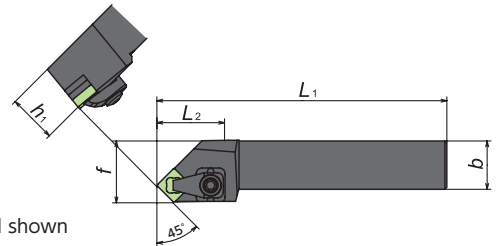
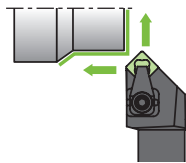


• Right hand shown

● Inch Holders

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

CSSN



• Right hand shown

● Inch Holders

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

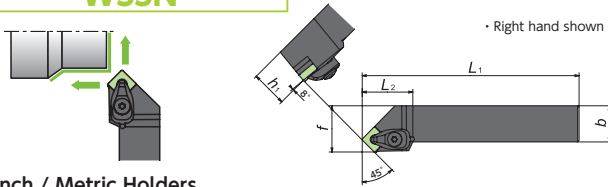
● Spare Parts

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

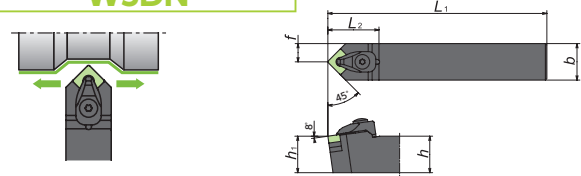
● : Stock ○ : 1-2 week delivery OP : Optional parts

Inserts (SNG) → E13 • E40
Inserts (SNGX) → E15

WSSN



WSDN



● Inch / Metric Holders

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

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

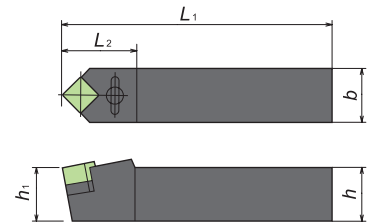
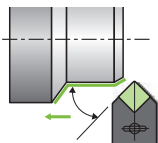
● Spare Parts

	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard								

* To be released in September 2015.

Inserts (SNG) → E13 • E40
 Inserts (SNGA) → E14 • E25 • E40
 Inserts (SNGX) → E15

CSDN



● Inch Holders

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

● Spare Parts

	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard						
Standard						

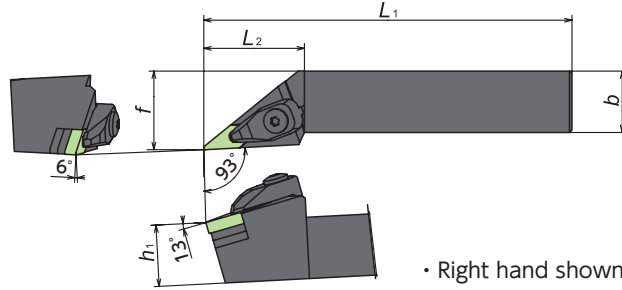
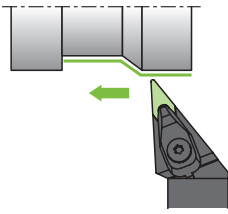
Inserts (SNG) → E13 • E40
 Inserts (SNGX) → E15

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

General Turning Toolholders


VN.. Inserts

WVJN











• Right hand shown

● Inch / Metric Holders

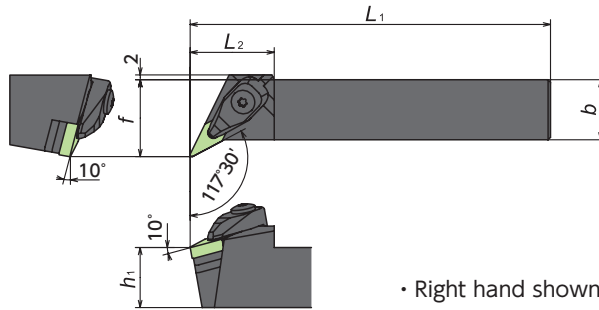
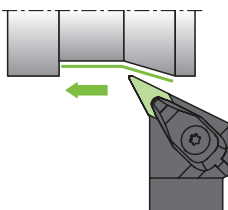
Item Number	Stock		h		b		L ₁		h ₁		f		L ₂		Insert*
	R	L	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
WVJN [®] / 16-3D	●	●	1.00	—	1.00	—	6.00	—	1.00	—	1.25	—	1.61	—	VNGA 33 (VNGA 35) (VNGX 35) 
WVJN [®] / 20-3D	●	●	1.25	—	1.25	—	6.00	—	1.25	—	1.50	—	1.61	—	
WVJN [®] / 2525M16	○	○	—	25	—	25	—	150	—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

● Spare Parts

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


Inserts (VNGA) → E20 • E27 • E50

WVPN











• Right hand shown

● Inch / Metric Holders

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

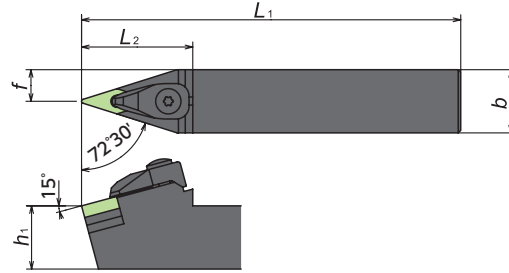
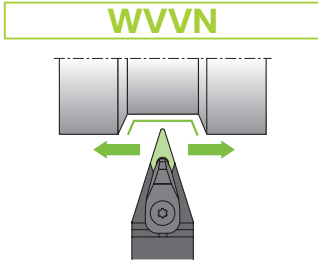
* To be released in September 2015.

● Spare Parts


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

● : Stock ○ : 1-2 week delivery OP : Optional parts

Inserts (VNGA) → E20 • E27 • E50

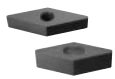

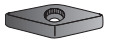







● Inch / Metric Holders

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

* To be released in September 2015.

● Spare Parts

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

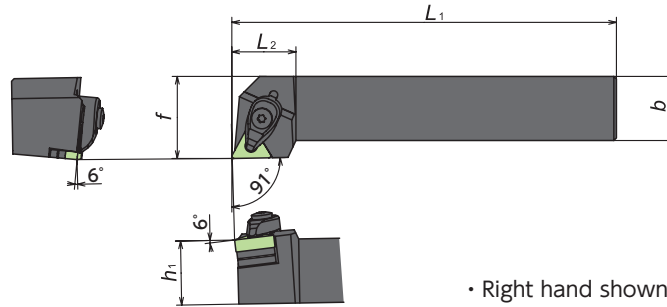
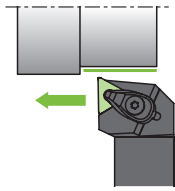
Inserts (VNGA) → E20 • E27 • E50

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

General Turning Toolholders

TN.. Inserts

WTGN



• Right hand shown

● Inch / Metric Holders

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

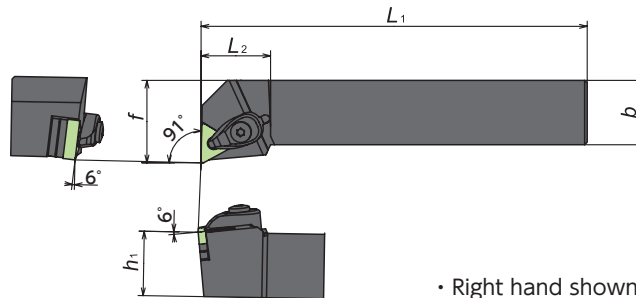
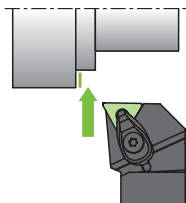
* To be released in September 2015.

● Spare Parts

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

Inserts (TNG) → E16
 Inserts (TNGA) → E18 • E26 • E43 • E44 • E45

WTFN



• Right hand shown

● Inch / Metric Holders

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

* To be released in September 2015.

● Spare Parts

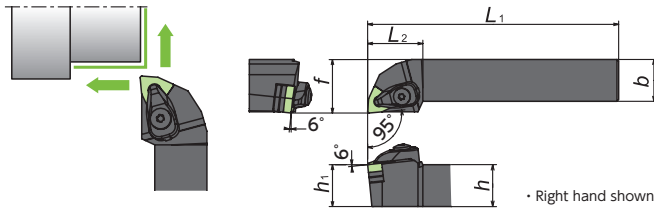
	Insert	Clamp	Shim	Clamp Screw	Wrench (for Clamp Screw)	Shim Screw	Wrench (for Shim Screw)	Spring
Standard	 TNGA 33 TNGA 35 TNG 33 TNG 35	 DC5TN TC5TN (OP)	 ATN323×2 ATN323×1 ATN323×2 ATN323×1	 AOS-5*26W	 LLR-T15	 FSS15-3.0*12	 LLR-T10	 ASGL6-D

Inserts (TNG) → E16
 Inserts (TNGA) → E18 • E26 • E43 • E44 • E45

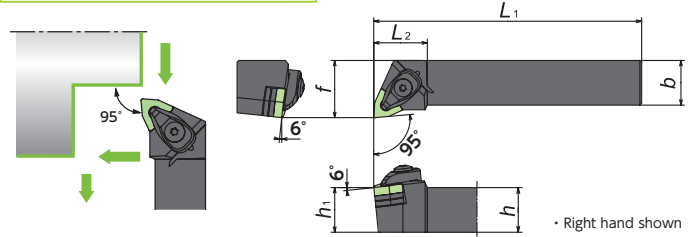
● : Stock ○ : 1-2 week delivery OP : Optional parts

WN.. Inserts


WWLN




WWLN-2











Inch / Metric Holders

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

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

* To be released in September 2015.

Spare Parts

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

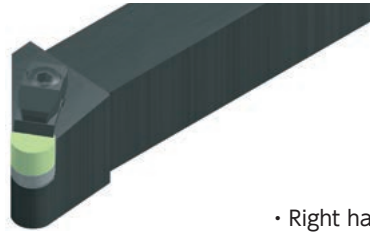
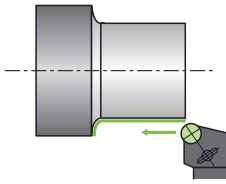
Inserts → E21 • E51

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

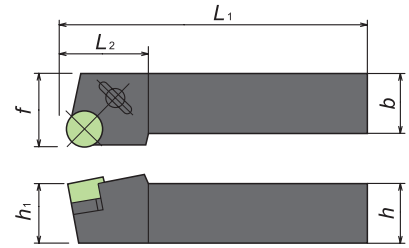
General Turning Toolholders

RN.. Inserts


CRGN









• Right hand shown



Inch Holders

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

Spare Parts

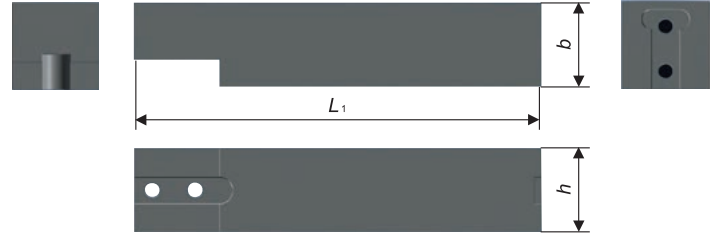
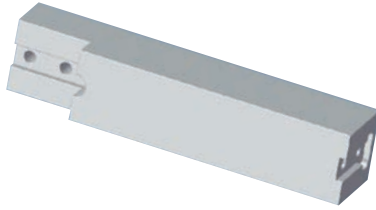
	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
						
Standard	RNG 45	2413	9414	IRSN 43	1160	LW-4
	RNG 43			IRSN 45 (OP)		
Standard	RNG 55			IRSN 53	1180	
Standard	RNG 65	2417		3919	1182	

Inserts → E10 • E25

● : Stock ○ : 1-2 week delivery OP : Optional parts

RC.. / RP.. Inserts

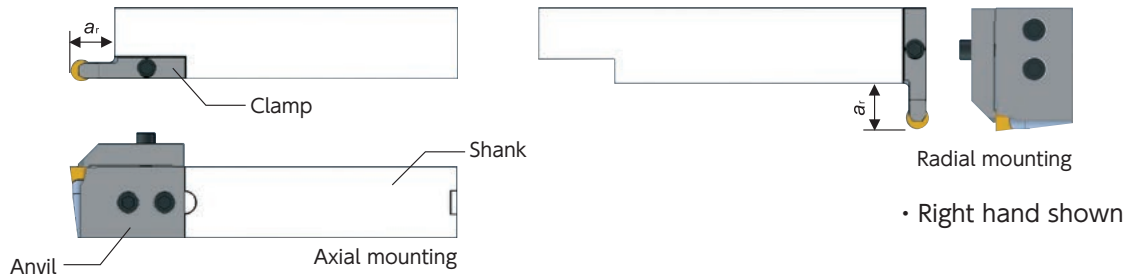
BRV





● Toolholder body

Item Number	Stock	Dimensions (inch)			Anvil Screw	Stock
		h	b	L_1		
BS 20	●	1.25	1.38	5.5	BAS 20	●

Note: Shank comes with anvil screws. - Order anvil separately.



● Anvils and Parts (Order each part separately)

Shank	Anvil	Stock		Dimensions (inch)	Insert	Clamp	Shim	Clamp Screw	Shim Screw	
		R	L	a_r						
BS 20	BRVR 6020-2V	●		.750	RCGX 23 RPGX 23		BRCR-2V	BN-2V	BRCS 2V	BNS-2V
	BRVR 8020-3V	●		1.000	RCGX 35 RPGX 35		BRCN-3V	BN-3V	BRCS 3V	BNS-3V
	BRVR 9020-4V	●		1.125	RCGX 45 RPGX 45	BRCN-4V	BN-4V	BRCS 4V	BNS-4V	
	BRVL 6020-2V		○	.750	RCGX 23 RPGX 23		BRCL-2V	BN-2V	BRCS 2V	BNS-2V
	BRVL 8020-3V		●	1.000	RCGX 35 RPGX 35		BRCN-3V	BN-3V	BRCS 3V	BNS-3V
	BRVL 9020-4V		●	1.125	RCGX 45 RPGX 45		BRCN-4V	BN-4V	BRCS 4V	BNS-4V

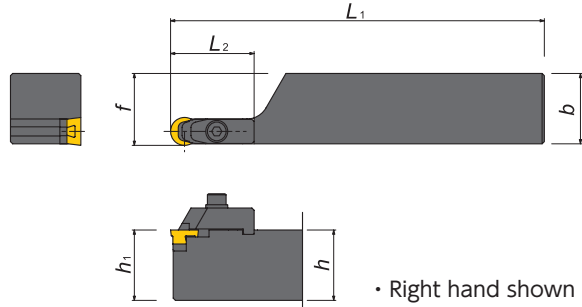
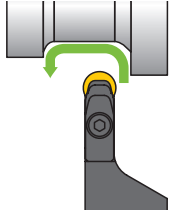
Inserts (RCGX) → E9
Inserts (RPGX) → E11

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

General Turning Toolholders

RC.. / RP.. Inserts

VRAO[®]_L



Inch Holders

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

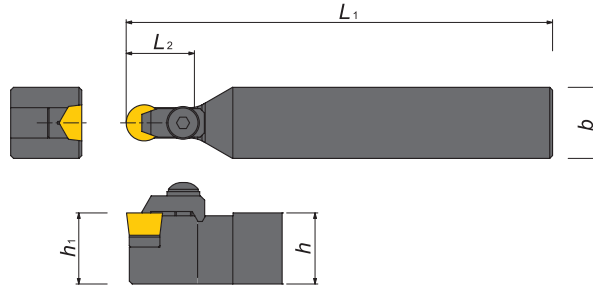
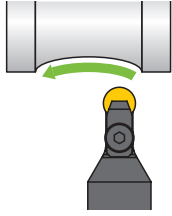
Spare Parts

Parts	Clamp	Shim	Clamp Screw	Shim Screw
Toolholder				
VRAO [®] _L 16-2D	CL2RV	SM2RV(RCGX10. / R.GX.5) SM2RVS(R.GX23) (OP)	SC40F-16	SC02C-08
VRAO [®] _L 20-2D				
VRAO [®] _L 16-3D	CL3RV	SM3RV	SC10F-10	SC05C-08
VRAO [®] _L 20-3D				
VRAO [®] _L 24-3E				
VRAO [®] _L 16-4D	CL4RV	SM4RV	SC40F-12	SC06C-08
VRAO [®] _L 20-4D				
VRAO [®] _L 24-4E				

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

● : Stock ○ : 1-2 week delivery OP : Optional parts

VRAON



Inch Holders

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

Spare Parts

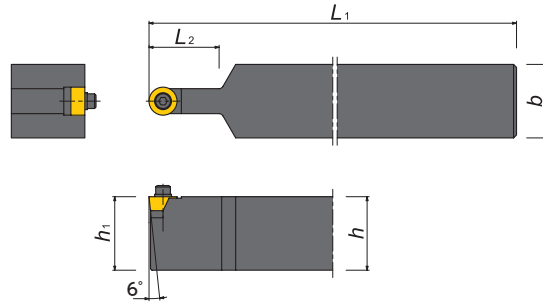
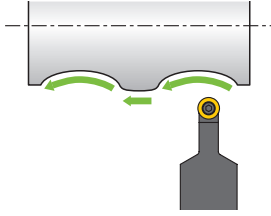
Parts	Clamp	Shim	Clamp Screw	Shim Screw
Toolholder				
VRAON 16-2D	CL2RV	SM2RV(RCGX10. / R.GX.5) SM2RVS(R.GX23) (OP)	SC40F-16	SC02C-08
VRAON 20-2D				
VRAON 16-3D	CL3RV	SM3RV	SC10F-10	SC05C-08
VRAON 20-3D				
VRAON 24-3E				
VRAON 16-4D	CL4RV	SM4RV	SC40F-12	SC06C-08
VRAON 20-4D				
VRAON 24-4E				
VRAON 20-5D	CL5RV	SM5RV	SC50F-16	SC08C-10
VRAON 24-5E				
VRAON 20-6F	CL6RV	SM6RV	SC50F-16	SC10C-10
VRAON 24-6F				
VRAON 20-8F	CL8RV	SM8RV	SC60F-16	SC40C-10
VRAON 24-8F				

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

General Turning Toolholders

CDH.. Inserts

HRC D



Inch Holders

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







Metric Holders

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



Spare Parts

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

Inserts → E2

● : Stock ○ : 1-2 week delivery

G



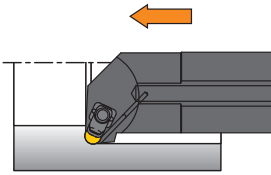
ID Tooling

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

NTK ID Tooling-Product Lines

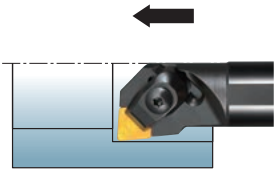
For Conventional Lathes

For round inserts



Insert	RN..	RP..
	S50-CRGN	S12-CRGP
Holder		
	→G4	→G4
Min. Bore Dia.	ϕ 5.0"	ϕ 1.25"

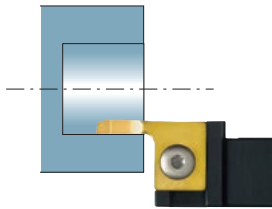
Multi-clamp series



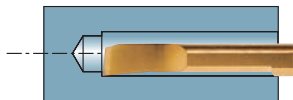
Insert	CN..	DN..	SN..	WN..
	S-WCLN	S-WDUN	S-WSKN	S-WWLN
Holder				
	→G5	→G5	→G6	→G6
Min. Bore Dia.	ϕ 1.299"~ (33mm~)	ϕ 1.654"~ (42mm~)	ϕ .969" (50mm)	ϕ 1.299"~ (33mm~)

For Swiss Type Lathes

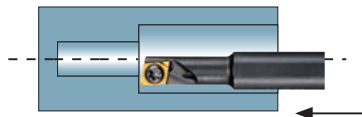
ID Boring



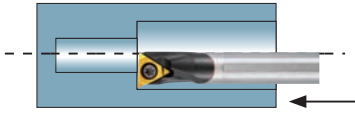
Insert	LBM →V7		
	LBMA	DS-LBMB	CH-LBM
Holder			
	→V6	→V6	→V6
Min. Bore Dia.	ϕ .039" (1.0mm)		







Insert	SHFS • SHFB • SBFS • SBFB →V12 • V16		
	HY-NBH-OH	HY-NBH	NBH
Holder			
	→V9 <small>STICK DUO HYPER with Coolant through</small>	→V11 <small>STICK DUO HYPER</small>	→V14
Min. Bore Dia.	ϕ .079" (2.0mm)		

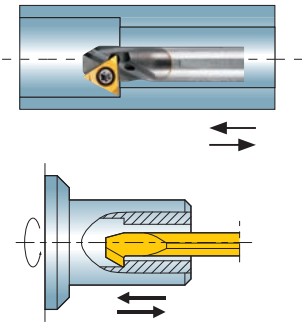



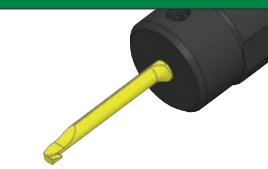

Insert	MBL →V23		ERGP →V24	
	C-MBR (Carbide shank)	S-MBR (Steel shank)	C-SEXR (Carbide shank)	S-SEXR (Steel shank)
Holder				
	→V23 Coolant through	→V23 Coolant through	→V24 Coolant through	→V24 Coolant through
Min. Bore Dia.	ϕ .197" (5.0mm)		ϕ .236" (6.0mm)	



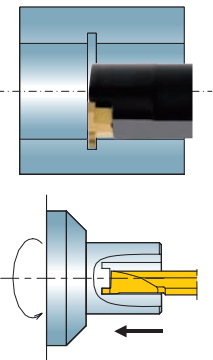
Insert	CC/CP →V25 · 26		TC/TP →V30	
	C-SCLC/P (Carbide shank)	S-SCLC/P (Steel shank)	C-STUC/P (Carbide shank)	S-STUC/P (Steel shank)
Holder				
	Coolant through →V25 · 26	Coolant through →V25 · 26	→V30 Coolant through	→V30 Coolant through
Min. Bore Dia.	φ .276" (7.0mm)		φ .315" (8.0mm)	

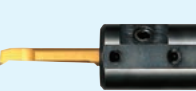


ID Back Turning



Insert	NEW SBB →V17	TC/TP →V30	
	HY-NBH-OH	NBH	
Holder			
	NEW →V9 Coolant through	→V14	→V30
Min. Bore Dia.	φ .118" (3.0mm)		φ .394" (10mm)

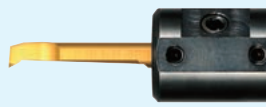


ID Grooving



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

ID Threading

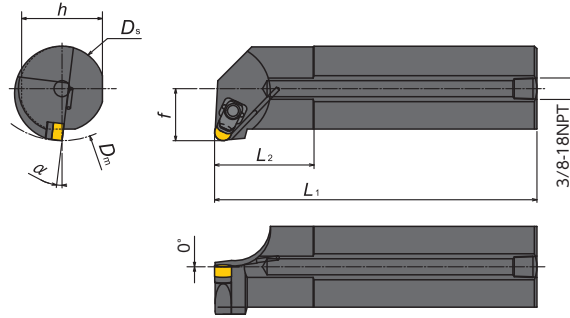
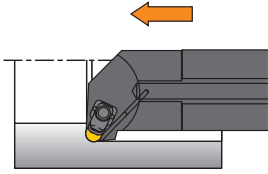


Insert	SBT →V20	TMN →V22	
	HY-NBH-OH	NBH	
Holder			
	NEW →V9 Coolant through	→V14	→V22
Min. Bore Dia.	φ .118" (3.0mm)	φ .315" (8.0mm)	

RN.. Inserts

S-CRGN (Coolant through)

Min. Bore Diameter $\phi 5.0"$ -



Inch Holders

Item Number	Stock		Min. Bore Dia. D_m (inch)	Dimensions (inch)					Insert*	
	R	L		D_s	h	L_1	f	L_2		α
S50-CRGN $\frac{3}{8}$ -32-4	●		5.0	2.0	1.87	16.0	1.281	2.362	7	RNG 45 (RNG 43)
S50-CRGN $\frac{3}{8}$ -40-4	●		5.0	2.5	2.38	16.0	1.531	2.950	7	

Spare Parts

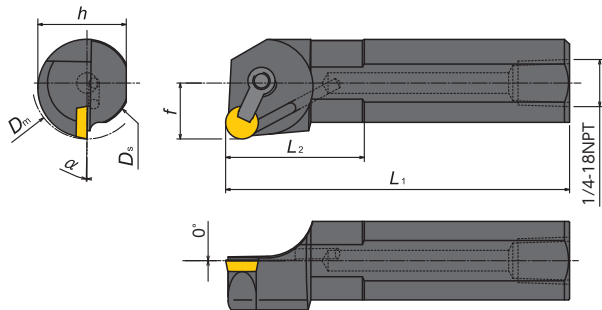
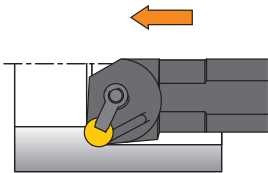
	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	RNG 45 RNG 43	2413	9414	IRSN 43 IRSN 45 (OP)	1161	5104

Inserts → E10 • E25

RP.. Inserts

S-CRGP (Coolant through)

Min. Bore Diameter $\phi 1.25"$ -



Inch Holders

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

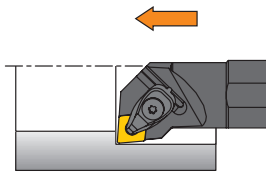
Spare Parts

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

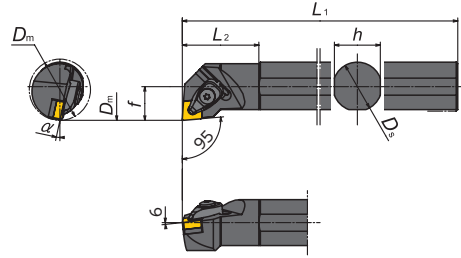
Inserts → E11

■ CN.. Inserts

S-WCLN



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



• Right hand shown

● Metric Holders

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

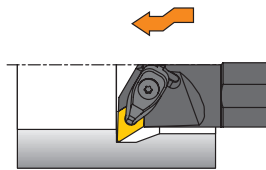
● Spare Parts

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

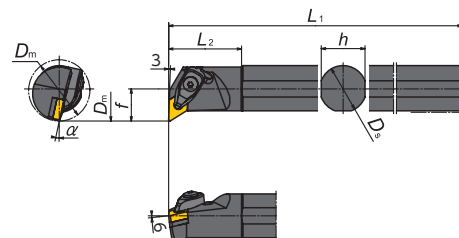
Inserts (CNG) → E3
 Inserts (CNGA) → E4 • E5 • E23 • E31
 Inserts (CNGX) → E6

■ DN.. Inserts

S-WDUN



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



• Right hand shown

● Metric Holders

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

● Spare Parts

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

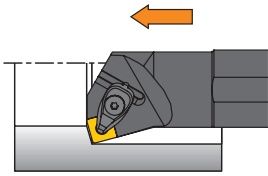
● : Stock ○ : 1-2 week delivery OP : Optional parts

Inserts (DNGA) → E7 • E24
 Inserts (DNGX) → E8 • E36 • E37

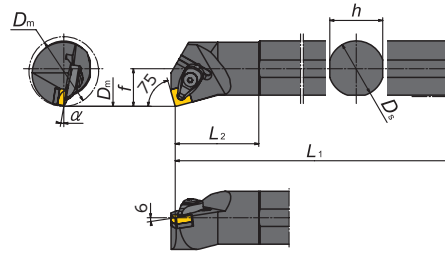
ID Tooling

SN.. Inserts

S-WSKN



Min. Bore Diameter ϕ 1.969" -



• Right hand shown

Metric Holder

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

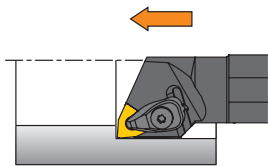
Spare Parts

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

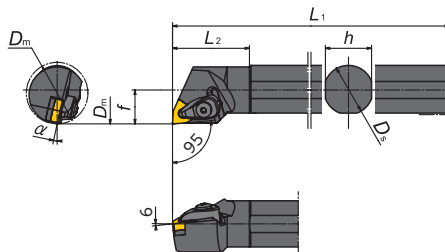
Inserts (SNG) → E13 • E40
 Inserts (SNGA) → E14 • E25 • E40
 Inserts (SNGX) → E15

WN.. Inserts

S-WWLN



Min. Bore Diameter ϕ 1.299" -



• Right hand shown

Metric Holders

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

Spare Parts

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

Inserts → E21 • E51

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

H

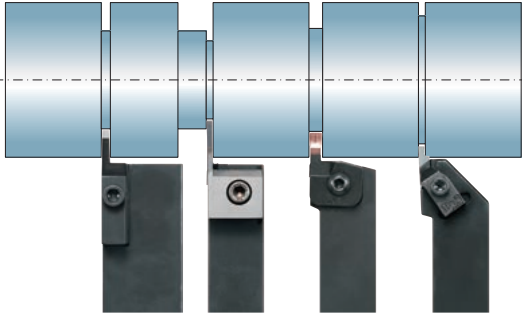


Grooving / Side Turning

- **Product Lines** H2
- **Guideline for Grooving Heat Resistant Alloys** H3
- **Product Lines for Swiss Style Lathes** H4
- **For VGW Inserts** H6
- **For VDB Inserts** H8
- **For GKN / GKP / RKN Inserts** ... H11
- **Groove Duo** H12
- **For VGE Inserts** H18
- **Poly-V grooving** H19

Grooving / Side Turning

OD Grooving

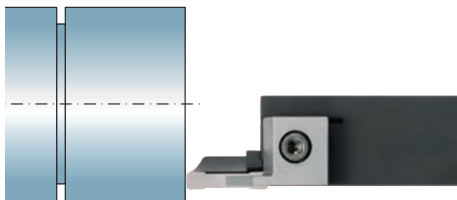


Insert	Ceramic insert
	PTM.. →H19
Holder	POLY-V
	NEW →H19

Insert	Ceramic insert		Ceramic / Cermet / Carbide insert	Cermet insert
	VGW / VGW..R →H7	VDB / VDB..R →H10	GKN / GKP / PKN →H11	VGE →H18
Holder	BGV →H6	DB →H8	NS →H11	VGT →H18
Blade width	.125" - .375"	.125" - .375"	.031" - .189"	.115" - .398"
Depth of cut	~1.125"	.750"	.210"	.470"

Insert	Carbide insert			
	GWPG / GWPM →H15			
Holder	GTWP-H →H12	GKWP-H →H12	GTWP →H16 · 17	GKWP →H16
Blade width	.118" - .236"			
Depth of cut	~.984"			

Face Grooving





Insert	Ceramic insert	Carbide insert	
	VDB →H9	GWPGF / GWPG / GWPM →H15	
Holder	DB →H9	GTWP-H →H12	GKWP-H →H12
Blade width	.156" - .375"	.118" - .236"	
Depth of cut	.750"	~.984"	
Min diameter	3"	1.142"	

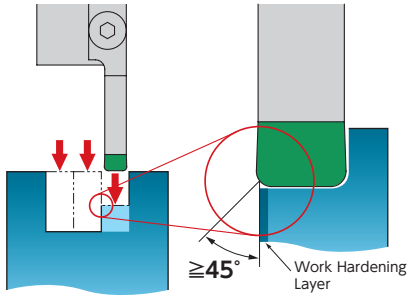
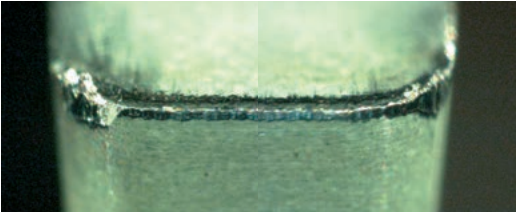
Guideline for grooving heat resistant alloys

	SiAlON Ceramic		Whisker Ceramic
	SX5	SX7	WA1
			
Toughness	← better		
Flank wear resistance	better →		
Notching resistance	← better		

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

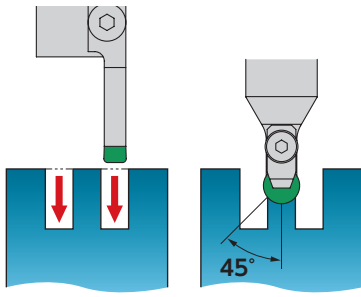
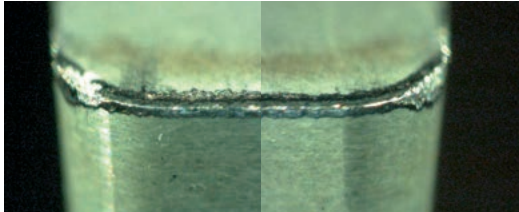
Application	Grade	Coolant	Cutting speed				Feed				
			400	600	800	1000	1200	.002	.004	.006	.008	.010
Grooving 	SX7 SX5	WET 	700 (500-900) SFM				.005 (.003-.006) IPR				
	WA1		850 (600-1100) SFM				.002 (.002-.004) IPR				

Application Information

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

Change to

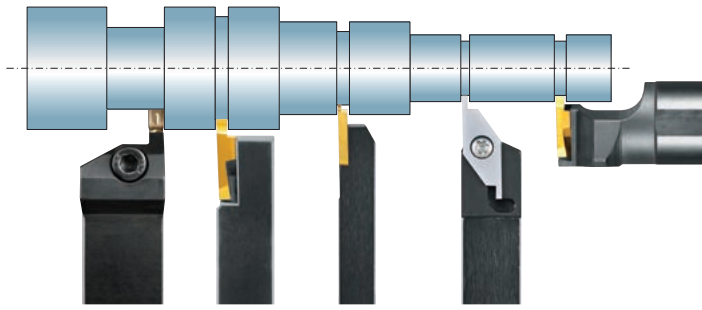






The grooving insert is plunged down both outside walls thus maintaining a good finish. The remaining material can be removed by using a stronger insert shape such as a RCGX style.

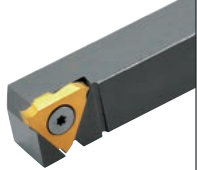





Grooving / Side Turning




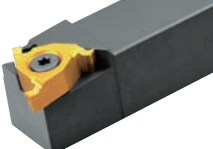
Grooving / Side Turning

For Swiss Type Lathes

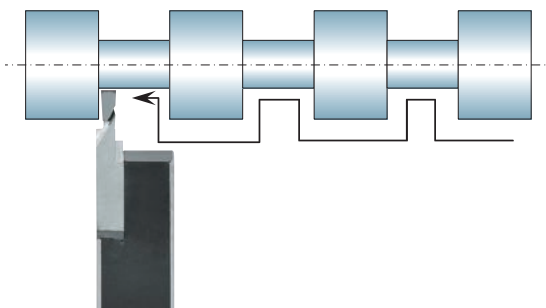





Insert	CSVG →T7		GTPS →T8
	CSV	DS-CSV	CTPS
Holder	 →T6	 →T6	 →T8
Blade width	.010" - .059" (0.25 - 1.50mm)		.030" - .079" (0.75 - 2.0mm)
Depth of cut	~.102" (~2.59mm)		~.098" (~2.50mm)

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

Insert	GWP →T9	GTM43 / GTMA43 / GTMT43 →T19		TWG →T17
	GTWP NEW	NGTN	NGTB	TWG
Holder	 →T9	 →T18	 →T18	 →T17
Blade width	.118" - .236" (3.0 - 5.9mm)	.039" - .216" (1.0 - 5.49mm)		.079" - .118" (2.0 - 3.0mm)
Depth of cut	~.354" (~9.0mm)	.177" (4.50mm)		~.118" (~3.0mm)

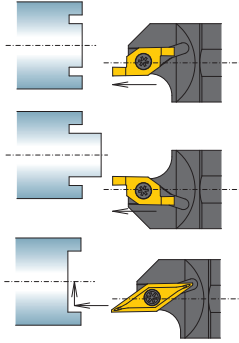
■ Multifunctional Grooving for non-ferrous material



Insert	GTPA →T24		
	GTPA	Y-GTPA	Y-GTPA-OH NEW
Holder	 →T24	 →T24 Y-axis	 →T24 Y-axis w/ Coolant through
Blade width	.079" - .098" (2.0 - 2.50mm)		
Depth of cut	~.236" (~6.0mm)		

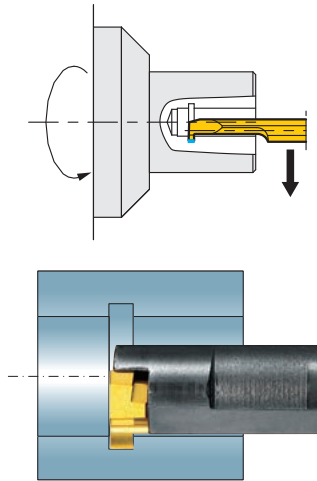
Grooving / Side Turning

Face Grooving



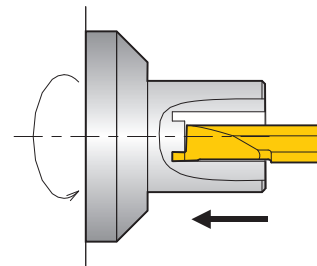
Insert	FGV →T23	FBV →T23	
Holder	FGV →T22	DS-FGV →T22	CH-FGV →T22
Blade width	.039" - .079" (1.0mm - 2.0mm)		
Depth of cut	~.118" (~3.0mm)	FGV: ~.118" (~3.0mm) FBV: ~.157" (~4.0mm)	

ID Grooving



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

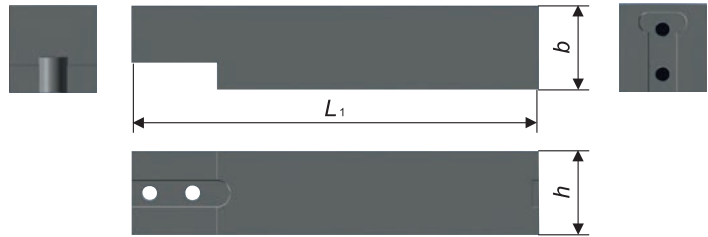
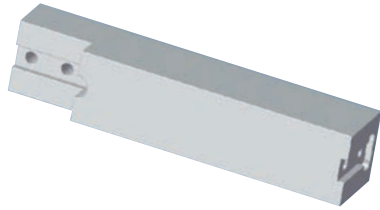
ID Face Grooving



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

Grooving / Side Turning

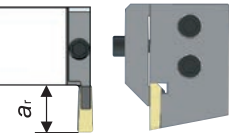
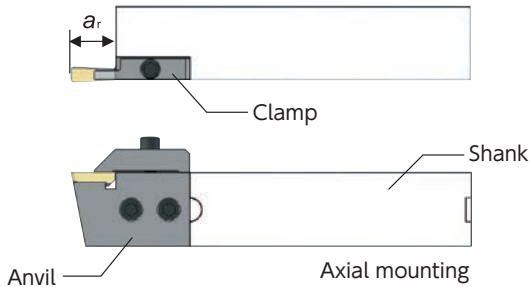
BGV



● Toolholder Body

Item Number	Stock	Dimensions (inch)			Insert	Anvil Screw	Stock
		h	b	L_1			
BS 20	●	1.25	1.38	5.5	VGW VGW..R	BAS 20	●

Note: The holder body comes with anvil screws. Anvils sold separately



Radial mounting

• Right-hand shown

● Anvils (Anvil comes with clamp & clamp screw)

Right hand

Shank	Item Number	Stock		Dimensions (inch)	Insert	Clamp	Stock	Clamp Screw	Stock
		R	L	a_r					
BS 20	BGVR 043020	●	—	.375	VGW 4125 VGW 4156	BGCR 04	●	BRCS 2V	●
	BGVR 054520	●	—	.562	VGW 4156 VGW 4187	BGCR 05	●		
	BGVR 074520	●	—	.562	VGW 6218 VGW 6250	BGCR 07	●		
	BGVR 086020	●	—	.750	VGW 6250 VGW 6281	BGCR 08	●		
	BGVR 106020	●	—	.750	VGW 8312 VGW 8344	BGCR 10	●		
	BGVR 119020	●	—	1.125	VGW 8344 VGW 8375	BGCR 11	●		

Left hand

Shank	Item Number	Stock		Dimensions (inch)	Insert	Clamp	Stock	Clamp Screw	Stock
		R	L	a_r					
BS 20	BGVL 043020	—	●	.375	VGW4125 VGW4156	BGCL 04	●	BRCS 2V	●
	BGVL 054520	—	●	.562	VGW4156 VGW4187	BGCL 05	●		
	BGVL 074520	—	●	.562	VGW6218 VGW6250	BGCL 07	●		
	BGVL 086020	—	●	.750	VGW6250 VGW6281	BGCL 08	●		
	BGVL 106020	—	●	.750	VGW8312 VGW8344	BGCL 10	●		
	BGVL 119020	—	●	1.125	VGW8344 VGW8375	BGCL 11	●		

Grooving / Side Turning

VGW

					Steel	P				
					Stainless Steel	M				
					Cast Iron	K	●	●	●	●
					Non-Ferrous Material	N				
					Heat Resistant Alloy	S	●	●	●	●
					Hardened Material	H				●
Item Number	W	R	T	L	SiAlON			Whisker		
					SX7	SX9	SX5	WA1		
VGW 41251 EX001	.125	.015	.187	.500				●		
VGW 41251 T0220	.125	.015	.187	.500	●					
VGW 41252 EX001	.125	.031	.187	.500				●		
VGW 41252 T0220	.125	.031	.187	.500	●					
VGW 41561 EX001	.156	.015	.187	.500				●		
VGW 41561 T0220	.156	.015	.187	.500	●					
VGW 41562 EX001	.156	.031	.187	.500				●		
VGW 41562 T0220	.156	.031	.187	.500	●					
VGW 41871 EX001	.187	.015	.187	.500				●		
VGW 41871 T0220	.187	.015	.187	.500	●		●			
VGW 41872 EX001	.187	.031	.187	.500				●		
VGW 41872 T0220	.187	.031	.187	.500	●		●			
VGW 62501 T0220	.250	.015	.250	.750	●			●		
VGW 62501 T0420	.250	.015	.250	.750				●		
VGW 62501 Z0420	.250	.015	.250	.750				●		
VGW 62502 EX001	.250	.031	.250	.750				●		
VGW 62502 T0220	.250	.031	.250	.750	●		●			
VGW 62503 T0220	.250	.046	.250	.750	●		●			
VGW 62814 T0220	.250	.062	.250	.750	●					
VGW 83122 EX001	.312	.031	.337	1.000				●		
VGW 83122 T0220	.312	.031	.337	1.000	●					
VGW 83124 EX001	.312	.062	.337	1.000				●		
VGW 83124 T0220	.312	.062	.337	1.000	●		●			
VGW 83752 EX001	.375	.031	.337	1.000				●		
VGW 83752 T0220	.375	.031	.337	1.000	●		●			
VGW 83754 EX001	.375	.062	.337	1.000				●		
VGW 83754 T0220	.375	.062	.337	1.000	●		●	●		

VGW..R

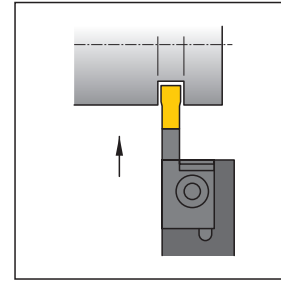
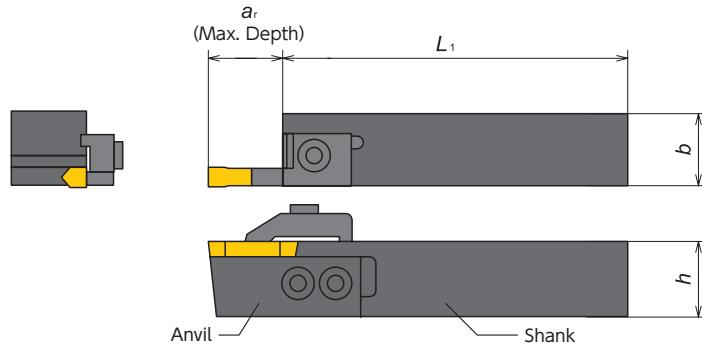
					Steel	P				
					Stainless Steel	M				
					Cast Iron	K	●	●	●	●
					Non-Ferrous Material	N				
					Heat Resistant Alloy	S	●	●	●	●
					Hardened Material	H				●
Item Number	W	R	T	L	SiAlON			Whisker		
					SX7	SX9	SX5	WA1		
VGW 4125R EX001	.125	.063	.187	.500				●		
VGW 4125R T0220	.125	.063	.187	.500	●					
VGW 4156R EX001	.156	.078	.187	.500				●		
VGW 4156R T0220	.156	.078	.187	.500	●			●		
VGW 4156R Z0820	.156	.078	.187	.500				●		
VGW 4187R EX001	.187	.094	.187	.500				●		
VGW 4187R T0220	.187	.094	.187	.500	●		●			
VGW 6218R EX001	.218	.109	.250	.750				●		
VGW 6218R T0220	.218	.109	.250	.750	●					
VGW 6250R T0220	.250	.125	.250	.750	●		●			
VGW 8312R EX001	.312	.156	.337	1.000				●		
VGW 8312R T0220	.312	.156	.337	1.000	●		●			
VGW 8375R EX001	.375	.188	.337	1.000				●		
VGW 8375R T0220	.375	.188	.337	1.000	●		●			

● : 1st Choice ● : Alternate choice
 ● : Stock ○ : 1-2 week delivery

Grooving / Side Turning

DB

Straight OD turning



• Right-hand shown

● Toolholder Body

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

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

● Anvils and Clamps

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

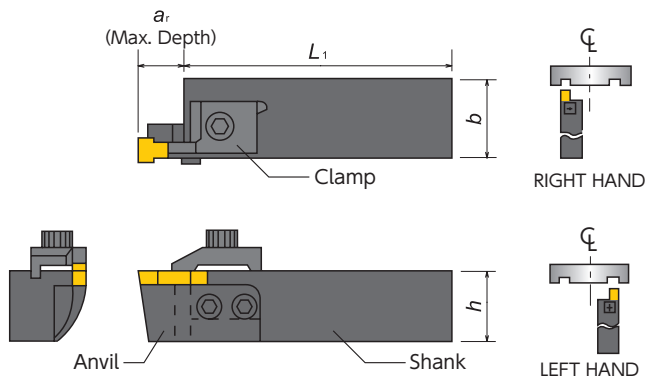
Insert	DB-1-20R (Right hand)				DB-1-20L (Left hand)			
	Anvil	Stock	Clamp	Stock	Anvil	Stock	Clamp	Stock
VDB125	R2E04	●	CR1-1-E04	●	L2E04	●	CL1-1-E04	●
VDB156	R2E05	●	CR1-1-E06	●	L2E05	○	CL1-1-E06	●
VDB188 / VDB218	R2E06	●	CR1-1-E06	●	L2E06	●	CL1-1-E06	●
VDB250	R2E07	●	CR1-1-E07	●	L2E07	●	CL1-1-E07	●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

Inserts → H10

DB

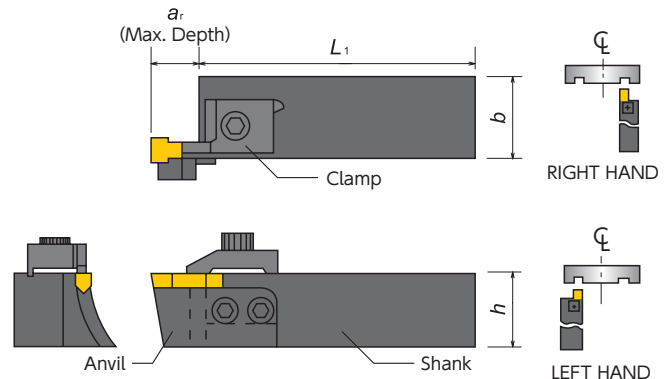
Face Grooving

Curve In




• Right-hand shown

Curve Out



• Right-hand shown

● Toolholder Body

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

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

● Anvils and Clamps

Curve In

Shank	Insert	O.D. range				Clamp	Stock
		3" - 4 1/2"	4 1/2" - 7"	7" - 14"	14" and over		
DB7-1-7-16R DB7-1-7-20R	VDB156 / VDB188	DBA-3305 ○	DBA-3405 ○	DBA-3505 ○	DBA-3605 ○	CR1-1-E06A	○
	VDB250	DBA-3307 ○	DBA-3407 ○	DBA-3507 ○	DBA-3607 ○	CR1-1-E07A	●
DB7-1-7-16L DB7-1-7-20L	VDB281 / VDB312	DBA-3309 ○	DBA-3309 ○	DBA-3509 ○	DBA-3509 ○	CR1-1-E09A	○
	VDB344 / VDB375	DBA-3311 ○	DBA-3311 ○	DBA-3511 ○	DBA-3511 ○	CR1-1-E11A	●
DB7-1-7-16L DB7-1-7-20L	VDB156 / VDB188	DBA-7305 ○	DBA-7405 ○	DBA-7505 ○	DBA-7605 ○	CL1-1-E06A	○
	VDB250	DBA-7307 ○	DBA-7407 ○	DBA-7507 ○	DBA-7607 ○	CL1-1-E07A	●
DB7-1-7-16L DB7-1-7-20L	VDB281 / VDB312	DBA-7309 ○	DBA-7309 ○	DBA-7509 ○	DBA-7509 ○	CL1-1-E09A	○
	VDB344 / VDB375	DBA-7311 ○	DBA-7311 ○	DBA-7511 ○	DBA-7511 ○	CL1-1-E11A	○

Curve Out

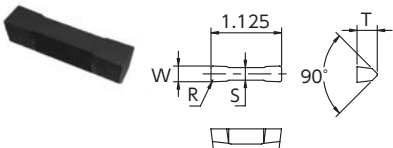
Shank	Insert	O.D. range				Clamp	Stock
		3" - 4 1/2"	4 1/2" - 7"	7" - 14"	14" and over		
DB7-1-7-16R DB7-1-7-20R	VDB156 / VDB188	DBA-4305 ○	DBA-4405 ○	DBA-4505 ○	DBA-4605 ○	CR1-1-E06A	○
	VDB250	DBA-4307 ○	DBA-4407 ○	DBA-4507 ○	DBA-4607 ○	CR1-1-E07A	●
DB7-1-7-16L DB7-1-7-20L	VDB281 / VDB312	DBA-4309 ○	DBA-4309 ○	DBA-4509 ○	DBA-4509 ○	CR1-1-E09A	○
	VDB344 / VDB375	DBA-4311 ○	DBA-4311 ○	DBA-4511 ○	DBA-4511 ○	CR1-1-E11A	●
DB7-1-7-16L DB7-1-7-20L	VDB156 / VDB188	DBA-8305 ○	DBA-8405 ○	DBA-8505 ○	DBA-8605 ○	CL1-1-E06A	○
	VDB250	DBA-8307 ○	DBA-8407 ○	DBA-8507 ○	DBA-8607 ○	CL1-1-E07A	●
DB7-1-7-16L DB7-1-7-20L	VDB281 / VDB312	DBA-8309 ○	DBA-8309 ○	DBA-8509 ○	DBA-8509 ○	CL1-1-E09A	○
	VDB344 / VDB375	DBA-8311 ○	DBA-8311 ○	DBA-8511 ○	DBA-8511 ○	CL1-1-E11A	○

● : 1st Choice ● : Alternate choice
 ○ : Stock ○ : 1-2 week delivery

Inserts → H10

Grooving / Side Turning

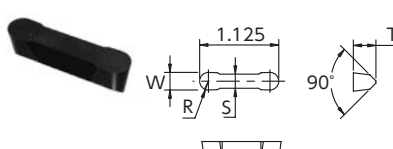
VDB



Item Number	W	R	S	T	SiALON			Whisker	Alumina - TIC						
					SX7	SX9	SX5	WA1	HC6	HC2	HC5	HC7	ZC7	ZC4	
VDB 125 A015 T0225	.125	.015	.106	.250						●					
VDB 156 A015 T0225	.156	.015	.106	.250						●					
VDB 188 A015 T0225	.188	.015	.144	.250						●					
VDB 218 A015 T0225	.218	.015	.144	.250						●					
VDB 250 B015 T0225	.250	.015	.202	.337						●					
VDB 250 B031 T0220	.250	.031	.202	.337		●	●	●							
VDB 250 B062 T0220	.250	.062	.202	.337		●									
VDB 281 B015 T0225	.281	.015	.202	.337						●					
VDB 312 B015 T0225	.312	.015	.202	.337						●					
VDB 312 B031 EX001	.312	.031	.202	.337				●							
VDB 312 B031 T0220	.312	.031	.202	.337				●							
VDB 312 B062 EX001	.312	.062	.202	.337				●							
VDB 312 B062 T0220	.312	.062	.202	.337				●							
VDB 344 B015 T0225	.344	.015	.275	.337						●					
VDB 375 B015 T0225	.375	.015	.275	.337						●					
VDB 375 B031 EX001	.375	.031	.275	.337				●							
VDB 375 B031 T0220	.375	.031	.275	.337				●							
VDB 375 B046 E02	.375	.046	.275	.337		●									
VDB 375 B046 T0220	.375	.046	.275	.337		●									
VDB 375 B062 E02	.375	.062	.275	.337		●									
VDB 375 B062 T0220	.375	.062	.275	.337		●	●								

Holders → H8 • H9

VDB..R

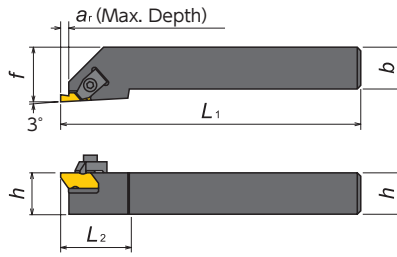


Item Number	W	R	S	T	SiALON			Whisker	Alumina - TIC						
					SX7	SX9	SX5	WA1	HC6	HC2	HC5	HC7	ZC7	ZC4	
VDB 125 RA T0225	.125	.063	.106	.250						●					
VDB 156 RA T0225	.156	.078	.106	.250						●					
VDB 188 RA T0225	.188	.094	.144	.250						●					
VDB 218 RA T0225	.218	.109	.144	.250						●					
VDB 250 RB T0220	.250	.125	.202	.337				●							
VDB 250 RB T0225	.250	.125	.202	.337						●					
VDB 281 RB T0225	.281	.141	.202	.337						●					
VDB 312 RB T0225	.312	.156	.202	.337						●					
VDB 344 RB T0225	.344	.172	.275	.337						●					
VDB 375 RB T0225	.375	.188	.275	.337						●					


Holders → H8 • H9

- : 1st Choice ● : Alternate choice
- : Stock ○ : 1-2 week delivery
- R : Stock (Right-hand only) L : Stock (Left-hand only)

NS



● Toolholders

Item Number	Stock	Dimensions (inch)						Insert	Clamp	Stock	Clamp Screw	Stock
		h	b	L_1	L_2	f	a_r					
NSR16-3D	●	1.00	1.00	6.00	1.25	1.25	0.210	GKN3..R RKN3..R GKP3..R		CM-72	S-412	
NSL16-3D	●	1.00	1.00	6.00	1.25	1.25	0.210	GKN3..L RKN3..L GKP3..L		CM-73	S-412	

■ GKN / GKP

Item Number	W	R	D	Alumina - TiC						C7X	PVD-Carbide	
				HC6	HC2	HC5	HC7	ZC7	ZC4			
				Steel	Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material			
GKP 3031 $\frac{R}{L}$	.031	.004	.050								RL	RL
GKP 3047 $\frac{R}{L}$	.047	.008	.075								RL	
GKN 3062 $\frac{R}{L}$	.062	.008	.094		RL						RL	
GKP 3062 $\frac{R}{L}$	.062	.008	.094								RL	RL
GKP 3088 $\frac{R}{L}$	.088	.008	.094								RL	
GKN 3094 $\frac{R}{L}$	.094	.008	.150		RL						RL	
GKP 3094 $\frac{R}{L}$	.094	.008	.150								RL	RL
GKN 3125 $\frac{R}{L}$	.125	.012	.150		RL						RL	
GKP 3125 $\frac{R}{L}$	.125	.008	.150								RL	RL
GKN 3156 $\frac{R}{L}$	.156	.012	.150		RL							
GKP 3156 $\frac{R}{L}$	.156	.008	.150								RL	RL
GKN 3189 $\frac{R}{L}$	.189	.012	.150		RL							
GKP 3189 $\frac{R}{L}$	.189	.012	.150								RL	RL

■ RKN

Item Number	W	R	D	Alumina - TiC						C7X	PVD-Carbide	
				HC6	HC2	HC5	HC7	ZC7	ZC4			
				Steel	Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material			
RKN 3078 $\frac{R}{L}$	.078	.039	.150								RL	
RKN 3094 $\frac{R}{L}$	.094	.047	.150								RL	
RKN 3125 $\frac{R}{L}$	.125	.063	.150								RL	
RKN 3156 $\frac{R}{L}$	.156	.078	.150								RL	
RKN 3189 $\frac{R}{L}$	.189	.095	.150								R	

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

Grooving / Side Turning

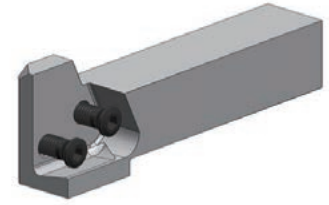
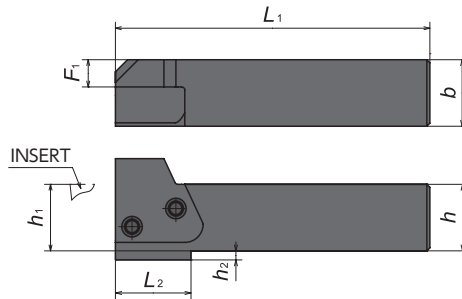
Groove DUO

Modular system

To be released in 2016

GTWP-H

Straight style toolholder



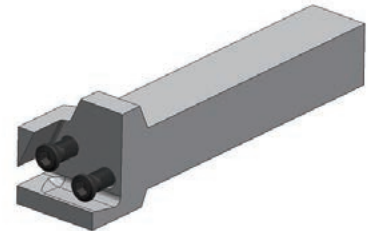
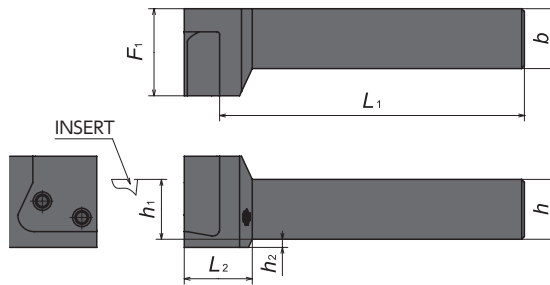
• Right-hand shown

● Toolholder Body

Item Number	Stock		Dimensions										Applicable Blade	Clamp Screw	Wrench				
	R	L	h		b		h ₁		L ₁		F ₁					h ₂		L ₂	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
GTWP 16-IN-H	●	●	1.00		1.00		1.00		5.311	134.9	0.567	14.4	0.260	6.6	0.965	24.5	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GTWP 20-IN-H	●	●	1.25		1.25		1.25		6.311	160.3	0.817	20.75	-	-	-	-	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GTWP 2020-H	○	○	.787	20	.787	20	.787	20	4.232	107.5	0.354	9	0.472	12	0.965	24.5	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GTWP 2525-H	○	○	.984	25	.984	25	.984	25	5.217	132.5	0.551	14	0.276	7	0.965	24.5	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GTWP 3232-H	○	○	1.26	32	1.26	32	1.26	32	6.004	152.5	0.827	21	-	-	-	-	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4

GKWP-H

L-style toolholder

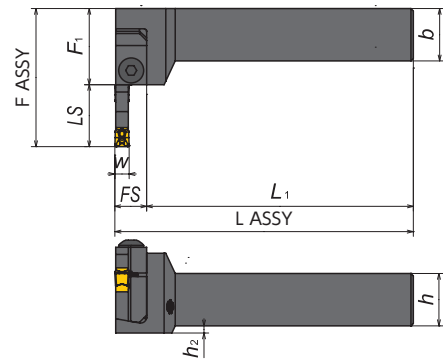
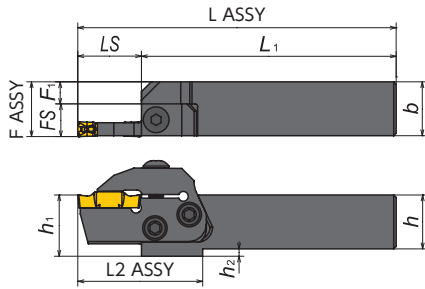


• Right-hand shown

● Toolholder Body

Item Number	Stock		Dimensions										Applicable Blade	Clamp Screw	Wrench				
	R	L	h		b		h ₁		L ₁		F ₁					h ₂		L ₂	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
GKWP 16-IN-H	●	●	1.00		1.00		1.00		5.449	138.4	1.26	32	0.260	6.6	0.965	24.5	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GKWP 20-IN-H	●	●	1.25		1.25		1.25		6.449	163.8	1.26	32	-	-	-	-	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GKWP 2020-H	○	○	.787	20	.787	20	.787	20	4.370	111	1.26	32	0.472	12	0.965	24.5	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GKWP 2525-H	○	○	.984	25	.984	25	.984	25	5.354	136	1.26	32	0.276	7	0.965	24.5	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4
GKWP 3232-H	○	○	.984	25	.984	25	.984	25	6.142	156	1.26	32	-	-	-	-	GBWP 1/2 GBWPF 1/2	FSI28-6.0*18	LW-4

(Combination dimentions)

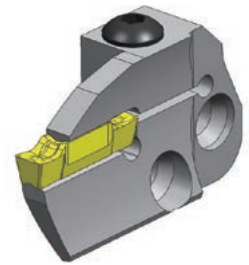
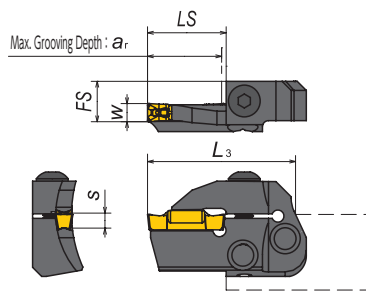
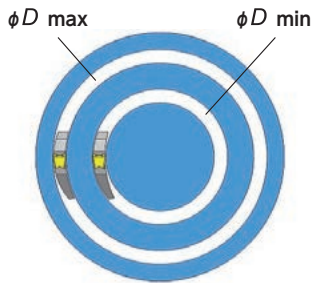


L ASSY = L1 (toolholder body) + LS (blade)
 F ASSY = F1 (toolholder body) + FS (blade)
 L2 ASSY = L2 (toolholder body) + LS (blade)

L ASSY = L1 (toolholder body) + FS (blade)
 F ASSY = F1 (toolholder body) + LS (blade)

GBWPF

Blade for Face Grooving



• Right-hand shown

● Toolholder Body

Item Number	Stock		Groove Width <i>w</i>		Max. Grooving Depth <i>a_r</i>		ϕD min		ϕD max		Dimensions				Seat Size <i>S</i>	Applicable Insert *		
	R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	<i>LS</i>	<i>FS</i>	<i>L₃</i>					
GBWPF _{R/L} -3T13-029035	○	○	.118	3	.512	13	1.142	29	1.378	35	.571	14.5	.551	14	1.535	39	C	GWPFM300
GBWPF _{R/L} -3T13-035045	○	○	.118	3	.512	13	1.378	35	1.772	45	.571	14.5	.551	14	1.535	39	C	GWPFM300
GBWPF _{R/L} -3T15-045060	○	○	.118	3	.591	15	1.772	45	2.362	60	.650	16.5	.551	14	1.614	41	C	GWPFM300
GBWPF _{R/L} -3T15-060100	○	○	.118	3	.591	15	2.362	60	3.937	100	.650	16.5	.551	14	1.614	41	C	GWPFM300
GBWPF _{R/L} -3T15-100250	○	○	.118	3	.591	15	3.937	100	9.843	250	.650	16.5	.551	14	1.614	41	C	GWPFM300
GBWPF _{R/L} -4T15-030040	○	○	.157	4	.591	15	1.181	30	1.575	40	.650	16.5	.551	14	1.614	41	C	GWPFM400
GBWPF _{R/L} -4T15-040060	○	○	.157	4	.591	15	1.575	40	2.362	60	.650	16.5	.551	14	1.614	41	C	GWPFM400
GBWPF _{R/L} -4T15-060120	○	○	.157	4	.591	15	2.362	60	4.724	120	.650	16.5	.551	14	1.614	41	C	GWPFM400
GBWPF _{R/L} -4T15-120300	○	○	.157	4	.591	15	4.724	120	11.811	300	.650	16.5	.551	14	1.614	41	C	GWPFM400
GBWPF _{R/L} -5T15-030050	○	○	.197	5	.591	15	1.181	30	1.969	50	.650	16.5	.551	14	1.614	41	C	GWPFM500
GBWPF _{R/L} -5T15-050120	○	○	.197	5	.591	15	1.969	50	4.724	120	.650	16.5	.551	14	1.614	41	C	GWPFM500
GBWPF _{R/L} -5T15-120999	○	○	.197	5	.591	15	4.724	120	∞	∞	.650	16.5	.551	14	1.614	41	C	GWPFM500
GBWPF _{R/L} -6T15-035080	○	○	.236	6	.591	15	1.378	35	3.150	80	.650	16.5	.551	14	1.614	41	C	GWPFM600
GBWPF _{R/L} -6T15-080999	○	○	.236	6	.591	15	3.150	80	∞	∞	.650	16.5	.551	14	1.614	41	C	GWPFM600

* Min. diameter depends on insert.

Inserts → H15

Grooving / Side Turning

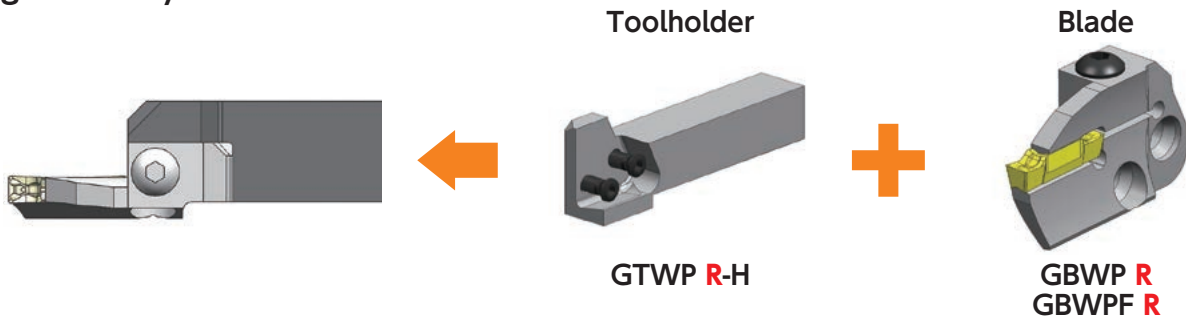
Grooving / Side Turning

Combination of toolholder and blade for Face Grooving

GTWP-H

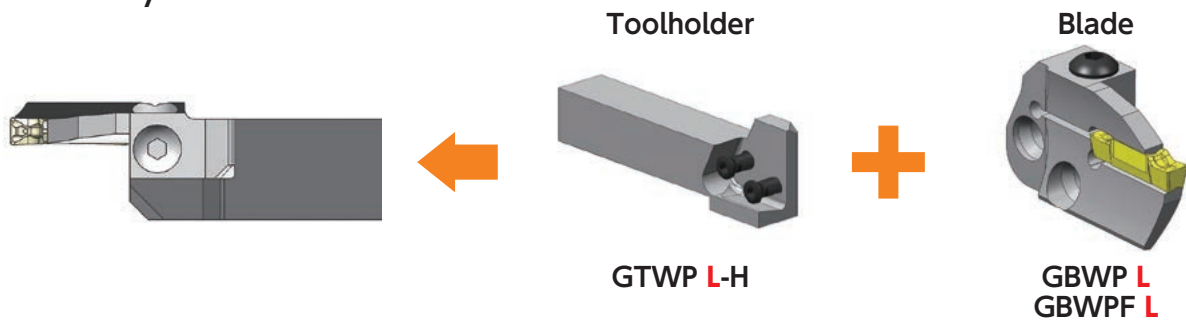
Straight style toolholder

Right-hand system



* Right-hand toolholder takes Right-hand blade.

Left-hand system

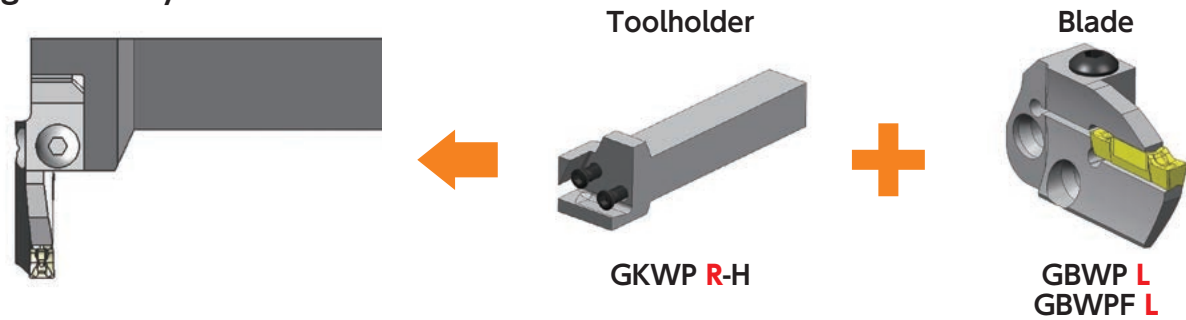


* Left-hand toolholder takes Left-hand blade.

GKWP-H

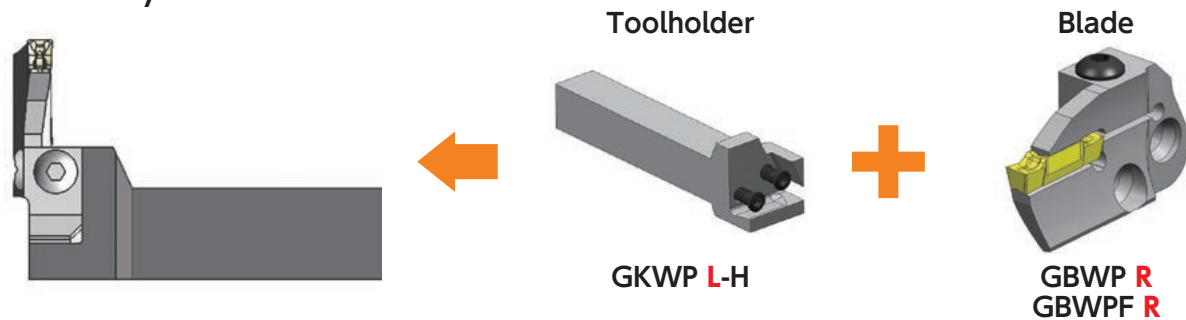
L-style toolholder

Right-hand system



* Right-hand toolholder takes Left-hand blade.

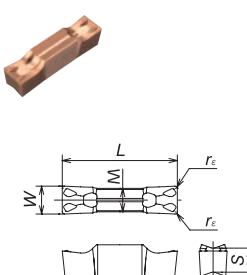
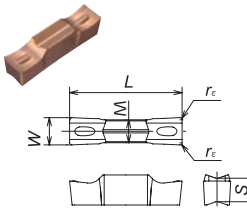
Left-hand system



* Left-hand toolholder takes Right-hand blade.

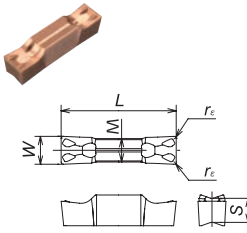
Groove DUO Series - Inserts

● OD Grooving Inserts

Shape	Item Number	W		r_e	M	L	Seat Size S	Coated Carbide	
		Groove Width (Inch) (mm)	Width Tolerance (Inch) (mm)					DM4	
 <p>GWPG: Outside ground GWPM: Full-molded</p> <ul style="list-style-type: none"> ● Excellent chip control ● Best for side turning 	GWPG300N02D-GW	.118	3.0	.001 ± 0.025	.008 0.2	.098 2.5	.811 20.6	D	●
	GWPG300N04D-GW	.118	3.0	.001 ± 0.025	.016 0.4	.098 2.5	.811 20.6	D	●
	GWPG400N02E-GW	.157	4.0	.001 ± 0.025	.008 0.2	.134 3.4	.811 20.6	E	●
	GWPG400N04E-GW	.157	4.0	.001 ± 0.025	.016 0.4	.134 3.4	.811 20.6	E	●
	GWPG400N08E-GW	.157	4.0	.001 ± 0.025	.031 0.8	.134 3.4	.811 20.6	E	●
	GWPG500N02F-GW	.197	5.0	.001 ± 0.025	.008 0.2	.169 4.3	.811 20.6	F	○
	GWPG500N04F-GW	.197	5.0	.001 ± 0.025	.016 0.4	.169 4.3	.811 20.6	F	○
	GWPG500N08F-GW	.197	5.0	.001 ± 0.025	.031 0.8	.169 4.3	.811 20.6	F	○
	GWPG600N02G-GW	.236	6.0	.001 ± 0.025	.008 0.2	.205 5.2	1.008 25.6	G	○
	GWPG600N04G-GW	.236	6.0	.001 ± 0.025	.016 0.4	.205 5.2	1.008 25.6	G	○
	GWPG600N08G-GW	.236	6.0	.001 ± 0.025	.031 0.8	.205 5.2	1.008 25.6	G	○
	GWPM300N04D-GW	.118	3.0	.002 ± 0.05	.016 0.4	.098 2.5	.811 20.6	D	○
	GWPM400N04E-GW	.157	4.0	.002 ± 0.05	.016 0.4	.134 3.4	.811 20.6	E	○
	GWPM500N04F-GW	.197	5.0	.002 ± 0.05	.016 0.4	.169 4.3	.811 20.6	F	○
GWPM600N04G-GW	.236	6.0	.002 ± 0.05	.016 0.4	.205 5.2	1.008 25.6	G	○	
 <ul style="list-style-type: none"> ● Less tool pressure design 	GWPG300N02D-GV	.118	3.0	.001 ± 0.025	.008 0.2	.205 2.5	.811 20.6	D	●
	GWPG300N04D-GV	.118	3.0	.001 ± 0.025	.016 0.4	.205 2.5	.811 20.6	D	●
	GWPG400N02E-GV	.157	4.0	.001 ± 0.025	.008 0.2	.169 4.3	.811 20.6	E	●
	GWPG400N04E-GV	.157	4.0	.001 ± 0.025	.016 0.4	.169 4.3	.811 20.6	E	●
	GWPG500N02F-GV	.197	5.0	.001 ± 0.025	.008 0.2	.169 4.3	.811 20.6	F	○
	GWPG500N04F-GV	.197	5.0	.001 ± 0.025	.016 0.4	.169 4.3	.811 20.6	F	○
	GWPG600N02G-GV	.236	6.0	.001 ± 0.025	.008 0.2	.169 4.3	1.008 25.6	G	○
GWPG600N04G-GV	.236	6.0	.001 ± 0.025	.016 0.4	.169 4.3	1.008 25.6	G	○	

To be released in 2016

● Face Grooving Insert

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

■ Minimum Diameter for Face Grooving

Groove Width (inch)	GWPM		GWPG	
	Groove Width (Inch) (mm)	Width Tolerance (Inch) (mm)	Groove Width (Inch) (mm)	Width Tolerance (Inch) (mm)
.118	φ 1.142" (φ 29mm)	± .002 ± 0.05	φ 5.827" (φ 148mm)	± .002 ± 0.05
.157	φ 1.299" (φ 33mm)	± .002 ± 0.05	φ 3.583" (φ 91mm)	± .002 ± 0.05
.197	φ 1.378" (φ 35mm)	± .002 ± 0.05	φ 3.543" (φ 90mm)	± .002 ± 0.05
.236	φ 1.575" (φ 40mm)	± .002 ± 0.05	φ 4.094" (φ 104mm)	± .002 ± 0.05

● : Stock

○ : 1-2 week delivery

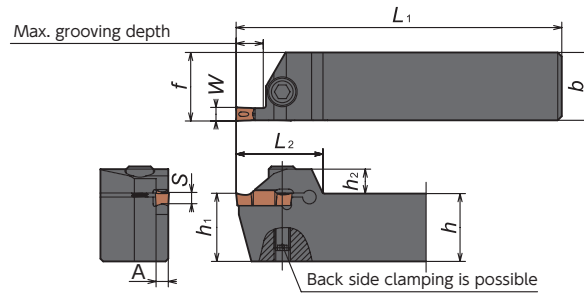
Holders → H13

Grooving / Side Turning

Groove DUO

Mono-shank style

GTWP



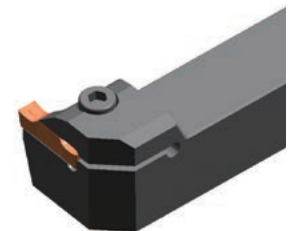
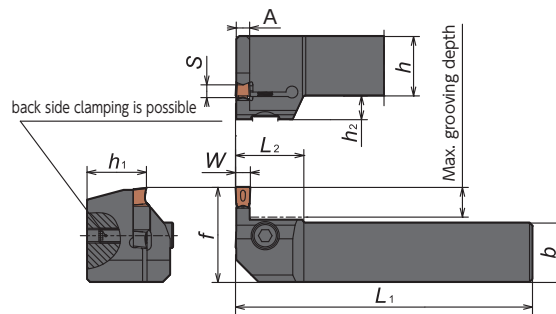
Recommended tightening torque 7.0[N · m]

• Right-hand shown

● Toolholder Body

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

GKWP



Recommended tightening torque 7.0[N · m]

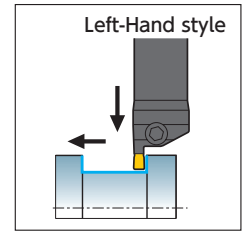
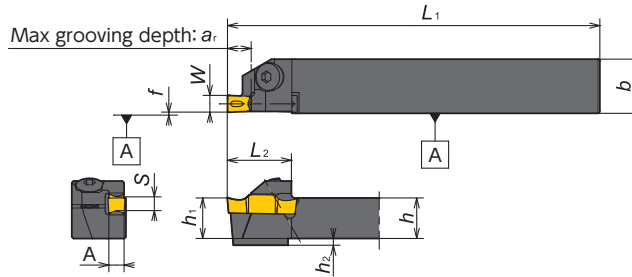
• L-hand shown

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

Groove DUO

GTWP

For Swiss Style Machine



Right-Hand style shown

● Toolholder

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

Groove DUO Series - Inserts

Shape	Item Number	W				r _e	M	L	Seat Size S	Coated Carbide			
		Groove Width		Width Tolerance						DM4			
		(Inch)	(mm)	(Inch)	(mm)								
<p>GWPG: Outside ground GWPM: Full-molded</p> <ul style="list-style-type: none"> ● Excellent chip control ● Best for side turning 	GWPG300N02D-GW	.118	3.0	.001	± 0.025	.008	0.2	.098	2.5	.811	20.6	D	●
	GWPG300N04D-GW	.118	3.0	.001	± 0.025	.016	0.4	.098	2.5	.811	20.6	D	●
	GWPG400N02E-GW	.157	4.0	.001	± 0.025	.008	0.2	.134	3.4	.811	20.6	E	●
	GWPG400N04E-GW	.157	4.0	.001	± 0.025	.016	0.4	.134	3.4	.811	20.6	E	●
	GWPG400N08E-GW	.157	4.0	.001	± 0.025	.031	0.8	.134	3.4	.811	20.6	E	●
	GWPG500N02F-GW	.197	5.0	.001	± 0.025	.008	0.2	.169	4.3	.811	20.6	F	○
	GWPG500N04F-GW	.197	5.0	.001	± 0.025	.016	0.4	.169	4.3	.811	20.6	F	○
	GWPG500N08F-GW	.197	5.0	.001	± 0.025	.031	0.8	.169	4.3	.811	20.6	F	○
	GWPG600N02G-GW	.236	6.0	.001	± 0.025	.008	0.2	.205	5.2	1.008	25.6	G	○
	GWPG600N04G-GW	.236	6.0	.001	± 0.025	.016	0.4	.205	5.2	1.008	25.6	G	○
<ul style="list-style-type: none"> ● Less tool pressure design 	GWPM300N04D-GW	.118	3.0	.002	± 0.05	.016	0.4	.098	2.5	.811	20.6	D	○
	GWPM400N04E-GW	.157	4.0	.002	± 0.05	.016	0.4	.134	3.4	.811	20.6	E	○
	GWPM500N04F-GW	.197	5.0	.002	± 0.05	.016	0.4	.169	4.3	.811	20.6	F	○
	GWPM600N04G-GW	.236	6.0	.002	± 0.05	.016	0.4	.205	5.2	1.008	25.6	G	○
	GWPG300N02D-GV	.118	3.0	.001	± 0.025	.008	0.2	.205	2.5	.811	20.6	D	●
	GWPG300N04D-GV	.118	3.0	.001	± 0.025	.016	0.4	.205	2.5	.811	20.6	D	●
	GWPG400N02E-GV	.157	4.0	.001	± 0.025	.008	0.2	.169	4.3	.811	20.6	E	●
	GWPG400N04E-GV	.157	4.0	.001	± 0.025	.016	0.4	.169	4.3	.811	20.6	E	●
	GWPG500N02F-GV	.197	5.0	.001	± 0.025	.008	0.2	.169	4.3	.811	20.6	F	○
	GWPG500N04F-GV	.197	5.0	.001	± 0.025	.016	0.4	.169	4.3	.811	20.6	F	○
GWPG600N02G-GV	.236	6.0	.001	± 0.025	.008	0.2	.169	4.3	1.008	25.6	G	○	
GWPG600N04G-GV	.236	6.0	.001	± 0.025	.016	0.4	.169	4.3	1.008	25.6	G	○	

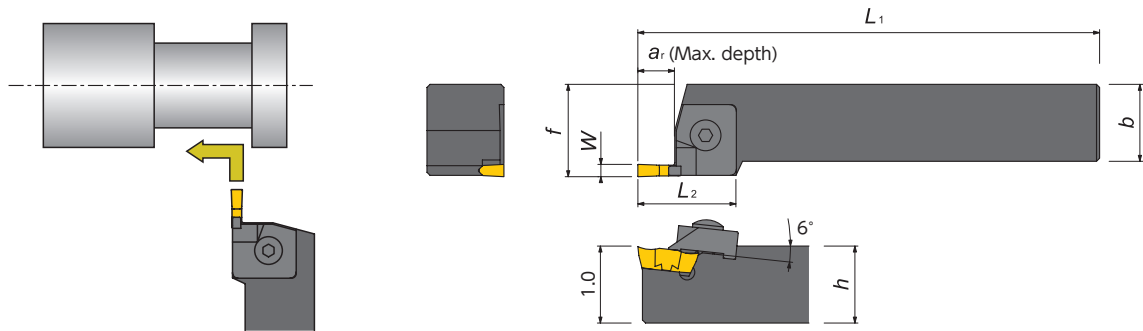
● : Stock ○ : 1-2 week delivery

Grooving / Side Turning

Grooving / Side Turning


VGT

Clamp-on type






• Right hand shown

Toolholders

Item Number	Stock		Groove size covered Width	Dimensions (inch)						Insert
	R	L		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>L</i> ₂	<i>f</i>	<i>a</i> _r	
VGT _{R/L} 16-3	●	●	.115 - .153	1.0	1.0	6.0	32	1.18	.470	VGE 
VGT _{R/L} 16-4	●	●	.154 - .220	1.0	1.0	6.0	32	1.18	.470	
VGT _{R/L} 16-6	●	●	.221 - .292	1.0	1.0	6.0	32	1.18	.470	

Spare Parts

Holder	Clamp		Clamp screw		Spring		Wrench	
		Stock R L		Stock		Stock		Stock
VGT _{R/L} 16-3	CV _{R/L} 3N	○ ○						
VGT _{R/L} 16-4	CV _{R/L} 4N	○ ●	AOB-6N	○	ASG-6	○	LW-4	●
VGT _{R/L} 16-6	CV _{R/L} 6	○ ○						

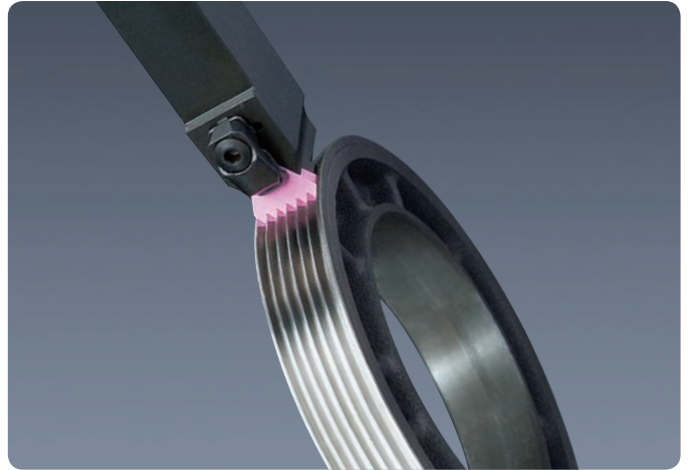
VGE

Item Number	W	R	T	Cermet					Carbide									
				PVD Coated					PVD Coated							CVD		
				XT3	C7X	XN4	Q15	C7Z	KM1	DM4	DT4	TM4	QM3	VM1	ZM3		CP1	
VGE 125N008	.125	.008	.205			●												
VGE 125N015	.125	.015	.205			●												
VGE 156N015	.156	.015	.335			●												
VGE 188N015	.188	.015	.335			●												
VGE 250N015	.250	.015	.335			●												

● : 1st Choice ● : Stock
 ● : Alternate choice ○ : 1-2 week delivery

Machining Poly-V Pulley Profiles

Grooving With Ceramics

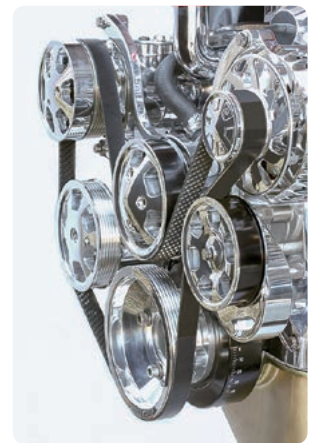


Features

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

Recommended Cutting Conditions

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



Grooving / Side Turning

3V ↔H20

21 HP needed

4V ↔H21

28 HP needed

5V ↔H22

35 HP needed

6V ↔H23

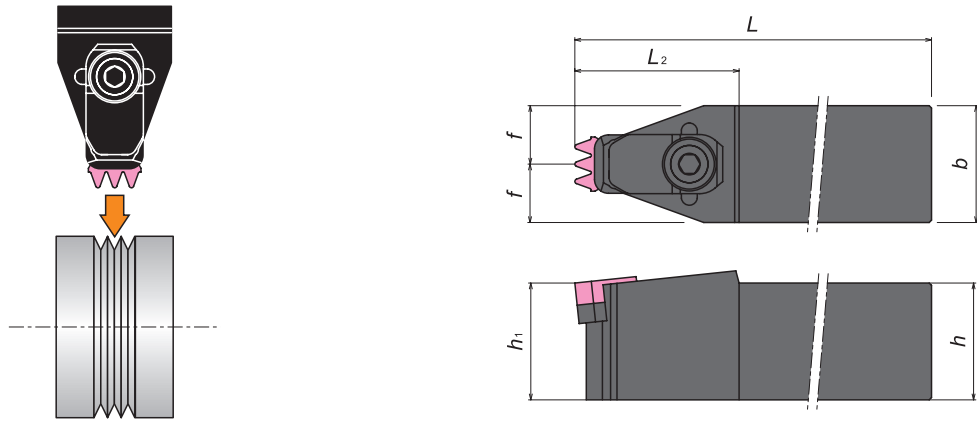
42 HP needed

Grooving / Side Turning

POLY-V (3V)

Clamp-on type





21 HP Needed




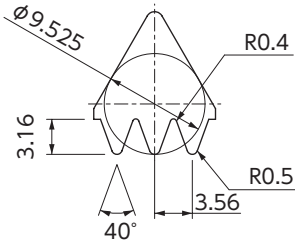
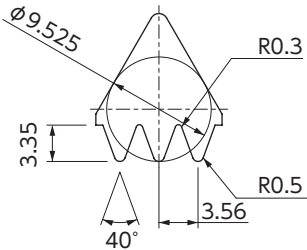
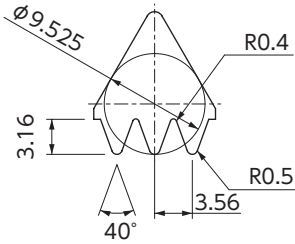
● Toolholders

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

● Spare Parts

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

● Insert

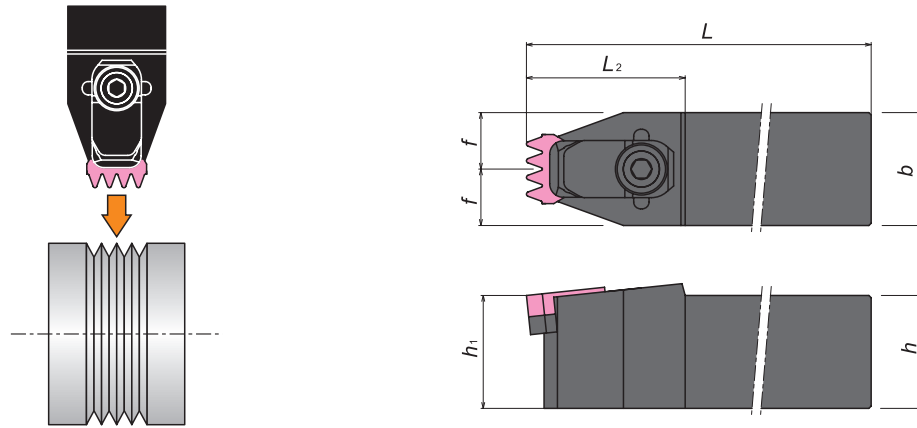
Shape	PTM33K305ENB		PTM33K30504ENB	
		(mm)		(mm)
		●		●
	4.76		4.76	

Grooving / Side Turning

POLY-V (4V)

Face Grooving





28 HP Needed




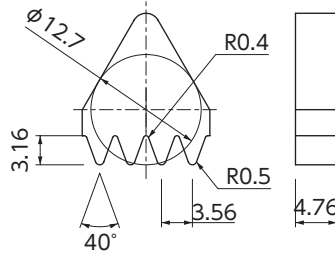
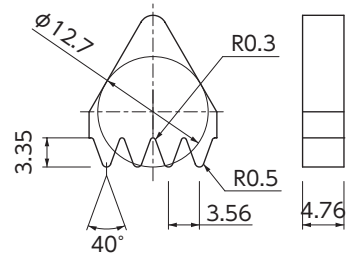
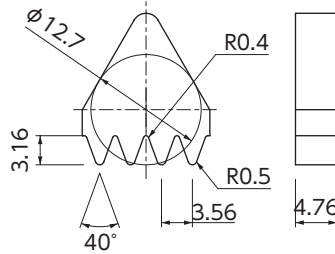
Toolholders

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

Spare Parts

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

Insert

Shape	PTM43K405ENB		PTM43K40504ENB	
		(mm)		(mm)
				
		●		●

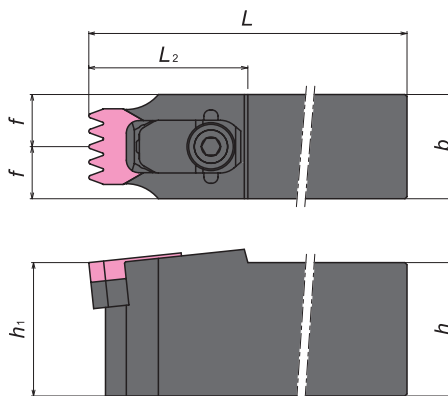
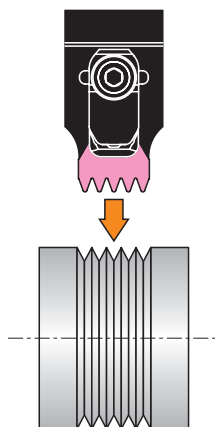
Grooving / Side Turning

Grooving / Side Turning

POLY-V (5V)

Clamp-on type



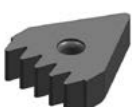

35 HP Needed



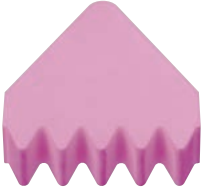
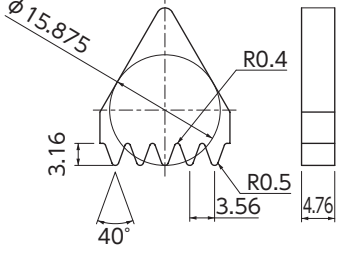
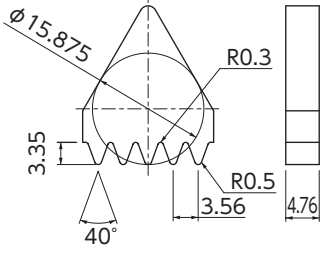
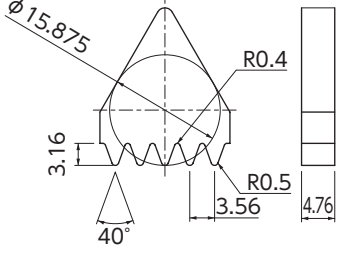
● Toolholders

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

● Spare Parts

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

● Insert

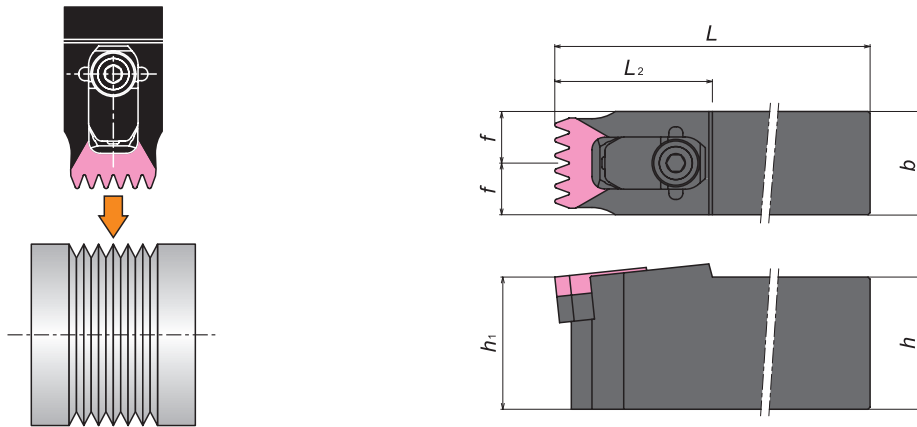
Shape	PTM53K505ENB		PTM53K50504ENB	
		(mm)		(mm)
				
		●	●	

Grooving / Side Turning

POLY-V (6V)

Face Grooving





42 HP Needed




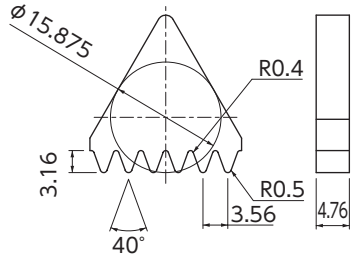
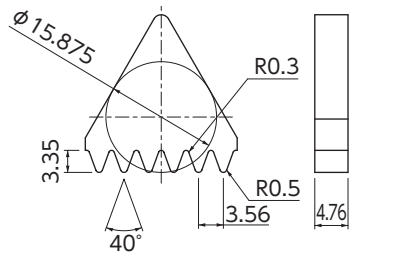
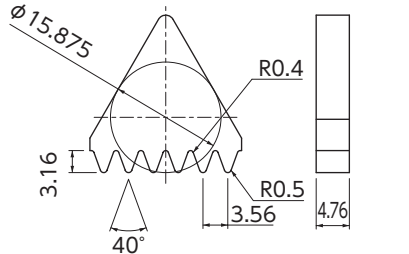
Toolholders

Item Number	Stock	Dimensions (inch)						Insert
		h	b	h_1	L	L_2	f	
POLY-V206	●	1.25	1.25	1.25	7.00	.625	1.50	PTM53K60..

Spare Parts

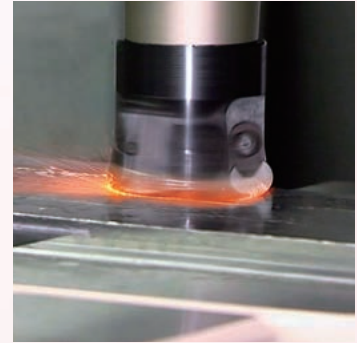
Holder	Clamp		Thrust Plate		Shim		Shim-Screw	
		Stock		Stock		Stock		Stock
POLY-V206	2417-C	●	9414-C	●	K6-C	●	1230-C	●

Insert

Shape	PTM53K605ENB		PTM53K60504ENB	
		HW2		HW2
	 (mm)	●	 (mm)	●

MEMO

I



Milling Cutters

- Overview I 2
- Milling with NTK Grades by Application I 4
- Hard Milling Guideline I 5
- For Heat Resistant Alloys and Hardened Materials I 6
- For Gray / Ductile Cast Iron ... I 8
- Required Machine Horse Power Chart I 21
- For Aluminum I 22

Heat Resistant Alloys and Hardened Materials

Features

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



Gray / Ductile cast iron

XFM series → I 8

xtreme feed mill

Features

- Large DOC is possible because of the fine pitch of inserts which results in higher productivity
- LNX Insert comes with special chipbreaker to reduce tool pressure

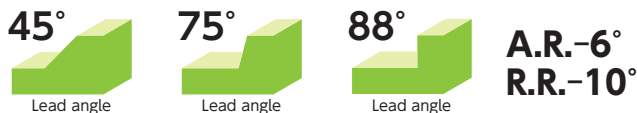


HVM series → I 10, I 12, I 14

high velocity mill

Features

- Extremely economical 8-corner inserts
- Covers various applications with 45, 75, and 88 degree angle milling cutter
- Ceramic inserts with chipbreaker and wiper are also available

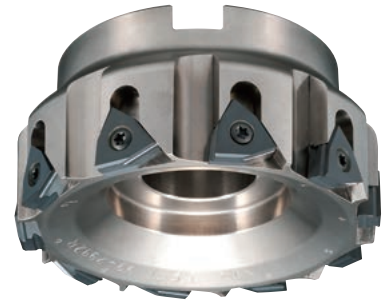


● : Stock ○ : 1-2 week delivery

TRI series → I 16

Features

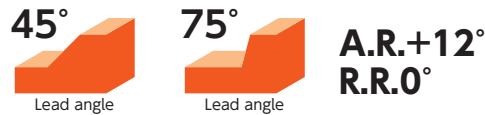
- Stable gray cast iron milling with lower cutting forces
- Maximizes ceramic insert potential and can mill faster than 3,200 SFM



HSM series → I 17-I 19

Features

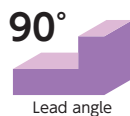
- Positive inserts reduce tool pressure and produces excellent surface finishes in addition to long tool life
- Best for milling thin parts thanks to reduced tool pressure



JQ series → I 20

Features

- Capable of 90-degree shoulder milling
- A variety of cutter diameters as small as .787 (φ20mm)



Milling Cutter

Aluminum

HPC series → I 22



Features

- A wide range of cutter diameters from φ.787" (20mm) to φ3.937" (100mm)
- Strong rigid steel bodies
- With the fixed-type cutters, no time-consuming presetting is required

Milling with NTK Grades by Application

General Guidelines for Successful Milling

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



Guidelines for Successful Milling by Material

Heat resistant alloy / PH stainless steel

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

Hardened Steel / Die mold / Chilled iron / Overlay

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

Cast iron / Ductile cast iron

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

Trouble shooting

Material	Insert Grade	NTK Grade	Problem	Solution					
				Speed	Feed	DOC	Edge Prep.	Insert Grade	Others
Stainless Steel	Cermet	C7X	Chipping	—	⬇	—	—	—	—
			BUE	⬆	—	—	—	—	
			Break	—	⬇	⬇	—	—	
Hardened Steel	Ceramic	HC7 WA1	Chipping	—	⬇	—	Wider	—	
			Break	⬇	⬇	—	—	—	
Cast Iron	Silicon Nitride	SX6 SP9	Chipping	⬇	⬇	—	Wider	—	
			Break	⬇	⬇	⬇	Tougher	Larger radius	
			Thermal Crack	⬇	⬇	—	—	—	
			Crater Wear	—	—	—	Sharper	—	
Heat Resistant Alloy	SiAlON	SX9 SX7	Notching	⬆	⬆	Vary / ⬇	Wider	—	Pre-chamfer parts
			Flank Wear	⬇	⬆	—	—	Harder	—
			Chipping	—	—	—	Wider	Tougher	—
			Break	⬇	—	⬇	—	Tougher	—
			Tool Pressure	—	—	—	—	—	Use RPG insert

Hard Milling with WA1

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

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



Target Industries

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

Application Materials

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

Cutters



→ I6



→ I6



→ I7

Insert

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

Recommend Cutting Conditions

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

Note: Speeds and Feeds are approximately starting points

Guidelines for Success

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

Milling Cutters

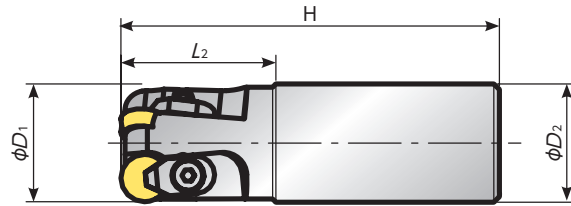


series

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



A.R.+5°
R.R.-7°30'

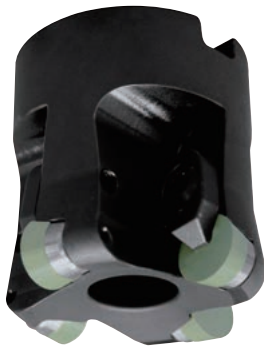


● Inch size cutters

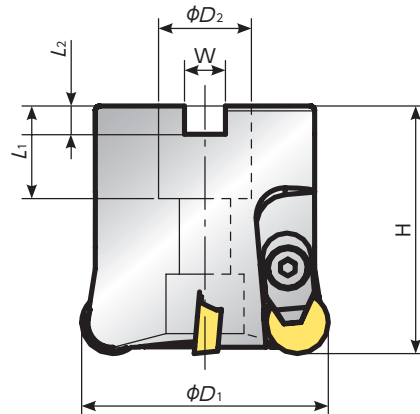
Item Number	Stock		Dimensions (inch)				Clamp	Clamp Screw	Weight (lbs)	Insert
			ϕD_1	D_2	H	L_2				
RPIW0625E0625R02	●	2	.625	.625	3.160	1.250	US6000926	US6000927	0.2	RPG 21.5
RPIW075E075R02	●	2	.750	.750	3.270	1.220	AMS-3	AOB-3S	0.4	RPG 21.5
RPIW100E100R03	●	3	1.000	1.000	3.270	1.000	AMS-4	AOB-4S	0.6	RPG 32
RPIW125E125R03	●	3	1.250	1.250	4.000	1.640	AMS-5T	AOB-5S-T25	1.1	RPG 43
RPIW150E150R03	●	3	1.500	1.500	4.000	1.830			1.6	

● Metric size cutters

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



A.R.+5°
R.R.-2°30' ~ -5°



● Inch size cutters

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

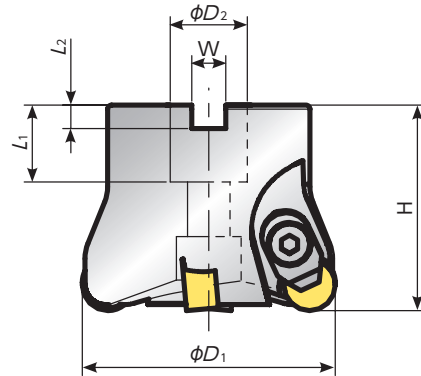
● Metric size cutters

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

● : Stock ○ : 1-2 week delivery



A.R.-5°
R.R.-10°



● Inch size cutters

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

● Metric size cutters

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

● Recommend Cutting Conditions

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

Milling Cutter

Inserts (RNG) →E10
Inserts (RPG) →E11

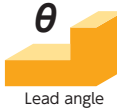
Milling Cutters

XFM series

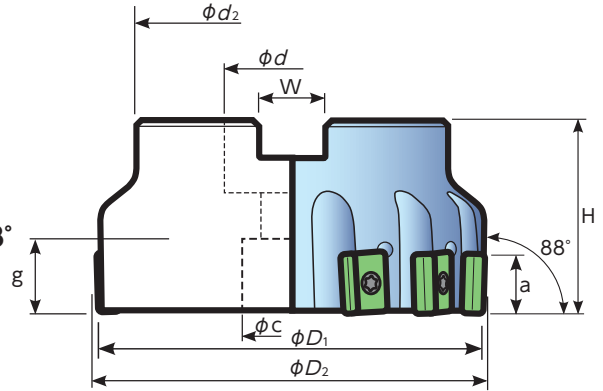
● Lead angle 88 degree - LNX324 (A.R.-4° ,R.R.0°)



A.R.-4°
R.R.0°



12.5





● Inch size cutters

Item Number	Stock	✳	Dimensions (inch)									Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JXTM15IN-88-4R	●	4	1.50	1.55	1.75	.551	.750	.32	1.350	.610	—	1.0	LNX 324
JXTM20IN-88-6R	●	6	2.00	2.05	2.00	.551	.750	.32	1.770	.610	—	1.0	
JXTM25IN-88-8R	●	8	2.50	2.55	2.00	.551	1.000	.38	2.000	.760	—	1.5	
JXTM30IN-88-10R	●	10	3.00	3.04	2.00	.551	1.000	.38	2.362	.827	.539	2.4	
JXTM40IN-88-13R	●	13	4.00	4.04	2.00	.551	1.500	.64	3.150	2.000	.870	3.9	
JXTM50IN-88-16R	●	16	5.00	5.04	2.00	.551	1.500	.64	3.740	2.000	.870	6.5	
JXTM60IN-88-18R	●	18	6.00	6.05	2.00	.551	2.000	.75	4.000	2.800	1.120	8.0	




● Metric size cutters

Item Number	Stock	✳	Dimensions (mm)									Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JXTM080-88-10R	○	10	80	83	50	14	25.4	9.5	58	36	14	1.1	LNX 324
JXTM100-88-13R	○	13	100	103	50	14	31.75	12.7	77	50	17	1.8	
JXTM125-88-16R	○	16	125	128	58	14	38.1	15.9	77	55	22	3.1	

● Spare Parts

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

● Screw Drivers (OP)

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

● : Stock ○ : 1-2 week delivery

● Inserts

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

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

● Recommend Cutting Conditions

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

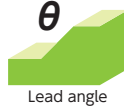
Milling Cutters

HVM series High velocity mill series

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

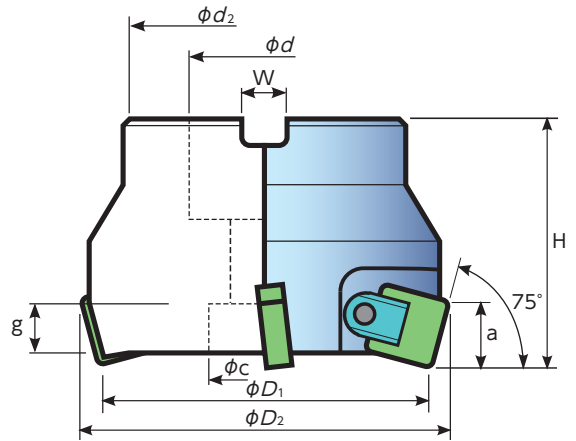


$\theta: 75^\circ$

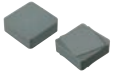


Lead angle

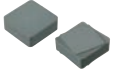
12.5 / 6.3

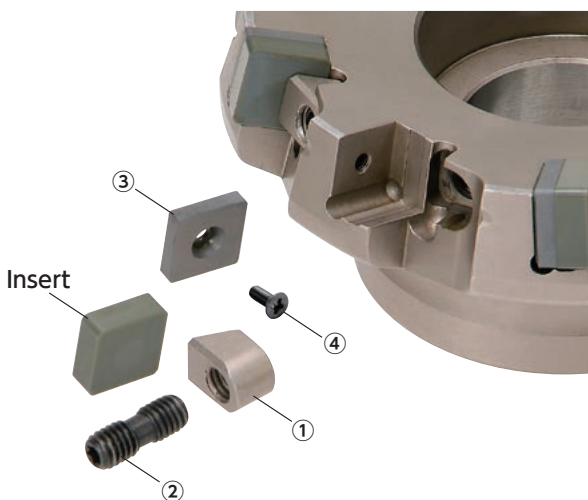


● Inch size cutters

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






● Metric size cutters

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


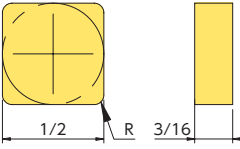

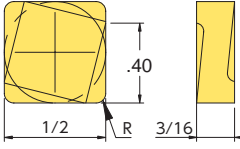

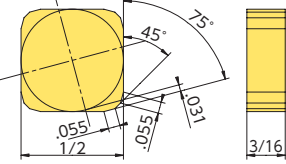


● : Stock ○ : 1-2 week delivery

● Spare Parts

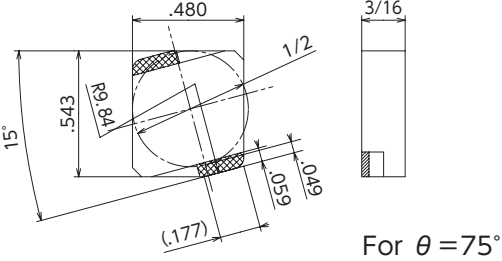
Wedge	Wedge Screw	Torx Wrench	Shim	Shim Screw
① 	② 		③ 	④ 
HLW175	WS0616-T15	T-15A	ASN423	M3×8

● Inserts

Shape	Dimensions (inch)	Item Number	R	Silicon Nitride		Whisker	Cermet
				SX6	SP9	WA1	C7X
 12.5°		SNG 432 T0220	.031			●	
		SNG 432 T0420	.031	●	●	●	●
		SNG 433 T0220	.047			●	
		SNG 433 T0420	.047	●	●	●	●
		SNG 434 T0220	.063			●	
		SNG 434 T0420	.063	●	●	●	●
 12.5° with chipbreaker		SNGF 433 TRCC413 Reduce tool pressure	.047	●			
		SNGF 433 RT0425 C421 Reduce tool pressure	.047		●		
 6.3° with wiper		SNG 43EN TN The insert must be installed in all insert pockets	—	●	●		

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

● CBN Wiper Insert

Dimensions (inch)	Item Number	R	CBN	
			B30	B52
 For $\theta = 75^\circ$	FDX 1204-75-50R	—	●	●

● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010	.012	
K Gray Cast Iron	SX6	●	●															~.220
	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220
	C7X	●	○															~.220

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				200	400	600	800	1000	1200	1400	1600	.002	.004	.006	.008	.010	.012	
P Stainless Steel	C7X	●	○															~.150
M Carbon Steel Alloy Steel	C7X	●	○															~.120

Inserts (SNG) → E13 · E40

Milling Cutters

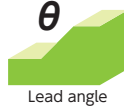
HVM series

High velocity mill series

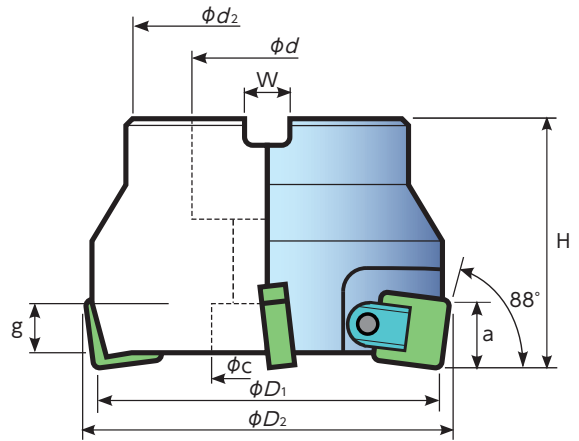
● Lead angle 88 degree -SN43(A.R. -6° R.R. -10°)



$\theta : 88^\circ$



12.5 / 6.3



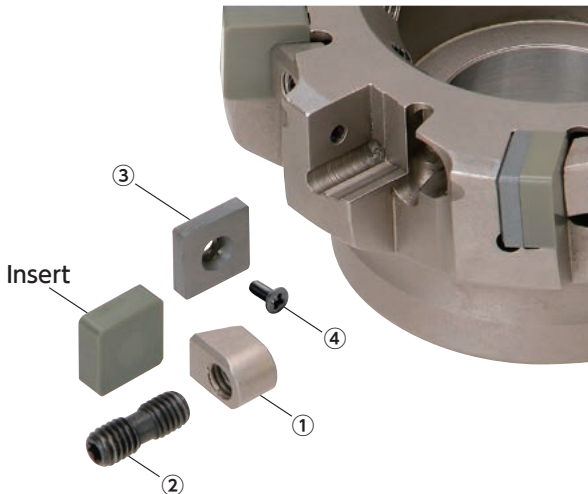
● Inch size cutters

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

● Metric size cutters

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

Milling Cutter


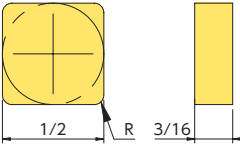

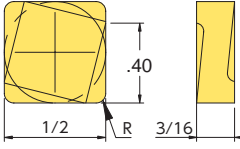

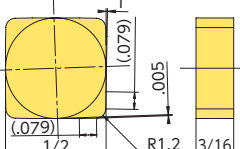


● Spare Parts

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

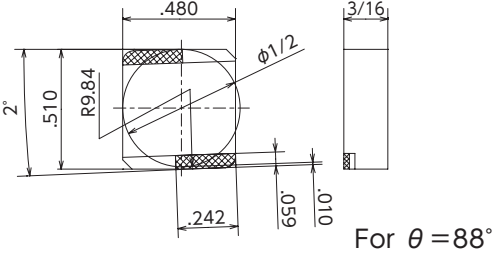
● : Stock ○ : 1-2 week delivery

● Inserts

Shape	Dimensions (inch)	Item Number	R	Silicon Nitride		Whisker	Cermet
				SX6	SP9	WA1	C7X
 12.5°		SNG 432 T0220	.031			●	
		SNG 432 T0420	.031	●	●	●	●
		SNG 433 T0220	.047			●	
		SNG 433 T0420	.047	●	●	●	●
		SNG 434 T0220	.063			●	
		SNG 434 T0420	.063	●	●	●	●
 12.5° with chipbreaker		SNGF 433 TRCC413	.047	●			
		Reduce tool pressure					
SNGF 433 RT0425 C421	.047			●			
Reduce tool pressure							
 6.3° with wiper		SNEN 1204ZN T01025	—	●	●		
		The insert must be installed in all insert pockets					

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

● CBN Wiper Insert

Dimensions (inch)	Item Number	R	CBN	
			B30	B52
 For $\theta = 88^\circ$	FDX 1204-88-50R	—	●	●

● Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010	.012	
K Gray Cast Iron	SX6	●	●															~.220
	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220
	C7X	●	○															~.220

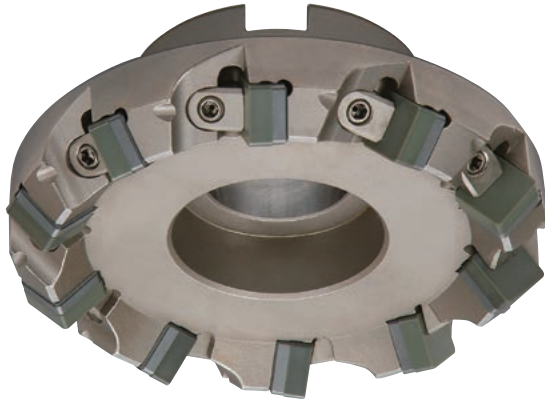
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)												Feed (IPT)						Depth of Cut (inch)
				200	400	600	800	1000	1200	1400	1600	.002	.004	.006	.008	.010	.012					
P Stainless Steel	C7X	●	○															~.150				
M Carbon Steel Alloy Steel	C7X	●	○															~.120				
																			~.040			

Inserts (SNG) →E13 · E40

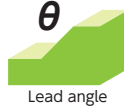
Milling Cutters

HVM series High velocity mill series

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

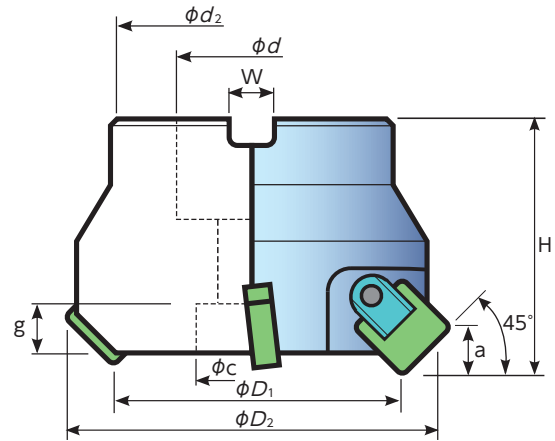


$\theta: 45^\circ$



Lead angle

12.5 / 6.3

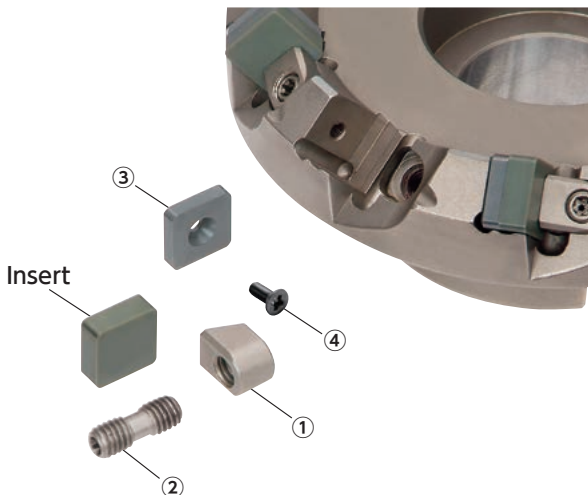


● Inch size cutters

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

● Metric size cutters

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




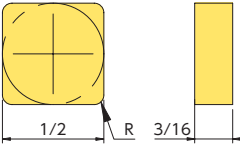

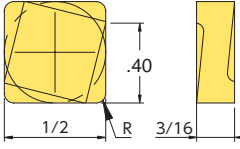

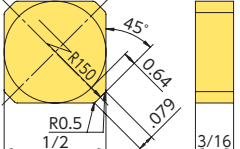
● Spare Parts

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

● : Stock

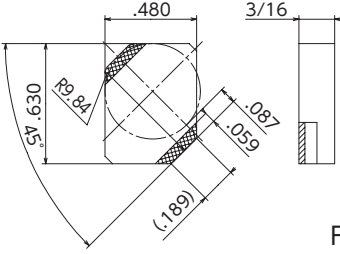
○ : 1-2 week delivery

● Inserts

Shape	Dimensions (inch)	Item Number	R	Silicon Nitride		Whisker	Cermet
				SX6	SP9	WA1	C7X
 12.5°		SNG 432 T0220	.031			●	
		SNG 432 T0420	.031	●	●	●	●
		SNG 433 T0220	.047			●	
		SNG 433 T0420	.047	●	●	●	●
		SNG 434 T0220	.063			●	
		SNG 434 T0420	.063	●	●	●	●
 12.5° with chipbreaker		SNGF 433 TRCC413	.047	●			
		Reduce tool pressure					
SNGF 433 RT0425 C421	.047		●				
Reduce tool pressure							
 6.3° with wiper		SNG 43AN TW	—	●	●		
		The insert must be installed in all insert pockets					

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

● CBN Wiper Insert

Dimensions (inch)	Item Number	R	CBN	
			B30	B52
 For $\theta = 45^\circ$	FDX 1204-45-50R	—	●	●

● Recommend Cutting Conditions

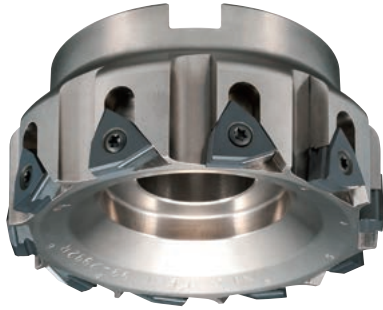
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)								Feed (IPT)						Depth of Cut (inch)
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010	.012	
Gray Cast Iron	SX6	●	○															~.220
	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220
	C7X	●	○															~.220

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)											Feed (IPT)						Depth of Cut (inch)
				200	400	600	800	1000	1200	1400	1600	.002	.004	.006	.008	.010	.012				
Stainless Steel	C7X	●	○															~.150			
Carbon Steel Alloy Steel	C7X	●	○															~.120			
																			~.040		

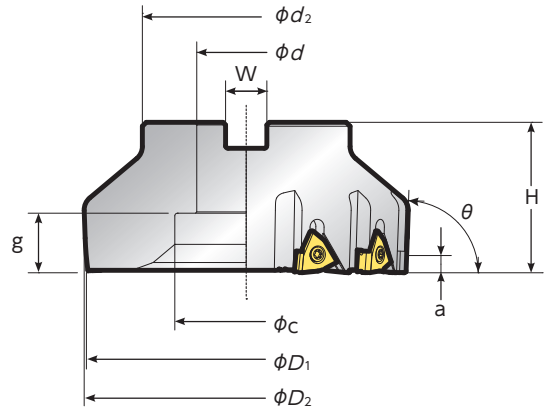
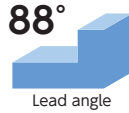
Inserts (SNG) →E13 · E40

TRI series

● Lead angle 88 degree



A. R. 5°
R. R. 4°, 7°, 10°



● Metric size cutters

Item Number	Stock		Dimensions (mm)										Weight (kg)	Rake angle (°)		Insert Screw	Wrench
			ϕD_1	ϕD_2	H	a *1	a *2	ϕd	W	ϕd_2	ϕc	g		A.R.	R.R.		
JWNXM063C2200R06	○	6	63	63	50	5.5	4.5	22	10.4	60	18	15.5	0.9	+5	+4	FSI26-4.0 * 12-LH	LLR-T15
JWNXM080A2540R08	○	8	80	80	50	5.5	4.5	25.4	9.5	60	36	15	1.1	+5	+7		
JWNXM100A3175R10	○	10	100	100	50	5.5	4.5	31.75	12.7	80	50	18	1.8	+5	+10		
JWNXM125A3810R12	○	12	125	125	58	5.5	4.5	38.1	15.9	80	55	23	3	+5	+10		
JWNXM160A5080R16	○	16	160	160	68	5.5	4.5	50.8	19	100	72	22	4.9	+5	+10		

* 1 Dimension when set the insert [WNX44-C10T01020]
* 2 Dimension when set the insert [WNX44-R12T01020]

● Insert

Shape	Dimensions (inch)	Item number	C or r_ϵ	Silicon Nitride	
				SX6	SP9
		WNX44-C10T0420	C .040	○	○
		WNX44-R12T0420	R .0472	○	○

○ : New standard stock items

● Recommend Cutting Conditions

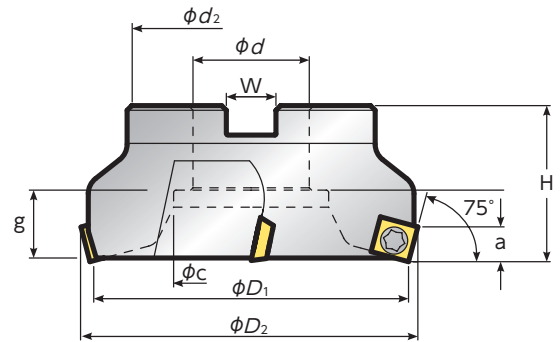
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)					Depth of Cut (inch)		
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008		.010	.012
K	SX6	●	●															~.220
Gray Cast Iron	SP9	●	○															~.220
Ductile Iron	SP9	●	○															~.220

● : Stock ○ : 1-2 week delivery

HSM series

high speed hear-ill

● Lead angle 75 degrees - SDW43 (A.R.+12°, R.R.0°)



● Inch size cutters

Item Number	Stock		Dimensions (inch)									Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
E250R100-SDW43-4C	●	4	2.500	2.780	2.000	.360	1.000	.38	2.290	.820	.787	1.9	
E300R100-SDW43-5C	●	5	3.000	3.280	2.000	.360	1.000	.38	2.290	.820	.787	2.4	
E400R150-SDW43-6C	●	6	4.000	4.280	2.000	.360	1.500	.64	3.200	2.000	.875	3.7	
E500R150-SDW43-7C	●	7	5.000	5.280	2.000	.360	1.500	.64	3.200	2.000	.875	5.4	

● Metric size cutters

Item Number	Stock		Dimensions (mm)									Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g		
JSDW063-75-04R	○	4	63	70.6	50	9.1	22	10.4	58	18	14	0.8	
JSDW080-75-05R	○	5	80	83.3	50	9.1	25.4	9.5	62	36	15.5	1.0	
JSDW100-75-06R	○	6	100	108.7	50	9.1	31.75	12.7	58	45	16.5	1.3	
JSDW125-75-07R	○	7	125	134.1	58	9.1	38.1	15.9	79	55	21.5	2.5	
JSDW160-75-10R		10	160	165	68	9.1	50.8	19	100	72	28.5	4.0	

● CBN Wiper Insert

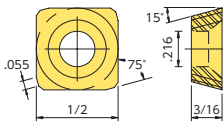
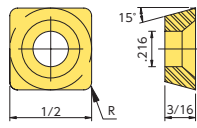
Shape	Item Number	CBN	
		B30	B52
<p>For $\theta = 75^\circ$</p>	SDW 1204-75-50R	○	○

● Spare Parts

Insert Screw	Torx Wrench
<p>FSI21-5.0*12.45</p>	<p>T20</p>

● Inserts

Item Number	R	Fig.	Silicon Nitride		Cermet
			SX6	SP9	C7X
SDCW 432 T0420	.031	1	●	○	●
SDCW 433 T0420	.047	1	●		●
SDCW 434 T0420	.063	1	●		●
SDCW 43EE T0420R*	—	2	●	○	●



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

* The insert must be installed in all insert pockets

● Recommend Cutting Conditions

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

Inserts (SDCW) → E12 · E39

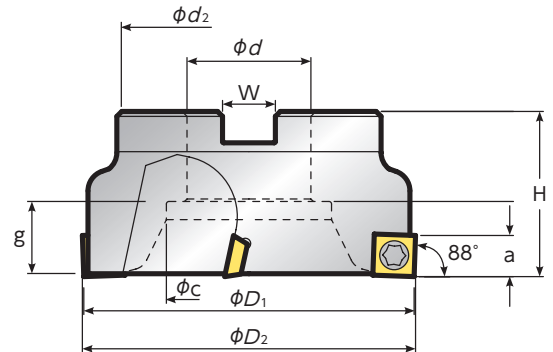
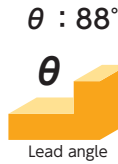
Milling Cutter

Milling Cutters

HSM series

High speed hear-ill

● Lead angle 88 degree - SDW43 (A.R.+12°, R.R.0°)



● Inch size cutters

Item Number	Stock		Dimensions (inch)										Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g			
P250R100-SDW43-4C	●	4	2.500	2.590	2.000	.400	1.000	.38	2.290	.820	.787	1.7		
P300R100-SDW43-6C	●	6	3.000	3.070	2.000	.400	1.000	.38	2.290	.820	.787	2.2		
P400R150-SDW43-8C	●	8	4.000	4.070	2.000	.400	1.500	.64	3.200	2.000	.875	3.5		
P500R150-SDW43-10C	●	10	5.000	5.070	2.000	.400	1.500	.64	3.200	2.000	.875	5.2		

● Spare Parts

Insert Screw	Torx Wrench
FSI21-5.0*12.45	T-20

● Inserts

 Fig.1: SDCW43	 Fig.2: SDCW43PE with wiper	Item Number	R	Fig.	Silicon Nitride		Cermet
					SX6	SP9	C7X
		SDCW 432 T0420	.031	1	●	○	●
		SDCW 433 T0420	.047	1	●		●
		SDCW 434 T0420	.063	1	●		●
		SDCW 43PE T0420R*	.031	2	●		

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

* The insert must be installed in all insert pockets

● Recommend Cutting Conditions

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

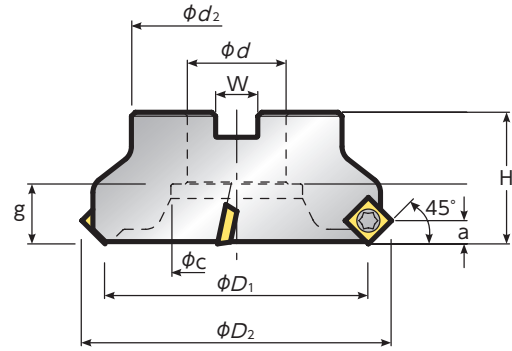
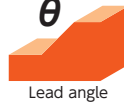
● : Stock ○ : 1-2 week delivery

Inserts (SDCW) → E12 · E39

● Lead angle 45 degree - SDW43 (A.R.+12°, R.R.0°)



$\theta : 45^\circ$



● Inch size cutters

Item Number	Stock	✳	Dimensions (inch)										Weight (lbs)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g			
A300R100-SDW43-6C	●	6	3.000	3.740	2.000	.260	1.000	.38	2.290	.820	.787	2.3	SDCW 43	
A400R150-SDW43-7C	●	7	4.000	4.740	2.000	.260	1.500	.64	3.200	2.000	.875	3.3		
A500R150-SDW43-8C	●	8	5.000	5.740	2.000	.260	1.500	.64	3.810	2.120	.871	5.0		

● Metric size cutters

Item Number	Stock	✳	Dimensions (mm)										Weight (kg)	Insert
			ϕD_1	ϕD_2	H	a	ϕd	W	ϕd_2	ϕc	g			
JSDW080-45-06R	○	6	80	95.0	50	6.6	25.4	9.5	62	36	18	1.1	SDCW 43	
JSDW100-45-07R	○	7	100	120.4	50	6.6	31.75	12.7	58	45	16	1.4		
JSDW125-45-08R	○	8	125	145.8	58	6.6	38.1	15.9	79	55	21	2.6		

● CBN Wiper Insert

Shape	Item Number	CBN	
		B30	B52
<p>For $\theta = 45^\circ$</p>	SDW 1204-45-50R	●	●

● Spare Parts

Insert Screw	Torx Wrench
<p>FSI21-5.0*12.45</p>	<p>T20</p>

● Inserts

Item Number	R	Fig.	Silicon Nitride		Cermet
			SX6	SP9	C7X
SDCW 432 T0420	.031	1	●	○	●
SDCW 433 T0420	.047	1	●		●
SDCW 434 T0420	.063	1	●		●
SDCW 43AE T0420*	—	2	●	○	●

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

* The insert must be installed in all insert pockets

● Recommend Cutting Conditions

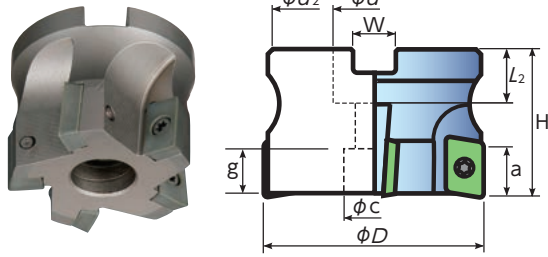
Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)						Depth of Cut (inch)	
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010		.012
K	SX6	●	●															~.200
Gray Cast Iron	SP9	●	○															~.200
Ductile Iron	SP9	●	○															~.200

Inserts (SDCW) →E12 · E39

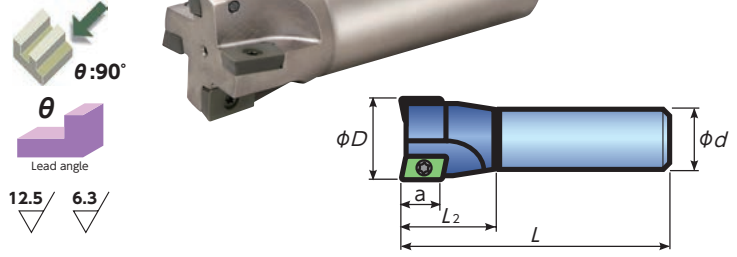
Milling Cutters

JQ series

JQTS



JQTE



JQTS Metric size cutters

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

JQTE Metric size cutters

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

Inserts

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

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

CBN Wiper Insert

Shape	Item Number	B30	B52
 	APCW 1604 PDSRCE	○	○

Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)							Feed (IPT)						Depth of Cut (inch)	
				700	1200	1700	2200	2700	3200	3700	4200	.002	.004	.006	.008	.010		.012
Gray Cast Iron	SX6	●	○															~.320
	SP9	●	●															~.320
Ductile Iron	SP9	●	○															~.320

● : Stock ○ : 1-2 week delivery

Milling Cutter

Machine power requirements ~ Quick Check Table ~

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

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


Width of cutting a_e = ___ % of the cutter diameter

The value ___ hp determined from the applicable table below

(Example of calculation)

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

The required power (hp)=30%×54hp=16hp

HVM Series 	HSM Series 	XFM Series 																																																																																													
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			Feed rate per tooth (IPT)																																																																																												
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Depth of cut (inch)	.039	28	43	56	67																																																																																										
	.079	55	85	111	134																																																																																										
	.118	83	127	168	203																																																																																										
	.157	110	170	223	270																																																																																										
		Feed rate per tooth (IPT)																																																																																													
		.004	.008	.012	.016																																																																																										
Depth of cut (inch)	.039	16	24	32	39																																																																																										
	.079	32	48	66	79																																																																																										
	.118	48	72	98	118																																																																																										
	.157	64	97	130	157																																																																																										

Unit : kW

Tips for utilizing the above tables

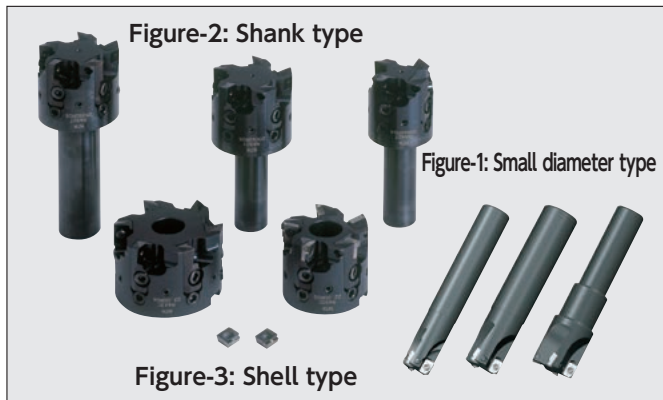
- ① The assumption is that gray cast iron is machined at a cutting speed of 2600 SFM, with the cutter diameter shown as the width of cut (a_e = 100% of the cutter diameter).
- ② The required power becomes approximately half (50%) if the cutting width a_e or depth of cut a_p is halved. (The power is proportional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

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

Milling Cutters

HPC
High performance cutter

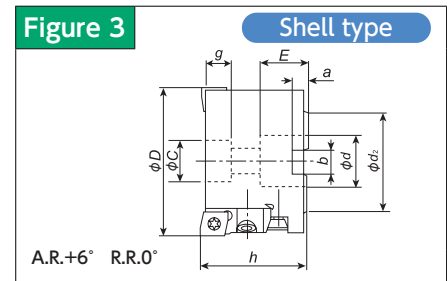
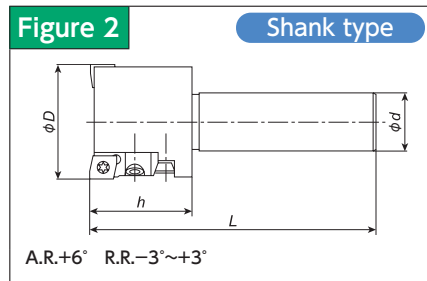
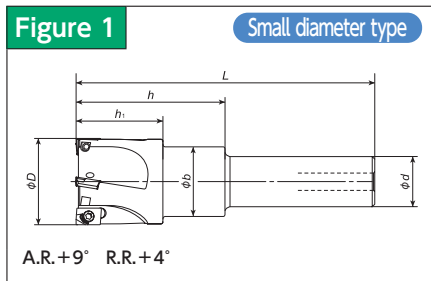
series Fixed type/Adjustable type



Features

- **A wide range of sizes**
The diameters range from $\phi .787''$ - $\phi 3.937''$ for the HPC series
- **Excellent rigidity (HPC)**
The material for the HPC body is steel, achieving exceptional reliability

HPC (steel body) $\phi 20$ - $\phi 100$ ($\phi .787''$ - $\phi 3.937''$)



Metric size Cutters

Figure	Item number	Stock		ϕD	h	ϕd	L	h_1	E	ϕb	b	a	ϕd_2	ϕc	g	Weight (kg)	Max. RPM allowed (RPM)	Item number of applicable insert
Fixed type 1	RD020T20070R03	○	3	20	30	20	100	30	-	-	-	-	-	-	-	0.23	18,000	HDA style
	RD025T25070R03	○	3	25	40	25	110	40	-	-	-	-	-	-	-	0.37	18,000	
	RD030T20060R04	○	4	30	60	20	120	35	-	25	-	-	-	-	-	0.33	18,000	
	RD032T20060R04	○	4	32	60	20	120	35	-	26	-	-	-	-	-	0.36	18,000	
	RD035T20060R04	○	4	35	60	20	120	35	-	28	-	-	-	-	-	0.36	18,000	
Fixed type 2	RA040T20060R04K	○	4	40	45	20	105	-	-	-	-	-	-	-	-	0.45	18,000	HAL style HAT style HAN style HLA style
	RA040T25080R04K	○	4	40	45	25	125	-	-	-	-	-	-	-	-	0.6	18,000	
	RA050T20060R05K	○	5	50	45	20	105	-	-	-	-	-	-	-	-	0.6	18,000	
	RA050T25080R05K	○	5	50	45	25	125	-	-	-	-	-	-	-	-	0.75	18,000	
	RA050T32080R05K	○	5	50	45	32	125	-	-	-	-	-	-	-	-	0.9	18,000	
Fixed type 3	RA050C22.00R05K	○	5	50	45	22	-	-	20	-	10.4	6.3	42	18	11	0.4	18,000	
	RA063C22.00R06K	○	6	63	45	22	-	-	20	-	10.4	6.3	42	18	11	0.73	18,000	
	RA080A25.40R07K	○	7	80	43	25.4	-	-	26	-	9.5	6.0	50	38.9	15	0.95	15,000	
	RA100A31.75R09K	○	9	100	45	31.75	-	-	32	-	12.7	8.0	60	61	11	1.6	10,000	
Adjustable type 2	RA040T20060R04	○	4	40	45	20	105	-	-	-	-	-	-	-	-	0.45	18,000	
	RA040T25080R04	○	4	40	45	25	125	-	-	-	-	-	-	-	-	0.60	18,000	
	RA050T20060R05	○	5	50	45	20	105	-	-	-	-	-	-	-	-	0.60	18,000	
	RA050T25080R05	○	5	50	45	25	125	-	-	-	-	-	-	-	-	0.75	18,000	
	RA050T32080R05	○	5	50	45	32	125	-	-	-	-	-	-	-	-	0.90	18,000	
	Adjustable type 3	RA050C22.00R05	○	5	50	45	22	-	-	20	-	10.4	6.3	42	18	11	0.40	18,000
		RA063C22.00R06	○	6	63	45	22	-	-	20	-	10.4	6.3	42	18	11	0.73	18,000
		RA080A25.40R07	○	7	80	43	25.4	-	-	26	-	9.5	6.0	50	38.9	15	0.95	15,000
		RA100A31.75R09	○	9	100	45	31.75	-	-	32	-	12.7	8.0	60	61	11	1.6	10,000

Recommend Cutting Conditions

Work Material	Grade	Dry	Wet	Cutting Speed (SFM)											Feed (IPT)				Depth of Cut (inch)								
				1000	3000	5000	7000	9000	11000	13000	15000	17000	19000	.002	.004	.006	.008	.010		.012							
Aluminum Alloy (Si ≤ 13)	PD1	○	●																								
	TM1	○	●																								
Aluminum Alloy (Si ≥ 13)	PD1	○	●																								
	TM1	○	●																								

● : Stock ○ : 1-2 week delivery

● Inserts

Shape	Item number	Corner angle	w	T	Cutting edge length	A. R.	R. R.	r_ϵ	Wiper	PCD	PVD coated carbide	Cutter Type (figure)
										PD1	TM1	
	HDA4015R04	0°	6.7	3.4	4.0	+9°	+4°	0.4	Provided	●		1
	HDA4505R04	0°	6.7	3.4	Min. 5.0	+9°	+4°	0.4	Provided		○	1
	HAL3515R04	0°	10	4.0	3.5	+6°	0°	0.4	Provided	●		2 3
	HAT6021R04		10		6.0			0.4		●		
	HAT6021C05		10		6.0			C0.5		○		
	HRT6021R04 Regrindable		10.2		Min. 6.0			0.4		○		
	HAL3515C05	0°	10	4.0	3.5	+6°	0°	C0.5	Provided	○		2 3
	HRL3515R04 Regrindable				Min. 3.5			0.4		○		
	HAN9521R04N	0°	10	4.0	Min. 6.0	+6°	-3°	0.4	Provided		○	2 3
	HLA8521R04	0°	10.078	4.0	Min. 6.0	+6°	+3°	0.4	Provided		○	2 3

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

● Spare Parts

Item number	Cartridge	Axial setscrew	Cartridge setscrew	Insert clamping screw	Handle	Torx screwdriver	Hex-screwdriver	Clamping bolt
RD020T20070R03				FSI0306A	2814HS (OP)	U107T10 (OP)		
RD025T25070R03				FSI0307A				
RD030T20060R04								
RD032T20060R04								
RD035T20060R04								
RA040T20060R04/K	RA06P03NC	CS0510A	CS0510T	FSI035104A	2814HS (OP)	U107T15 (Torx) (OP)	U104-40 (Hex) (OP)	
RA040T25080R04/K								
RA050T20060R05/K								
RA050T25080R05/K								
RA050T32080R05/K								
RA050C22.00R05/K								
RA063C22.00R06/K								
RA080A25.40R07/K								
RA100A31.75R09/K								
								CS1040A (OP) (coolant through)
								MBC-M12(OP)
								MBC-M16(OP)

Insert Presetting and PCD Damage Preventative Measures for HPC

■ Be sure to clean all the insert pockets before carrying out the following steps:

● **Step1: Preventative measures against insert chipping**

Attach a piece of adhesive tape (preferably, a tape low in adhesion) to the end of a dial gauge's probe.

● **Step2: Mounting inserts**

For HPC: First, install the cartridges to the body, then, tighten each insert with the insert clamping screw at 3 N·m.

[Caution: If you mount inserts in a cartridge first, it's not possible to install the cartridges to the body.]

● **Step3: Temporary tightening (using a torque-wrench)**

Tighten set screw (1) first, at 4 N·m.

● **Step4: Setting**

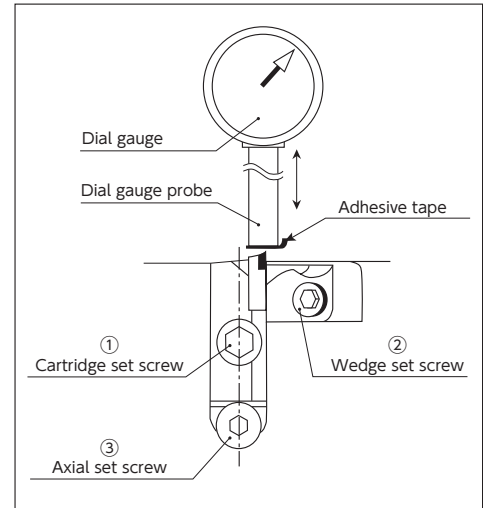
While watching the reading on the dial gauge, rotate set screw (2) so that the insert with the highest cutting edge is lifted by +0.03 mm. Next, with this position as the reference, set the cutting edges of all other inserts with variations in run out to stay within +/- 5 microns (10 microns in terms of range).

● **Step5**

Remove the probe from the dial gauge.

● **Step6: Tightening set screws (using a torque wrench)**

For HPC, tighten set screw (1) at 8 N·m.



■ **Supplemental explanation**

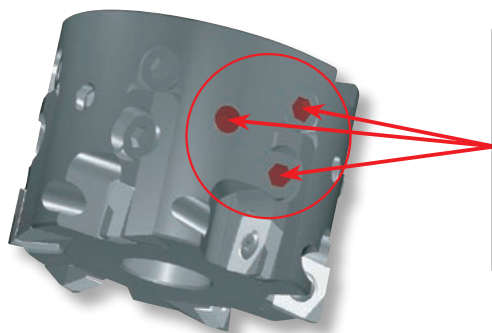
1. Even after the set screws have been tightened, the run out of the cutting edges should stay within approximately +/- 10 microns (20 microns in terms of range).
2. In the above case, NTK standard inserts (excluding some of them; see the note below for details.) and re-ground NTK inserts will not affect the tool life and surface finish.

HPC Fixed Type

No need for pre-setting

No need for cutting edge adjustments!

(The only requirement is clamping and unclamping of the inserts with the clamping bolt)



[Note]

The holes for the axial setscrews and balance adjusting screws are filled with a special material, thus, no screwdrivers and hex-wrenches can be inserted in them.

※The color of the special material is different from the color of the actual product body.

NTK CUTTING TOOLS

SWISS TOOLING 6200



App for iOS
Available on the
App Store

App for ANDROID
ANDROID APP ON
Google play

WATCH ON
YouTube



NTKCUTTINGTOOLS.com
youtube.com/NTKCUTTINGTOOLS



App for iOS

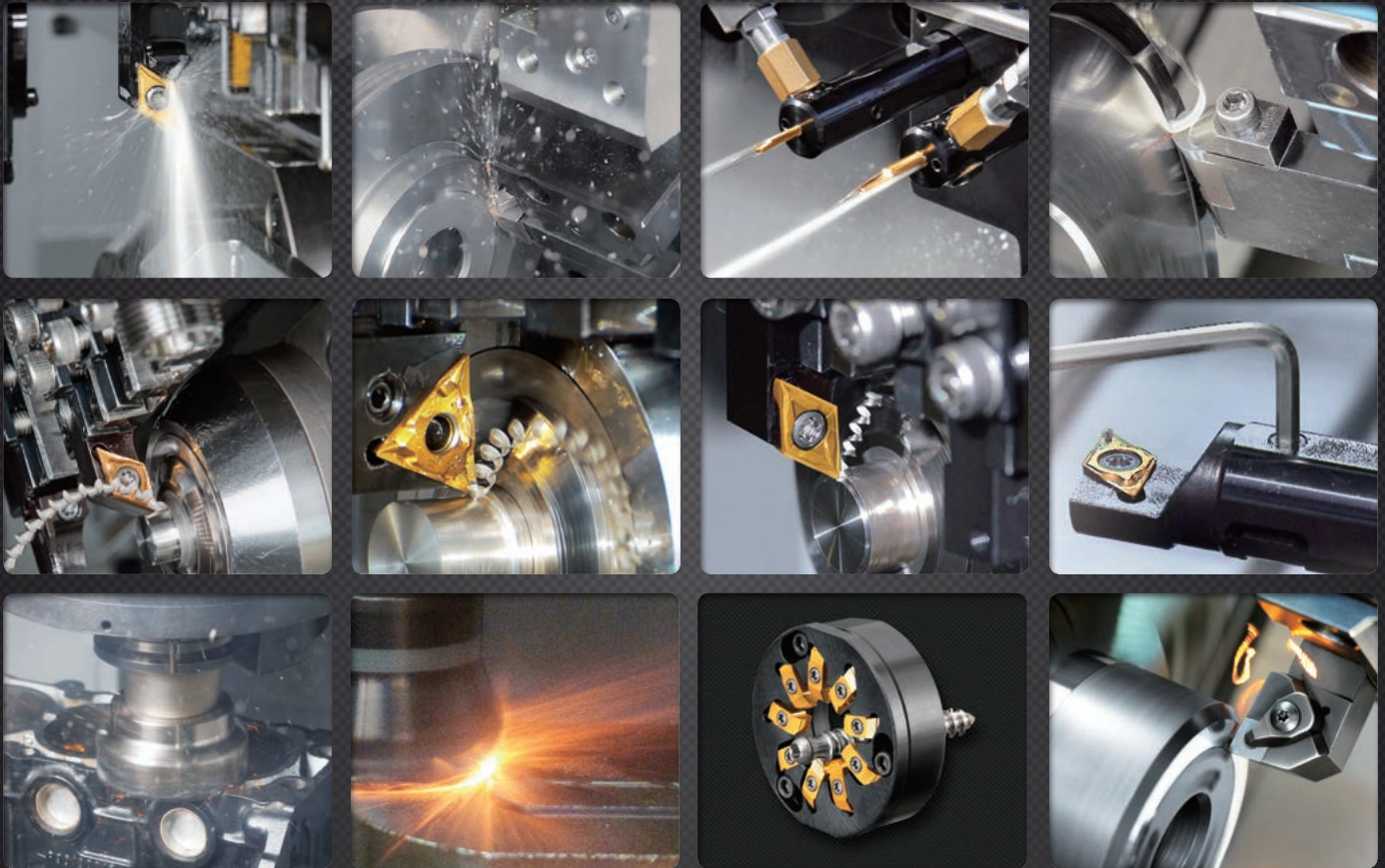
App for ANDROID



Tooling for Swiss-type Lathes

WATCH ON YouTube

www.youtube.com/ntkcuttingtools



MORE TO COME



New Product Information		N1 to N11
NEW PRODUCTS		NTK Unique Tooling O1 to O35
"SPLASH Series" Coolant through toolholders	N2	Tooling for Swiss-type Lathes P 1 to P 26
"STICK DUO SPLASH" Coolant through sleeves for ID boring with adjustable overhang mechanism ...	N4	
"TBP / TBPA-BM" 3D molded chipbreaker for Back turning	N6	Front Turning Q1 to Q38
"GTMH-GX" 3D molded chipbreaker for Grooving	N7	Back Turning R 1 to R 19
"YL Chipbreaker" New chipbreaker for Front turning	N8	
"SHAPER DUO" New concept tool for making Hexagon/Square socket	N9	Cut-off S 1 to S 17
"VBGT Tooling" YL chipbreaker and coolant through tool holders for Swiss machine ...	N10	
"Groove Duo" Grooving and side-turning tools with highly rigid design	N11	Grooving / Side-Turning T 1 to T 24
NTK Unique Tooling		Threading U1 to U21
"Thread Whirling" Can form Multi-lead thread with single pass	O2	ID Tooling V 1 to V32
"SPLASH series" Coolant through toolholders.....	O3	
Quick change coolant components	O10	Shaper W1 to W10
"Y-axis Toolholders" Chip control by gravity	O11	
"Mogul Bar" High rigidity boring bars with coolant through system	O16	Indexable End mill X1 to X5
"DS-ACH Toolholders" Adjust centerline height simply with a wrench ...	O17	
"DS Toolholders" Utilize drill sleeve posts	O18	
"DS Sleeve" Prevents coolant and chips from damaging live tool stations ...	O26	
"CSV Series" Best tool for up to .200" diameter material.....	O27	
"CTPS Series" Best fit for Radial-style tool station	O31	
"WP Series" Wiper insert with ISO style	O33	
"UL Chipbreaker" 6 corner insert for Swiss machines	O34	
"Shifted Toolholders" Designed for extended guide-bushing	O35	
"SATURN DUO" Face turning/grooving tools	O35	



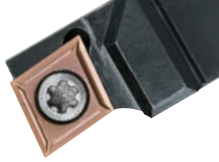

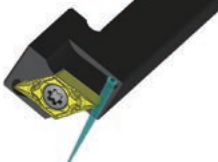
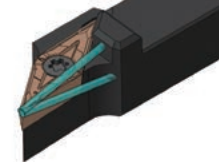
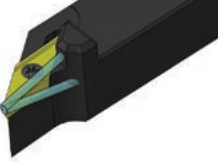
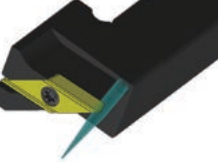
Features

- Evacuates chips away from the cutting edge
- Reduces cutting tool temperature and helps keep the edge sharp
- Y-axis toolholders are available
- Improves part tolerance by steady coolant supply to the edge

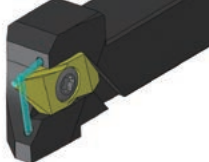
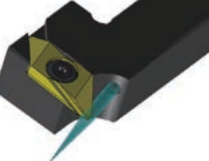
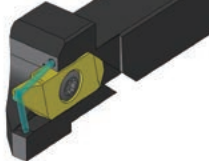
Square Shank Toolholders



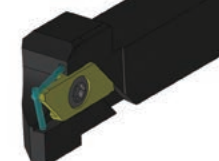
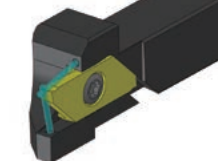
Front Turning

Insert	CC.. insert	DC.. insert	
	SCLC-OH	SDJC-OH	Y-SDJC-OH
Holder			
Insert	VB.. insert	VC.. insert	
	SVJB-OH	SDJC-OH	Y-SDJC-OH
Holder			




Back Turning

Insert	TBP insert
	TBP-OH
Holder	
Insert	TBP insert
	Y-TBP-OH
Holder	
Insert	TBPA insert
	CTPA-OH
Holder	

Cut Off

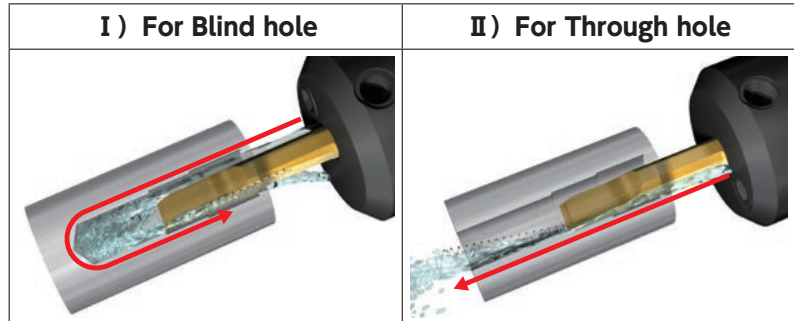
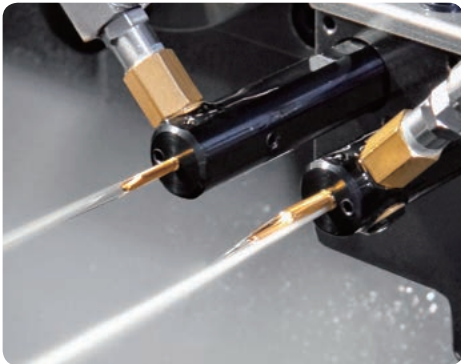
Insert	CTP insert	CTPA insert
	CTP-OH	CTPA-OH
Holder		

Grooving / Side Turning

Insert	GTM.. insert	GTPA.. insert	
	GTT-OH	Y-GTT-OH	Y-GTPA-OH
Holder			

ID Tooling Toolholders

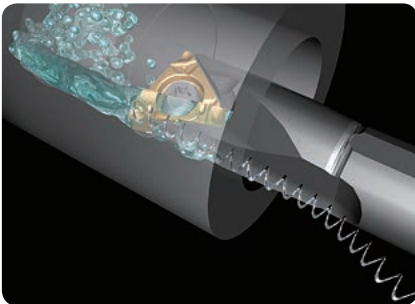
STICK DUO Series with Adjustable Overhang Mechanism



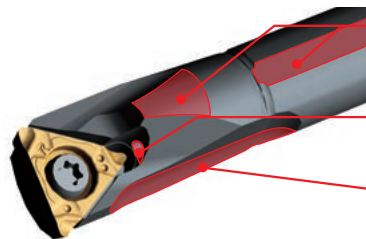
Features

- Good chip control evacuation in ID machining
- Three way coolant connection
- Can choose 2-way coolant direct
- Adjustable overhang length

Mogul Bar Series



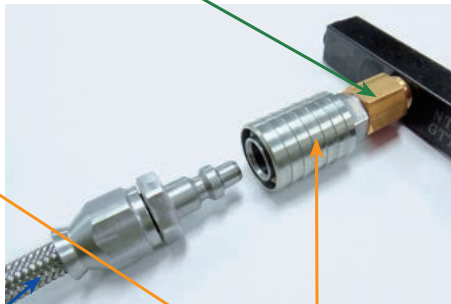
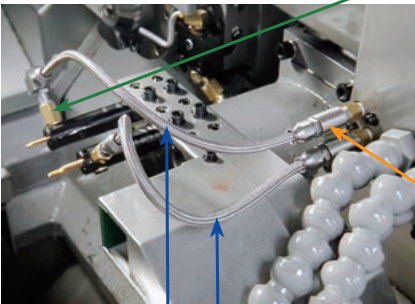
Features



- Highly rigid design reduces vibration and chatter
- Internal coolant helps chip evacuation
- Large clearance for improved chip evacuation

Quick-Change Coolant Components

③ Conversion / Extension Joint



- Up to 2900psi
- High quality flexible stainless steel braided hose
- Reduce machine down time

① Plug-in Style Flexible Hose

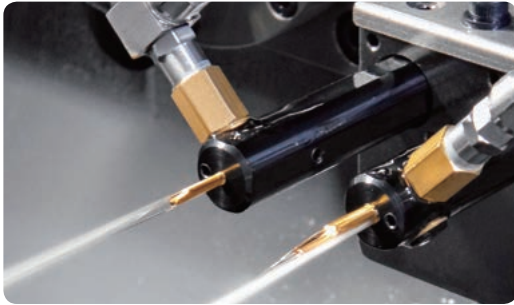
② Quick Change Coupling

NEW

STICK DUO SPLASH

New Products

- Coolant through sleeves for ID Boring with Adjustable Overhang Mechanism -



■ No chip problems

STICK DUO SPLASH	External coolant
No chip inside hole	Chip packed
Material : 4140 Insert bar : SHFS040R005S Hole depth : .590" (15mm) Pilot hole : $\phi .201" \times 1.102" L (\phi 5.1 \times 28.0 \text{mm} L)$ Coolant Pressure : 725psi(5MPa)	

■ Choose from 2 coolant directions

I) For Blind hole	II) For Through hole
Just rotated 180 degrees	

■ 3 coolant connection options

② Rear Connection (Rc1/8)

③ Sealed end for closed unit

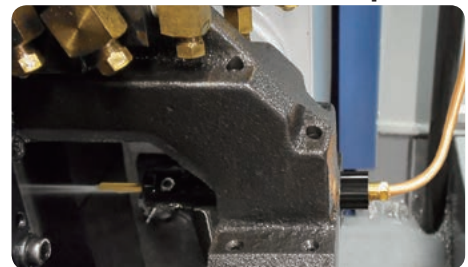
Adjustable overhang length (Hyper system)

① Front Connection (M6 x 1.0)

① Front Connection example

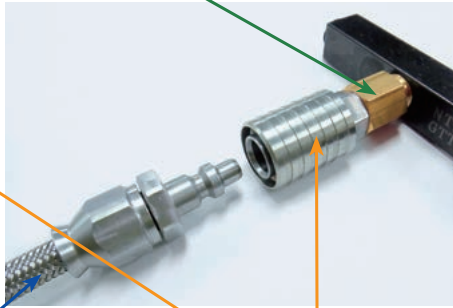
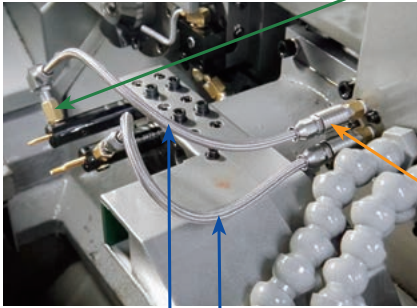


② Rear Connection example

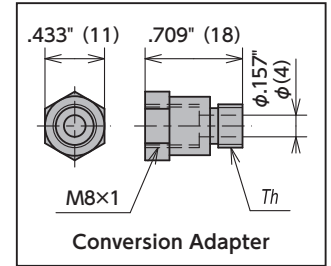


Quick-change Coolant Components

③ Conversion / Extension Joint



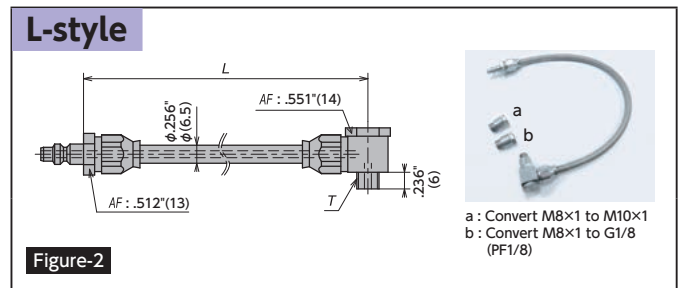
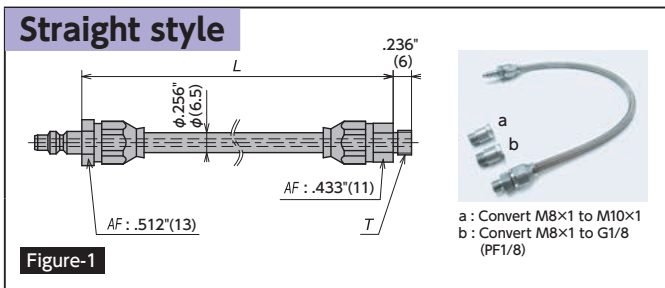
- Up to 2900psi
- High quality flexible stainless steel braided hose
- Reduce machine downtime



① Plug-in Style Flexible Hose

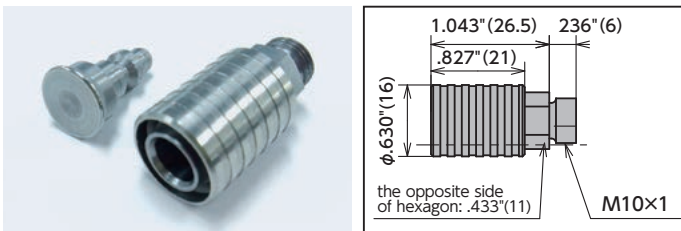
② Quick Change Coupling

① Plug-in Style Flexible Hose



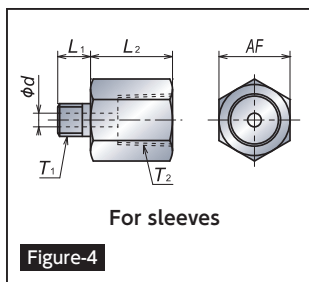
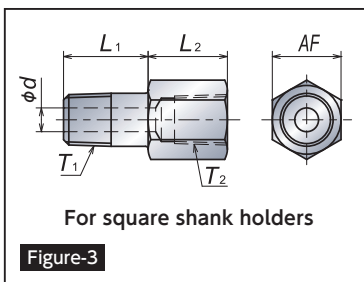
Item Number	Figure	Stock	L		T	Comes with
			(Inch)	(mm)		
HOSE-ST-1/8NPT-4IN	1	●	4.000	101.6	NPT1/8	—
HOSE-ST-1/8NPT-6IN	1	●	6.000	152.4	NPT1/8	—
HOSE-ST-1/8NPT-10IN	1	●	10.000	254.0	NPT1/8	—
HOSE-ST-M8*1	1	●	11.811	300.0	M8 × 1	Conversion Adapter a and b
HOSE-AN-M8*1	2	●	11.890	302.0	M8 × 1	Conversion Adapter a and b

② Quick Change Coupling



Item Number	Stock	Comes with
COUP-M10*1	●	Seal Plug

③ Conversion / Extension Joint



Item Number	Figure	Stock	T ₁ (mm)	T ₂ (mm)	L ₁ (mm)	L ₂ (mm)	AF (mm)	d (mm)
SCJ-M6-RC1/8-L	3	○	M6 × 1	Rc1/8 (PT1/8)	16	15	13	2.5
SCJ-NPT1/8-M10-L	3	●	NPT1/8	M10 × 1	16	12	13	4.5
SCJ-R1/8-M10-L	3	○	R1/8 (PT1/8)	M10 × 1	16	12	13	4.5
SCJ-R1/8-RC1/8-L	3	○	R1/8 (PT1/8)	Rc1/8 (PT1/8)	16	15	13	4.5
SCJ-R1/8-NPT1/8-L	3	●	R1/8 (PT1/8)	NPT1/8	16	15	13	4.5
SCJ-M6-M10	4	○	M6 × 1	M10 × 1	6	15	12	2.5
SCJ-M6-RC1/8	4	○	M6 × 1	Rc1/8 (PT1/8)	6	15	13	2.5
SCJ-M6-NPT1/8	4	●	M6 × 1	NPT1/8	6	15	13	2.5
SCJ-M8-RC1/8	4	○	M8 × 1	Rc1/8 (PT1/8)	6	15	13	3.5
SCJ-R1/8-M10	4	○	R1/8 (PT1/8)	M10 × 1	10	15	12	4.5
SCJ-R1/8-NPT1/8	4	●	R1/8 (PT1/8)	NPT1/8	10	15	13	4.5

● : Stock ○ : 1-2 week delivery 🔵 : Coolant through

3D Molded Chipbreakers

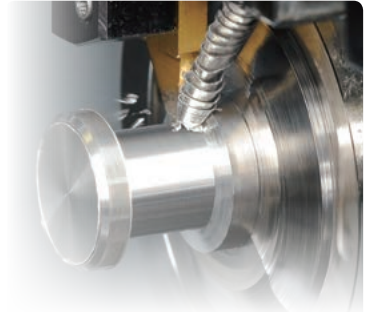
NEW

TBP / TBPA-BM for Back turnings

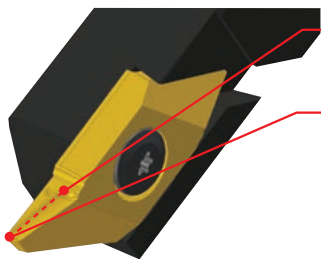


Features

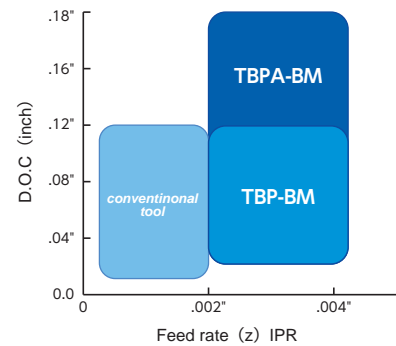
- "Single Pass Back Turning" offers excellent surface finishes
- Up-right type insert and screw clamping provides high rigidity
- Wiper flat on cutting edge offers stable surface finishes even under high feed cutting conditions



New BM chipbreaker



- Prevents the rough end face from hitting the chip
- Wiper flat on cutting edge offers excellent surface finishes



Superior Surface Finish

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

Material : 304 SS (φ.630") , 260 SFM , Feed X : .0008 IPR , Feed Z : .0031 IPR , .118"DOC , WET

Excellent Chip Control

D.O.C (inch)	BM chipbreaker		Competitor	
	Feed rate (IPR) .002"	Feed rate (IPR) .003"	Feed rate (IPR) .002"	Feed rate (IPR) .003"
.020"				
.120"				
	Good chip control		Unstable chip control	

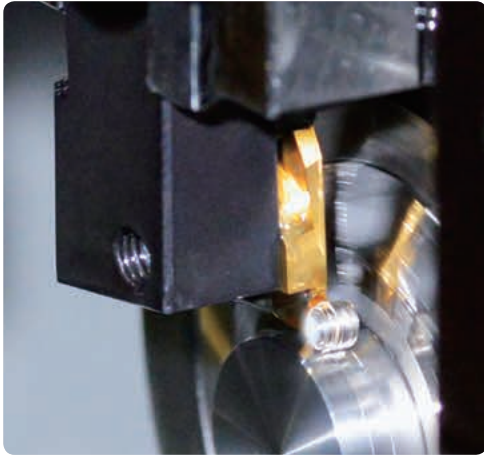
Material : 304 SS (φ.630") , 260 SFM , WET

NEW

GTMH-GX Chipbreaker for Grooving / Side Turning



New Products



Features

- Can solve either problems of chips remaining in the grooves or bird's nest of chips
- Good surface finishes on groove side faces
- UP to .078" DOC side turning capability

Typical Grooving Problems

- Chips remain at the bottom of groove
- Bird's nest of chips



Excellent Chip Control

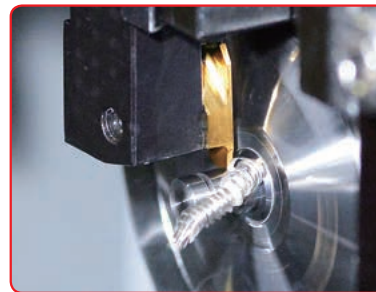
• Chipbreakers



Groove width .059"~



Groove width ~.039"



GX chipbreaker can solve these problems

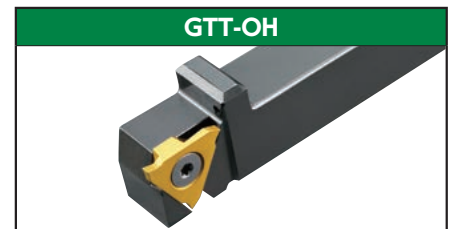
• Grooving

DOC	Feed rate (IPR)		
	.0004"	.0011"	.0020"
GX chipbreaker			
Competitor's chipbreaker			

Material : 304 SS (φ.630"), 260 SFM, .059", DOC

Best Solution for Chip Control

Now available in Coolant through toolholders



• Side Turning

DOC	Feed rate (IPR)			
	.0004"	.0011"	.0020"	.0031"
.010"				
.020"				
.030"				

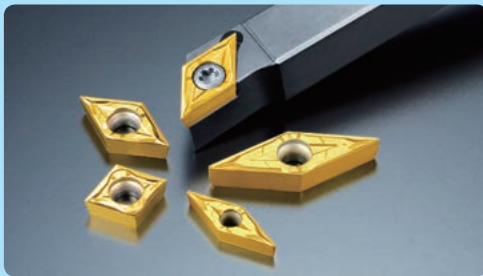
Material : 304 SS (φ.630"), 260 SFM, .030" width insert

NEW

Front Turning Chipbreaker Quartet

New Products

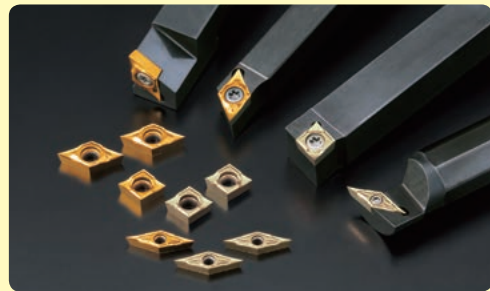
NEW YL Chipbreaker



- Great combination of sharpness and toughness
- Covers extremely wide range
- Excellent chip control

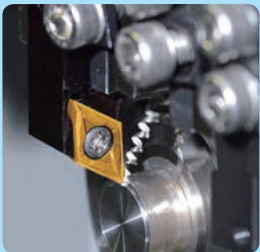
WATCH ON YouTube

CL Chipbreaker



- Sharpest molded Chipbreaker
- Excellent chip control
- Less tool pressure

WATCH ON YouTube

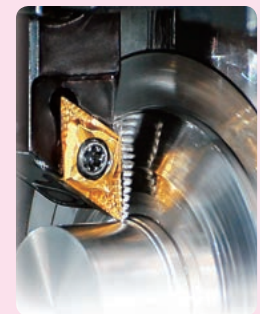


AM3 Chipbreaker



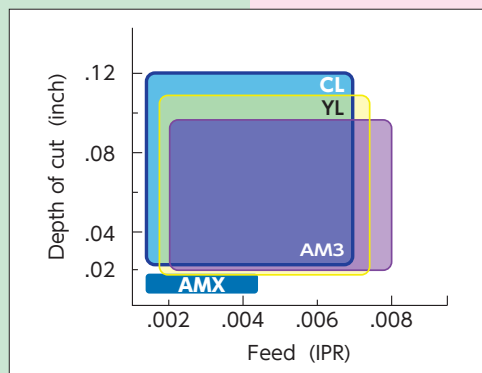
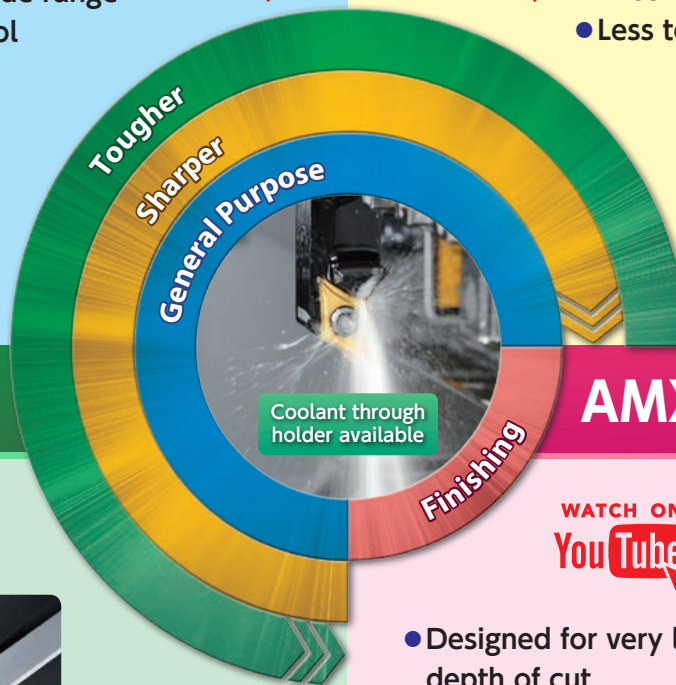
- All purpose chipbreaker
- Sharp edge with toughness

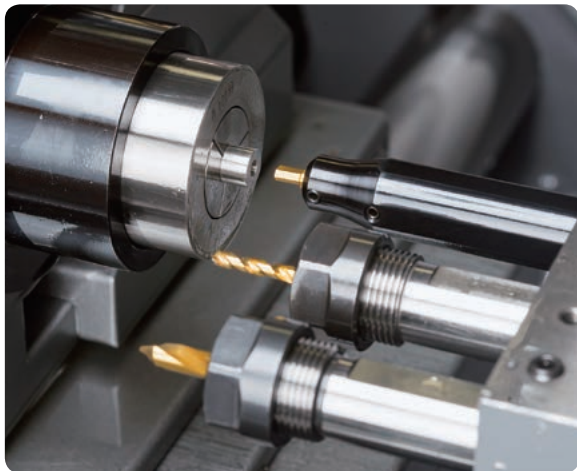
AMX Chipbreaker



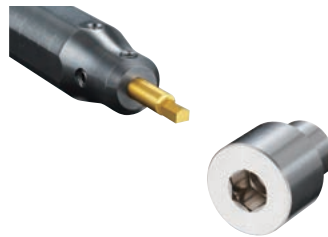
- Designed for very light depth of cut
- Exceptional sharpness

WATCH ON YouTube

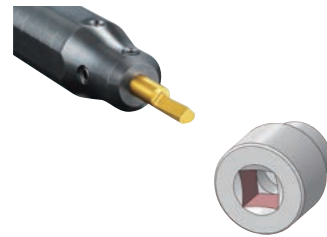




Hexagon Socket




Square Socket

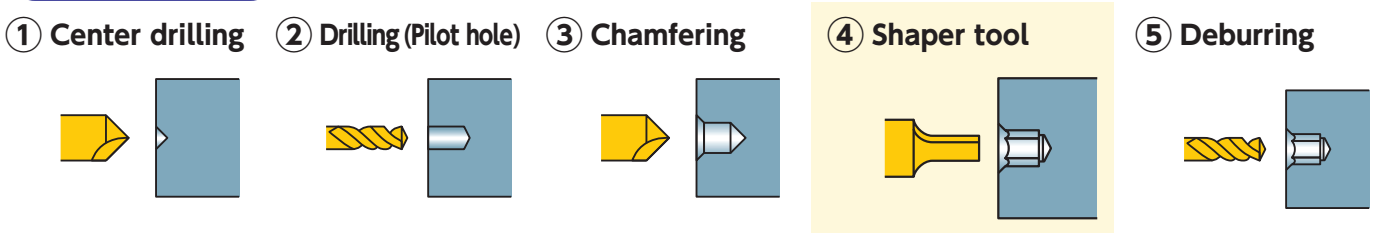


- Perfect fit for back spindle of Swiss machine
- Achieves good corner edge sharpness
- Less tool pressure than Rotary-Braching
- Easy to adjust for correct dimension
- Economical two-sided insert bar

Comparison Chart of HEX Socket Machining

	Tool Pressure	Cycle Time	Pliability	Tool Cost	
Shaper Duo 	◎	△ * Can be off-set by over-wrapping operation	○	◎	<ul style="list-style-type: none"> ● Less tool pressure-especially on small diameter parts ● One size can cover several socket sizes
Broach Tool	△	○	×	△	<ul style="list-style-type: none"> ● Need to have tools for each socket size

Process Chart



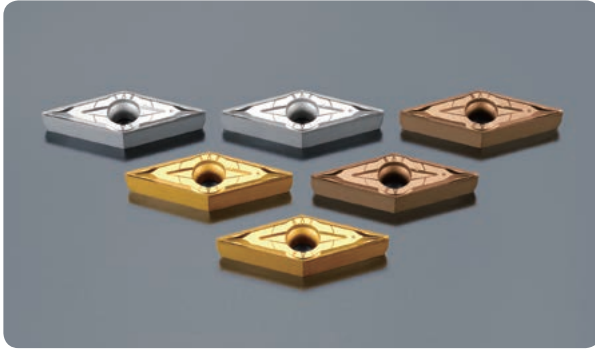
SHAPER DUO Process Chart

HEX Standard	Tool	Pilot bore Dia. (mm)	Total DOC /side (mm)	Number of passes			Estimated cycle time *		
				Total pass /side	Roughing pass 0.025mm	Finishing pass 0.010mm	ISO 2936 standard depth of Hex hole (mm)	Whole process ①-⑤	Process④ Shaper
HEX 1.5	SSP020N1130H	1.5	0.116	6	5	1	2	39 sec	14 sec
HEX 2.0	SSP020N1430H	2.0	0.155	7	6	1	2.5	44 sec	16 sec
HEX 2.5	SSP030N1940H	2.5	0.193	9	8	1	3	50 sec	20 sec
HEX 3.0	SSP030N1940H	3.0	0.232	10	9	1	3.5	55 sec	23 sec
HEX 4.0	SSP040N2450H	4.0	0.309	13	12	1	5	73 sec	33 sec
HEX 5.0	SSP050N3260H	5.0	0.387	17	16	1	6	90 sec	46 sec
HEX 6.0	SSP060N42120H	6.0	0.464	20	19	1	8	117 sec	63 sec
HEX 8.0	SSP080N62160H	8.0	0.619	26	25	1	10	155 sec	92 sec

*Pilot bore diameter is same as AF
*Using Carbide drill

*Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.010 mm (Finishing)



Features

- NTK developed the "VB" style chipbreaker with a unique combination of both sharpness and toughness
- Excellent chip control and covers a wide range of cutting conditions
- "G" tolerance inserts provide great surface finishes and stable part tolerances

Wide Chip Control Range

304SS (ϕ .630") 260SFM		Feed (IPR)		
		.002"	.003"	.005"
Depth of cut (inch)	.118"			
	.079"			
	.039"			
	.020"			

Coolant Through Toolholders Available



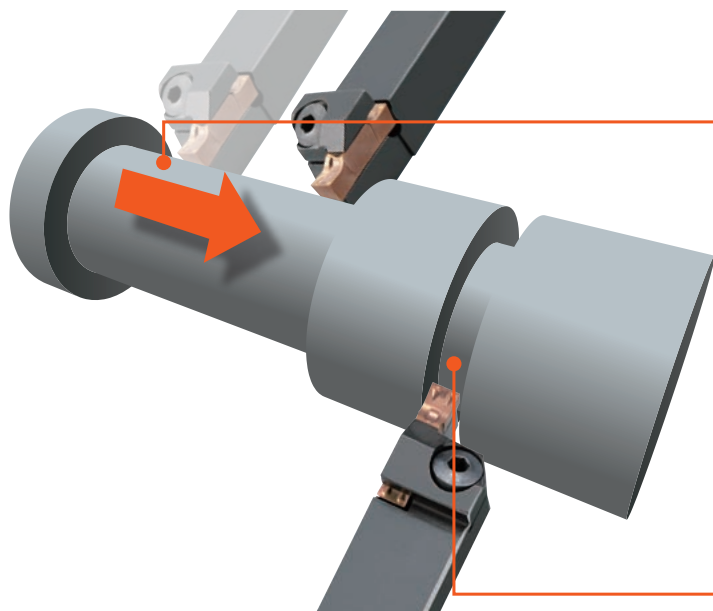
- Evacuates chips away from the cutting edge
- Reduces cutting tool temperature and keeps edge sharp even large depth of cut conditions
- Improves part tolerance by steady coolant supply to the edge

* Left-hand holders (SVJBL) are designed for Right-hand machines



Features

- Grooving and side turning tools with highly rigid design
- 3D design chipbreakers result in less tool pressure and excellent chip control



Side-turning

	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : 4135, 5005FM, .004IPR, .040DOC

Grooving

	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

Material : 4135, 5005FM, .004IPR, .275DOC

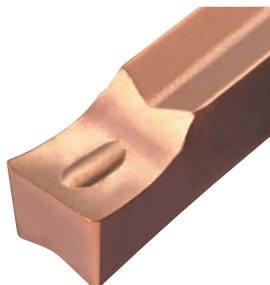
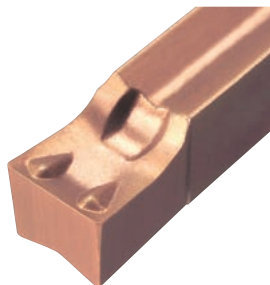
Chipbreaker

For Grooving / Side-turning

Less tool pressure

GW

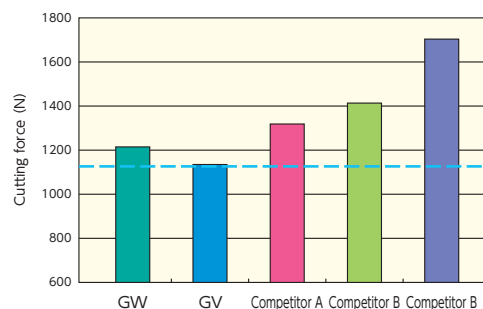
GV



- Excellent chip control
- Good sharpness
- Side turning capability

- Superior sharp edge

Tool pressure comparison when grooving





Multi-lead thread machining capability

Thread Whirling

→O2 [WATCH ON YouTube](#)



Coolant through toolholders

Splash Series / Quick-Charge Coolant Components

→O3 [WATCH ON YouTube](#) **NEW**



Chip controlled by gravity

Y-axis Toolholders

→O11 [WATCH ON YouTube](#)



High rigidity boring bars

Mogul Bar

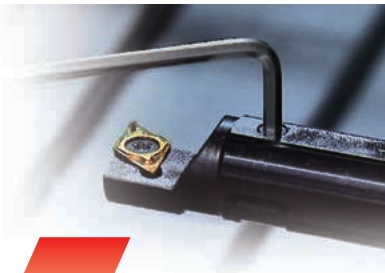
→O16 [WATCH ON YouTube](#)



Interchangeable tools

CSV / CTPS Series

→O27 · O31



Tools for sub-spindle machining

DS-ACH / DS Toolholders / DS Sleeves

→O17 · O26 [WATCH ON YouTube](#)



Wiper inserts with ISO style

WP Series

→O33 [WATCH ON YouTube](#)



6 corner insert for Swiss machines

UL Chipbreaker

→O34 [WATCH ON YouTube](#)



Toolholders for extended guide-bushing

Shifted Toolholders

→O35 [WATCH ON YouTube](#)



Face turning / grooving tools

Saturn DUO

→O35 [WATCH ON YouTube](#)

Thread Whirling

Features

WATCH ON
YouTube



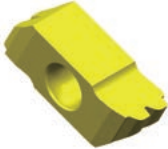
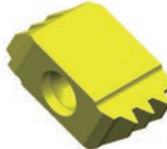


- NTK's unique patented design technology makes precise and correct inserts possible the first time, *without any redesign or remanufacture even if it is a multiple-lead thread*
- The sharper cutting edges produce a better surface finish and longer tool life than competitor's inserts

NTK Unique Tooling

Form Double-lead or Multiple-lead with Single Pass

Patented

	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm gear
Work material	Ti-6Al-4V ELI	brass
Work appearance		
Insert appearance		
Major Dia.	φ .157" (4.0mm)	φ .278" (7.0mm)
Minor Dia.	φ .094" (2.4mm)	φ .185" (4.7mm)
Lead [Pitch×No. of Lead]	.135" (3.42mm) [.067"×2(1.71mm×2)]	.193" (4.9mm) [.064"×3(1.63mm×3)]

- Can reduce cycle time by more than half
- NTK can achieve what other competitors cannot

Double-lead Bone Screw Process Example

- 1 1st thread whirl at taper part
- 2 Rotate the bar 180° and whirl the 2nd thread on same part as 1
- 3 Thread whirl whole straight part
- 4 Thread whirl at very last part to get two-exits, after back of bar has been backed up a half lead (one pitch) and rotated 180°

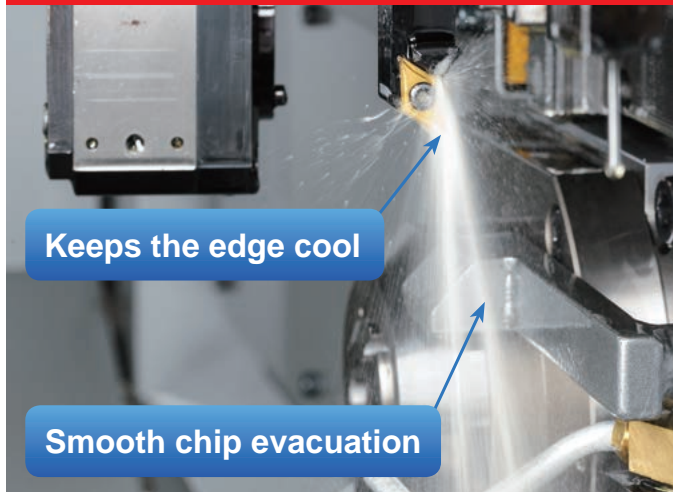
Information →U16

SPLASH Series

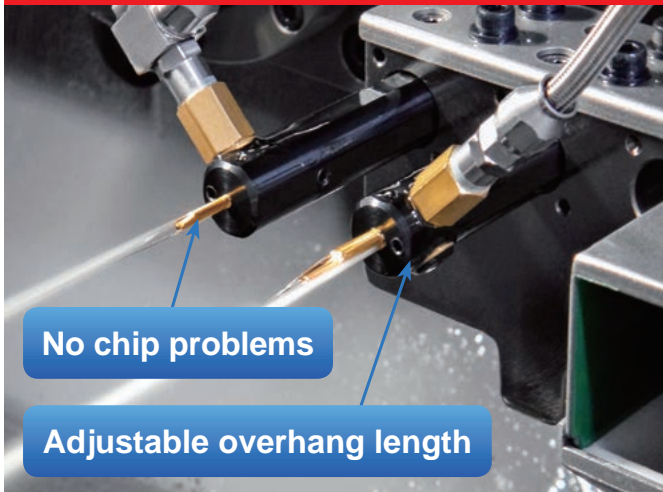
Coolant through toolholders

WATCH ON
YouTube

Coolant through toolholders



STICK DUO SPLASH



→V8

Full line-up

Front turning

<p>SCLC-OH</p> <p>NEW</p>	<p>SDJC-OH</p> <p>NEW</p>	<p>SVJB-OH</p> <p>NEW</p>	<p>SVJC-OH</p> <p>NEW</p>	<p>Y-SDJC-OH</p> <p>NEW</p>	<p>Y-SVJC-OH</p> <p>NEW</p>
----------------------------------	----------------------------------	----------------------------------	----------------------------------	------------------------------------	------------------------------------

Back turning / Grooving / Side turning

<p>TBP-OH</p> <p>NEW</p>	<p>CTPA-OH</p> <p>NEW</p>	<p>GTT-OH</p> <p>NEW</p>	<p>Y-TBP-OH</p> <p>NEW</p>	<p>Y-GTT-OH</p> <p>NEW</p>	<p>Y-GTPA-OH</p> <p>NEW</p>
---------------------------------	----------------------------------	---------------------------------	-----------------------------------	-----------------------------------	------------------------------------

Cut-off

<p>CTP-OH</p> <p>NEW</p>	<p>CTPA-OH</p> <p>NEW</p>
---------------------------------	----------------------------------

Perfect solution for chip control
- Y-axis holder with coolant through -

Front Turning Toolholders I

SCLC-N-OH (Coolant through)

NEW

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder : M6, Rc1/8 (PT1/8)

Figure-1 Right-Hand style shown

DS-SCL (Coolant through)

Figure-2 Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		L ₃		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
CC..21.5..	SCLC%1082H-F079-OH	1	●		1/2	.551	14	1/2	3.937	100	.079	2	2.953	75	.472	12	NPT1/8	LRIS-2.5 × 7	CLR-155		
	SCLC%1083H-F079-OH	1	●		1/2	.551	14	1/2	3.937	100	.079	2	2.953	75	.472	12	NPT1/8	LRIS-4 × 10	LLR-255		
	SCLC%1103H-F079-OH	1	■		5/8	5/8	5/8	5/8	3.937	100	.079	2	2.953	75	.472	12	NPT1/8	LRIS-4 × 10	LLR-255		
	SCLC%1103HL-F079-OH	1	●		5/8	5/8	5/8	5/8	3.937	100	.079	2	2.953	75	.697	17.7	NPT1/8	LRIS-4 × 10	LLR-255		
CC..32.5..	SCLC%11014F09N-F020H	1	○		.394	10	.551	14	.394	10	3.150	80	.079	2.0	2.165	55	M6 × 1	LRIS-4 × 10	LLR-255		
	SCLC%11214H09N-F020H	1	○		.472	12	.551	14	.472	12	3.937	100	.079	2.0	2.953	75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255		
	SCLC%11616H09N-F020H	1	○		.630	16	.630	16	.630	16	3.937	100	.079	2.0	2.953	75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255		

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CC..32.5..	DS-SCLL19-09-004	2	●		3/4	19.050	.709	18	.709	18	4.724	120	.413	10.5	LRIS-4 × 8	LLR-255-20 × 65
	DS-SCLL22-09-005	2	●		.866	22.000	.827	21	.827	21	4.724	120	.472	12.0	LRIS-4 × 8	LLR-255-20 × 65

Inserts → Q12

SDJC-N-OH (Coolant through)

NEW

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder : M6, Rc1/8 (PT1/8)

Figure-3 Right-Hand style shown

Y-SDJC-OH (Coolant through)

NEW

Th (Thread type)
 3/8" holder : M6 × 1
 1/2" 5/8" holder : NPT1/8
 Metric size holder : M6, Rc1/8 (PT1/8)

Figure-4 Right-Hand style shown
Takes Right-hand or Neutral insert

DS-SDX (Coolant through)

Figure-5 Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		L ₃		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)					
			N																		
DC..21.5../DC..21.5..WP	SDJC%1082H-F079-OH	3	●		1/2	.551	14	1/2	3.937	100	.079	2	2.953	75	.630	16	NPT1/8	LRIS-2.5 × 7	CLR-155		
	SDJC%1083H-F079-OH	3	●		1/2	.551	14	1/2	3.937	100	.079	2	2.953	75	.630	16	NPT1/8	LRIS-4 × 10	LLR-255		
	SDJC%1103H-F079-OH	3	■		5/8	5/8	5/8	5/8	3.937	100	.079	2	2.953	75	.630	16	NPT1/8	LRIS-4 × 10	LLR-255		
DC..32.5..	SDJC%1103HL-F079-OH	3	●		5/8	5/8	5/8	5/8	3.937	100	.079	2	2.953	75	.724	18.4	NPT1/8	LRIS-4 × 10	LLR-255		
DC..32.5..WP	SDJC%11014F11N-F020H	3	○		.392	10	.551	14	.394	10	3.150	80	.079	2	2.165	55	M6 × 1	LRIS-4 × 10	LLR-255		
	SDJC%11214H11N-F020H	3	●		.472	12	.551	14	.472	12	3.937	100	.079	2	2.953	75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255		
	SDJC%11616H11N-F020H	3	○		.630	16	.630	16	.630	16	3.937	100	.079	2	2.953	75	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255		
DC..21.5..	Y-SDJCR062H-IN-OH	4	●		3/8	3/8	3/8	3/8	3.937	100	0	0	.984	25			M6 × 1	LRIS-2.5 × 7	CLR-155		
DC..21.5..WP	Y-SDJCR082H-IN-OH	4	●		1/2	1/2	1/2	1/2	3.937	100	0	0	.984	25			NPT1/8	LRIS-2.5 × 7	CLR-155		
	Y-SDJCR083H-IN-OH	4	●		1/2	1/2	1/2	1/2	3.937	100	0	0	.984	25			NPT1/8	LRIS-4 × 10	LLR-255-20 × 65		
DC..32.5..	Y-SDJCR103H-IN-OH	4	●		5/8	5/8	5/8	5/8	3.937	100	0	0	.984	25			NPT1/8	LRIS-4 × 10	LLR-255-20 × 65		
DC..32.5..WP	Y-SDJCR1212H115-OH	4	●		.472	12.0	.472	12.0	3.937	100	0	0	.787	20			Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255-20 × 65		
	Y-SDJCR1616H11-OH	4	○		.630	16.0	.630	16.0	3.937	100	0	0	.984	25			Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255-20 × 65		

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
DC..32.5..	DS-SDX%122-11-006	5	●		.866	22.000	.827	21.0	.827	21.0	4.724	120	.472	12.0	LRIS-4 × 10	LLR-255-20 × 65

● : Stock ○ : 1-2 week delivery ■ : While stock lasts 🔵 : Coolant through

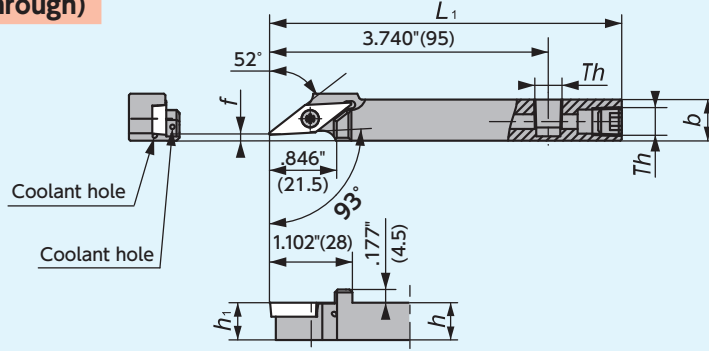
Inserts → Q20

Cutting condition → Q4

Front Turning Toolholders II

SVJB-OH (Coolant through)

NEW



Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

Figure-1 • Left-Hand coolant through holders are designed for Right-Hand machines.

VBGT33

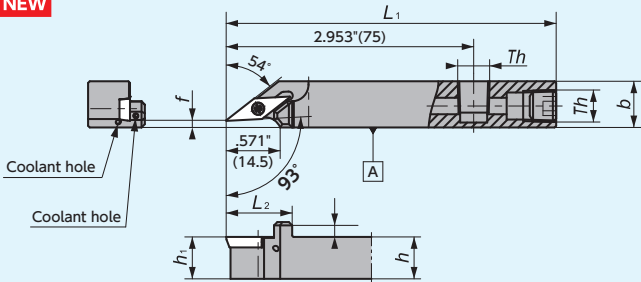
Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	g (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L									
	SVJB%L083C-F079-OH	1	●	●	1/2	.551 14	1/2	4.724 120	.079 2	.079 2	NPT1/8	LRIS-4 × 10	LLR-25S
	SVJB%L103C-F079-OH	1	●	●	5/8	5/8	5/8	4.724 120	.079 2	0 0	NPT1/8	LRIS-4 × 10	LLR-25S
	SVJB%L1214-X16N-F02OH	1	●	●	.472 12	.551 14	.472 12	4.724 120	.079 2	.079 2	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SVJB%L1616-X16N-F02OH	1	●	●	.630 16	.630 16	.630 16	4.724 120	.079 2	0 0	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S

• Left-Hand coolant through holders are designed for Right-Hand machines.

Inserts → **Q24**

SVJC-OH (Coolant through)

NEW

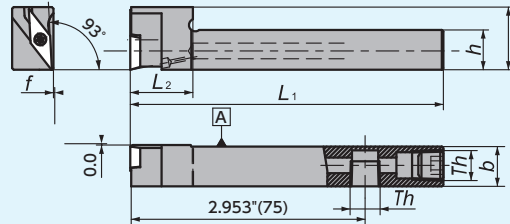


Th (Thread type)
 Inch size holder: NPT1/8

Figure-2 Right-Hand style shown

Y-SVJCR-OH (Coolant through)

NEW



Th (Thread type)
 Inch size holder: NPT1/8

Figure-3

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L									
			N										
	SVJC%L082H-F079-OH	2	●		1/2	.551 14	1/2	3.937 100	.079 2.0	.787 20	NPT1/8	LRIS-2.5 × 7	CLR-15S
	SVJC%L102H-F079-OH	2	●		5/8	5/8	5/8	3.937 100	.079 2.0	.787 20	NPT1/8	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR082HS-IN-OH	3	●		1/2	1/2		3.937 100	0.0 0.0	.787 20	NPT1/8	LRIS-2.5 × 7	CLR-15S
	Y-SVJCR102H-IN-OH	3	●		5/8	5/8		3.937 100	0.0 0.0	.984 25	NPT1/8	LRIS-2.5 × 7	CLR-15S

Inserts → **Q29**

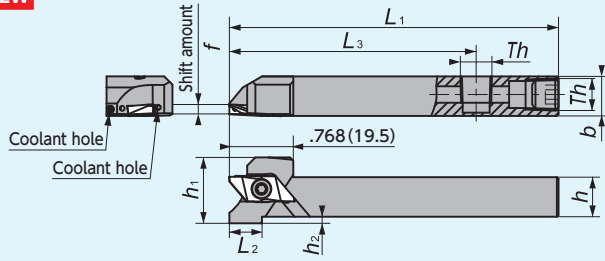
Cutting condition → **Q4**

Back Turning Toolholders

TBP-OH (Coolant through)

Screw accessible from both sides

NEW



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

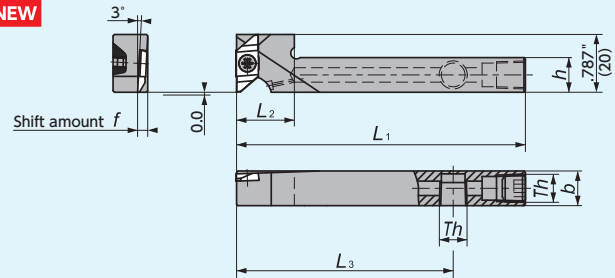
Figure-1

Right-Hand style shown

Y-TBP-OH (Coolant through)

Screw accessible from both sides

NEW



Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder : M6, Rc1/8 (PT1/8)

Figure-2

Right-Hand style shown
 Takes Right-hand Insert

TBP

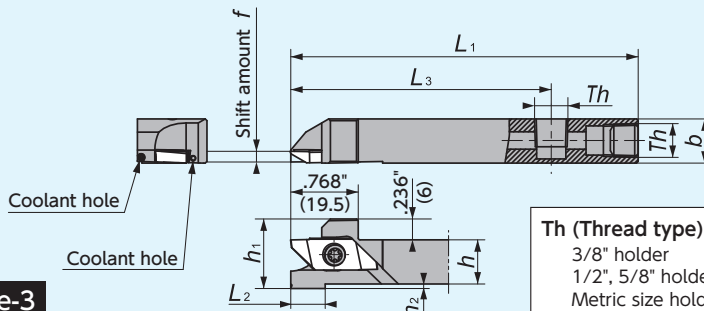
Gage Insert	Item Number	Figure	Stock		h		h ₁		L ₁		f		L ₂		h ₂		L ₃		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
	TBP%06-IN-OH	1	●	●	3/8	.472 12	3/8	3/8	3.937 100	.138 3.5	.748 19	.176 4.475	2.953 75	2.953 75	M6 × 1	LRIS-4 × 10PW	CLR-15S				
	TBP%08-IN-OH	1	●	●	1/2	1/2	1/2	3.937 100	.138 3.5	.394 10	.051 1.3	2.953 75	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-15S					
	TBP%10-IN-OH	1	●	●	5/8	5/8	5/8	3.937 100	.138 3.5	0 0	0 0	2.953 75	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-15S					
	TBP%1012H-OH	1	○	○	.394 10	.472 12	.394 10	3.937 100	.138 3.5	.748 19	.176 4.475	2.953 75	2.953 75	M6 × 1	LRIS-4 × 10PW	CLR-15S					
	TBP%12H-OH	1	●	●	.472 12	.472 12	.472 12	3.937 100	.138 3.5	.394 10	.051 1.3	2.953 75	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S					
	TBP%16H-OH	1	○	○	.630 16	.630 16	.630 16	3.937 100	.138 3.5	0 0	0 0	2.953 75	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S					
	Y-TBP%08H-IN-OH	2	●	●	1/2	1/2	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-15S				
	Y-TBP%12HS-OH	2	●	●	.472 12	.472 12	—	3.937 100	.138 3.5	.787 20	—	—	2.953 75	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S				
	Y-TBP%16H-OH	2	○	○	.630 16	.630 16	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	2.953 75	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S				

Inserts →R9

CTPA-OH / TBPA-OH

Screw accessible from both sides

NEW



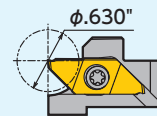
Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Figure-3

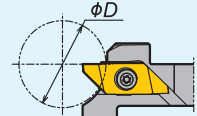
Right-Hand style shown

Max Bar Dia at Max DOC

CTPA-OH



TBPA-OH



CTPA (Compatible with TBPA & CTPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. φD		h		h ₁		b		L ₁		h ₂		L ₂		L ₃		Th	f	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)				
	CTPA%06H-IN-OH	3	●	●	.630 16	.630 16	3/8	3/8	3/8	3.937 100	.176 4.475	.787 20	2.165 55	2.165 55	M6 × 1	.134 3.4	LRIS-4 × 10PW	CLR-15S						
	CTPA%08H-IN-OH	3	●	●	.630 16	.630 16	1/2	1/2	1/2	3.937 100	.051 1.3	.394 10	2.953 75	2.953 75	NPT1/8	.134 3.4	LRIS-4 × 12PW	CLR-15S						
	CTPA%10H-IN-OH	3	●	●	.630 16	.630 16	5/8	5/8	5/8	3.937 100	0 0	0 0	2.953 75	2.953 75	NPT1/8	.134 3.4	LRIS-4 × 12PW	CLR-15S						
	CTPA%12H-OH	2	●	●	.630 16	.630 16	.472 12	.472 12	.472 12	3.937 100	.079 2	.768 19.5	.394 10	.394 10	Rc1/8(PT1/8)	.134 3.4	LRIS-4 × 12PW	CLR-15S						
	CTPA%16H-OH	2	○	○	.630 16	.630 16	.630 16	.630 16	.630 16	3.937 100	0 0	.768 19.5	0 0	0 0	Rc1/8(PT1/8)	.134 3.4	LRIS-4 × 12PW	CLR-15S						

TBPA (Optimized for TBPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. φD		h		h ₁		b		L ₁		h ₂		L ₂		L ₃		Th	f	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)						
	TBPA%12H-OH*	2	○	○	.984 25	.984 25	.472 12	.472 12	.472 12	3.937 100	.157 4	.768 19.5	.394 10	.394 10	Rc1/8(PT1/8)	.134 3.4	LRIS-4X12PW	CLR-15S						
	TBPA%16H-OH*	2	○	○	1.378 35	1.378 35	.630 16	.630 16	.630 16	3.937 100	.079 2	.768 19.5	.394 10	.394 10	Rc1/8(PT1/8)	.134 3.4	LRIS-4X12PW	CLR-15S						
	TBPA%20H-OH*	2	○	○	1.969 50	1.969 50	.787 20	.787 20	.787 20	3.937 100	0 0	.768 19.5	0 0	0 0	Rc1/8(PT1/8)	.134 3.4	LRIS-4X12PW	CLR-15S						

* To be released in June 2015.

● : Stock ○ : 1-2 week delivery 💧 : Coolant through

Inserts →R11

Cutting condition →R3

Back Turning / Grooving / Side Turning Toolholders

NTK Unique Tooling

GTT-OH (Coolant through)

Screw accessible from both sides

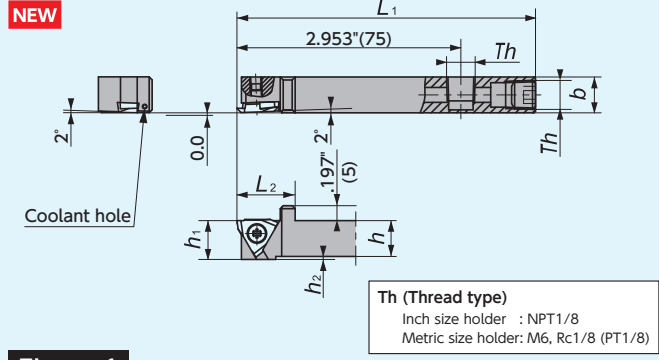


Figure-1

Right-Hand style shown

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Y-GTT-OH (Coolant through)

Screw accessible from both sides

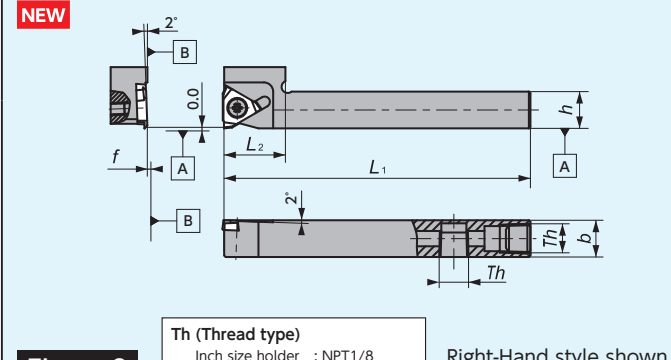


Figure-2

Right-Hand style shown
Takes Right-hand Insert

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

GTT

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	a _r (Inch) (mm)	h ₂ (Inch) (mm)	Th	Clamp Screw	Wrench	
			R	L												
TBMH32.. GTM.32.. TMG32	GTT%{08HA-IN-OH	1	●		1/2	1/2	1/2	3.937 100	.000 0	.768 19.5	.071 1.8	.039 1	NPT1/8	LR-S-4x10PW	CLR-15S	
	GTT%{08HB-IN-OH	1	●		1/2	1/2	1/2	3.937 100	.000 0	.768 19.5	.106 2.7	.039 1	NPT1/8	LR-S-4x10PW	CLR-15S	
	GTT%{10HA-IN-OH	1	●		5/8	5/8	5/8	3.937 100	.000 0	.768 19.5	.071 1.8	.000 0	NPT1/8	LR-S-4x10PW	CLR-15S	
	GTT%{10HB-IN-OH	1	●		5/8	5/8	5/8	3.937 100	.000 0	.768 19.5	.106 2.7	.000 0	NPT1/8	LR-S-4x10PW	CLR-15S	
	GTT%{1012H00-OH	1	○		.394 10	.472 12	.394 10	3.937 100	.000 0	.768 19.5	.071 1.8	.039 1	M6 x 1	LR-S-4x10PW	CLR-15S	
	GTT%{12H00-OH	1	●		.472 12	.472 12	.472 12	3.937 100	.000 0	.768 19.5	.071 1.8	.039 1	Rc1/8 (PT1/8)	LR-S-4x10PW	CLR-15S	
	GTT%{16H00-OH	1	○		.630 16	.630 16	.630 16	3.937 100	.000 0	.768 19.5	.071 1.8	0 0	Rc1/8 (PT1/8)	LR-S-4x10PW	CLR-15S	
	Y-GTT%{08H-IN-OH	2	●		1/2	1/2	—	3.937 100	.000 0	.984 25.0	.063 1.6	—	—	NPT1/8	LR-S-4x10PW	CLR-15S
	Y-GTT%{12H00S-OH	2	●		.472 12	.472 12	—	3.937 100	.000 0	.787 20.0	.063 1.6	—	—	Rc1/8 (PT1/8)	LR-S-4x10PW	CLR-15S
Y-GTT%{16H00-OH	2	○		.630 16	.472 16	—	3.937 100	.000 0	.984 25.0	.063 1.6	—	—	Rc1/8 (PT1/8)	LR-S-4x10PW	CLR-15S	

Inserts TBMH **➔R19**

Inserts GTM. **➔T12**

Y-GTPA-OH (Coolant through)

Screw Accessible from both sides

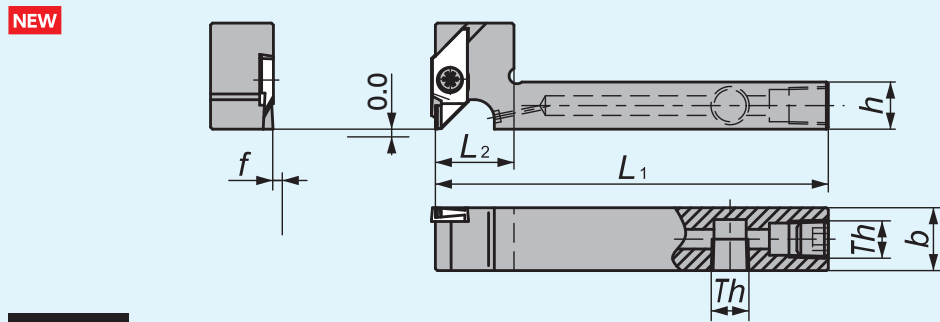


Figure-3

Right-Hand style shown

Th (Thread type)
Metric size holder: Rc1/8 (PT1/8)

GTPA

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L									
GTPA	Y-GTPA%{1216HS-OH	3	○		.472 12	.630 16	—	2.756 70	.004 0.1	.787 20	Rc1/8(PT1/8)	LRIS-4 x 12PW	CLR-15S
	Y-GTPA%{1216H-OH	3	○		.630 16	.630 16	—	2.756 70	.004 0.1	.984 25	Rc1/8(PT1/8)	LRIS-4 x 12PW	CLR-15S

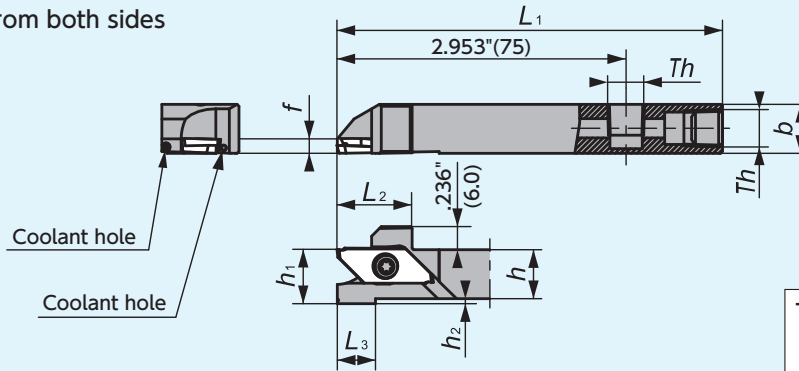
Inserts **➔T24**

Cut-off Toolholders

CTP-OH (Coolant through)

Screw Accessible from both sides

NEW



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Figure-1

● Left-Hand holders are designed for Right-Hand machines

Right-Hand style shown

CTP

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h		h_1		b		L_1		h_2		L_2		L_3		Th	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
	CTP% ϕ 06H-IN-OH	1	●	●	.472	12	3/8	.472	12	3/8	3.937	100	.176	4.475	.768	19.5	.748	19	M6 × 1	0.0	0.0	LR15-4×10PW	CLR-15S		
	CTP% ϕ 08H-IN-OH	1	●	●	.472	12	1/2	1/2	1/2	3.937	100	.051	1.3	.768	19.5	.394	10	NPT1/8	0.0	0.0	LR15-4×12PW	CLR-15S			
	CTP% ϕ 1012H-OH	1	○	○	.472	12	.394	10	.472	12	.394	10	3.937	100	.176	4.475	.768	19.5	.748	19	M6 × 1	0.0	0.0	LR15-4×12PW	CLR-15S
	CTP% ϕ 12H-OH	1	●	●	.472	12	.472	12	.472	12	.472	12	3.937	100	.051	1.3	.768	19.5	.394	10	Rc1/8(PT1/8)	0.0	0.0	LR15-4×12PW	CLR-15S
	CTP% ϕ 16H-OH	1	○	○	.472	12	.630	16	.630	16	.630	16	3.937	100	0	0	.768	19.5	—	—	Rc1/8(PT1/8)	0.0	0.0	LR15-4×12PW	CLR-15S

● Left-Hand coolant through holders are designed for Right-Hand machines.

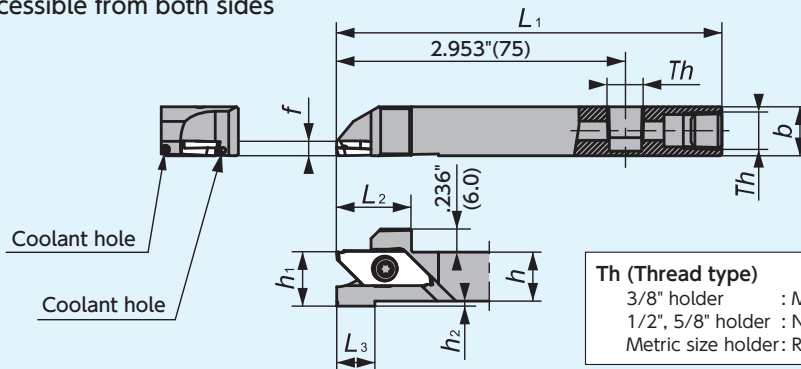
* Would be changed by insert

Inserts → S10·S12

CTPA-OH / TBPA-OH

Screw Accessible from both sides

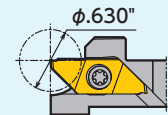
NEW



Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Max Bar Dia at Max DOC

CTPA-OH



TBPA-OH

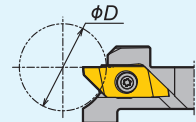


Figure-2

● Left-Hand holders are designed for Right-Hand machines

Right-Hand style shown

CTPA (Compatible with TBPA & CTPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD^*		h		h_1		b		L_1		h_2		L_2		L_3		Th	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)					
	CTPA% ϕ 06H-IN-OH	2	●	●	.630	16	3/8	.472	12	3/8	3.937	100	.176	4.475	.768	19.5	.787	20	M6 × 1	0.0	0.0	LR15-4×10PW	CLR-15S		
	CTPA% ϕ 08H-IN-OH	2	●	●	.630	16	1/2	1/2	1/2	3.937	100	.051	1.3	.768	19.5	.394	10	NPT1/8	0.0	0.0	LR15-4×12PW	CLR-15S			
	CTPA% ϕ 10H-IN-OH	2	●	●	.630	16	5/8	5/8	5/8	3.937	100	0	0	.768	19.5	—	—	NPT1/8	0.0	0.0	LR15-4×12PW	CLR-15S			
	CTPA% ϕ 12H-OH	2	●	●	.630	16	.472	12	.472	12	.472	12	3.937	100	.079	2	.768	19.5	.394	10	Rc1/8(PT1/8)	0.0	0.0	LR15-4×12PW	CLR-15S
	CTPA% ϕ 16H-OH	2	○	○	.630	16	.630	16	.630	16	.630	16	3.937	100	0	0	.768	19.5	0	0	Rc1/8(PT1/8)	0.0	0.0	LR15-4×12PW	CLR-15S

● Left-Hand coolant through holders are designed for Right-Hand machines.

* Would be changed by insert

● : Stock ○ : 1-2 week delivery 💧 : Coolant through

Inserts → S10·S12

Cutting condition → S5

ID Tooling - STICK DUO SPLASH -

HY-NBH-OH (Coolant through)

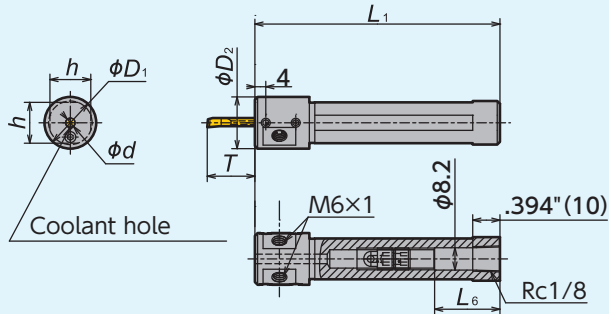


Figure-1

HY-NBH-OH (Coolant through)

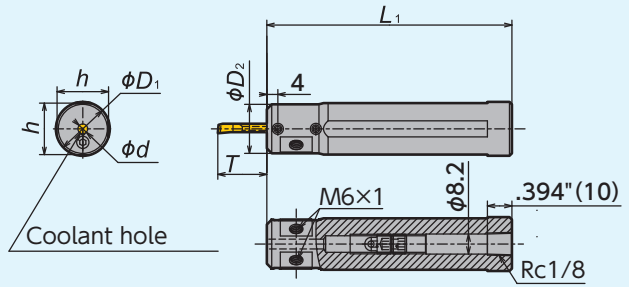
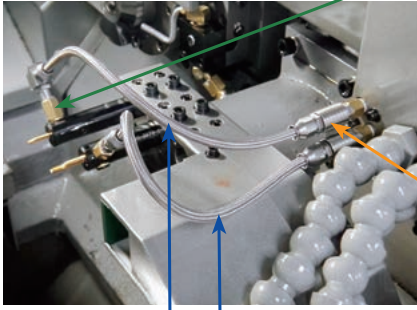


Figure-2

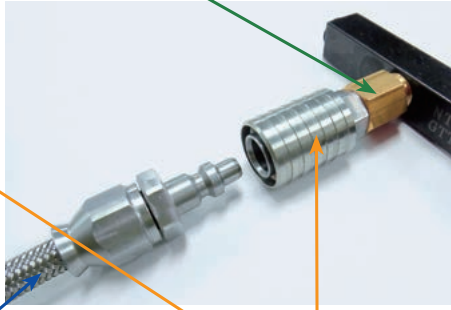
Item Number	Stock	Figure	ϕd		ϕD_1		ϕD_2	h	L_1	Overhang Length of Bar T				
			(Inch)	(mm)	(Inch)	(mm)				Min.		Max.		
											(Inch)	(mm)	(Inch)	(mm)
HY-NBH02016G-OH	●	1	.079	2	.630	16	19	15	90	.197	5.0	.709	18.0	
HY-NBH02516G-OH	●	1	.098	2.5	.630	16	19	15	90	.248	6.3	.768	19.5	
HY-NBH03016G-OH	●	1	.118	3	.630	16	19	15	90	.295	7.5	.827	21.0	
HY-NBH03516G-OH	●	1	.138	3.5	.630	16	19	15	90	.346	8.8	.965	24.5	
HY-NBH04016G-OH	●	1	.157	4	.630	16	19	15	90	.394	10.0	1.102	28.0	
HY-NBH05016G-OH	●	1	.197	5	.630	16	19	15	90	.492	12.5	1.378	35.0	
HY-NBH02019J-OH	●	2	.079	2	3/4	19.05	19.05	18	110	.197	5.0	.709	18.0	
HY-NBH02519J-OH	●	2	.098	2.5	3/4	19.05	19.05	18	110	.248	6.3	.768	19.5	
HY-NBH03019J-OH	●	2	.118	3	3/4	19.05	19.05	18	110	.295	7.5	.827	21.0	
HY-NBH03519J-OH	●	2	.138	3.5	3/4	19.05	19.05	18	110	.346	8.8	.965	24.5	
HY-NBH04019J-OH	●	2	.157	4	3/4	19.05	19.05	18	110	.394	10.0	1.102	28.0	
HY-NBH05019J-OH	●	2	.197	5	3/4	19.05	19.05	18	110	.492	12.5	1.378	35.0	
HY-NBH02020J-OH	●	2	.079	2	.787	20	20	19	110	.197	5.0	.709	18.0	
HY-NBH02520J-OH	●	2	.098	2.5	.787	20	20	19	110	.248	6.3	.768	19.5	
HY-NBH03020J-OH	●	2	.118	3	.787	20	20	19	110	.295	7.5	.827	21.0	
HY-NBH03520J-OH	●	2	.138	3.5	.787	20	20	19	110	.346	8.8	.965	24.5	
HY-NBH04020J-OH	●	2	.157	4	.787	20	20	19	110	.394	10.0	1.102	28.0	
HY-NBH05020J-OH	●	2	.197	5	.787	20	20	19	110	.492	12.5	1.378	35.0	
HY-NBH02022X-OH	●	2	.079	2	.866	22	20	21	120	.197	5.0	.709	18.0	
HY-NBH02522X-OH	●	2	.098	2.5	.866	22	20	21	120	.248	6.3	.768	19.5	
HY-NBH03022X-OH	●	2	.118	3	.866	22	20	21	120	.295	7.5	.827	21.0	
HY-NBH03522X-OH	●	2	.138	3.5	.866	22	20	21	120	.346	8.8	.965	24.5	
HY-NBH04022X-OH	●	2	.157	4	.866	22	20	21	120	.394	10.0	1.102	28.0	
HY-NBH05022X-OH	●	2	.197	5	.866	22	20	21	120	.492	12.5	1.378	35.0	
HY-NBH02025.0K-OH	●	2	.079	2	.984	25.0	20	24	125	.197	5.0	.709	18.0	
HY-NBH02525.0K-OH	●	2	.098	2.5	.984	25.0	20	24	125	.248	6.3	.768	19.5	
HY-NBH03025.0K-OH	●	2	.118	3	.984	25.0	20	24	125	.295	7.5	.827	21.0	
HY-NBH03525.0K-OH	●	2	.138	3.5	.984	25.0	20	24	125	.346	8.8	.965	24.5	
HY-NBH04025.0K-OH	●	2	.157	4	.984	25.0	20	24	125	.394	10.0	1.102	28.0	
HY-NBH05025.0K-OH	●	2	.197	5	.984	25.0	20	24	125	.492	12.5	1.378	35.0	
HY-NBH02025.4K-OH	●	2	.079	2	1	25.4	20	24	125	.197	5.0	.709	18.0	
HY-NBH02525.4K-OH	●	2	.098	2.5	1	25.4	20	24	125	.248	6.3	.768	19.5	
HY-NBH03025.4K-OH	●	2	.118	3	1	25.4	20	24	125	.295	7.5	.827	21.0	
HY-NBH03525.4K-OH	●	2	.138	3.5	1	25.4	20	24	125	.346	8.8	.965	24.5	
HY-NBH04025.4K-OH	●	2	.157	4	1	25.4	20	24	125	.394	10.0	1.102	28.0	
HY-NBH05025.4K-OH	●	2	.197	5	1	25.4	20	24	125	.492	12.5	1.378	35.0	

Quick-change Coolant Components

③ Conversion / Extension Joint

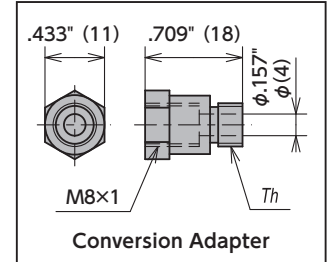


① Plug-in Style Flexible Hose



② Quick Change Coupling

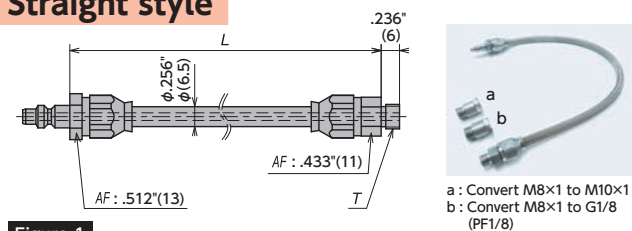
- Up to 2900psi
- High quality flexible stainless steel braided hose
- Reduce machine downtime



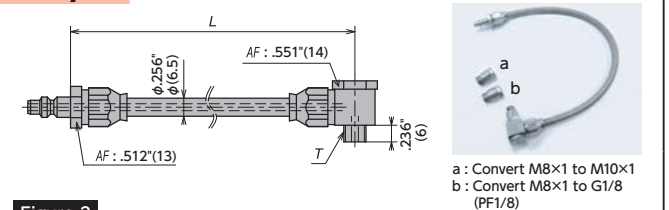
NTK Unique Tooling

① Plug-in Style Flexible Hose

Straight style

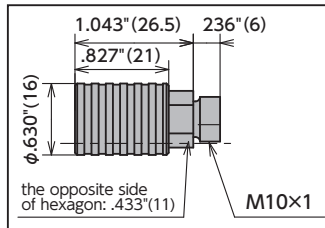


L-style



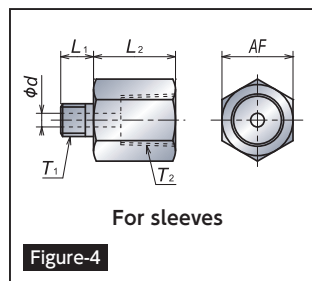
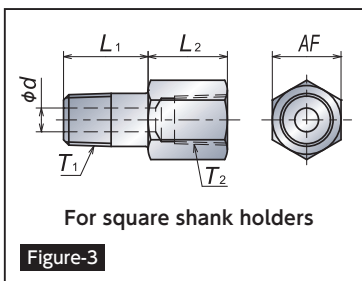
Item Number	Figure	Stock	L		T	Comes with
			(Inch)	(mm)		
HOSE-ST-1/8NPT-4IN	1	●	4.000	101.6	NPT1/8	—
HOSE-ST-1/8NPT-6IN	1	●	6.000	152.4	NPT1/8	—
HOSE-ST-1/8NPT-10IN	1	●	10.000	254.0	NPT1/8	—
HOSE-ST-M8*1	1	●	11.811	300.0	M8 × 1	Conversion Adapter a and b
HOSE-AN-M8*1	2	●	11.890	302.0	M8 × 1	Conversion Adapter a and b

② Quick Change Coupling



Item Number	Stock	Comes with
COUP-M10*1	●	Seal Plug

③ Conversion / Extension Joint



Item Number	Figure	Stock	T ₁ (mm)	T ₂ (mm)	L ₁ (mm)	L ₂ (mm)	AF (mm)	d (mm)
SCJ-M6-RC1/8-L	3	○	M6 × 1	Rc1/8 (PT1/8)	16	15	13	2.5
SCJ-NPT1/8-M10-L	3	●	NPT1/8	M10 × 1	16	12	13	4.5
SCJ-R1/8-M10-L	3	○	R1/8 (PT1/8)	M10 × 1	16	12	13	4.5
SCJ-R1/8-RC1/8-L	3	○	R1/8 (PT1/8)	Rc1/8 (PT1/8)	16	15	13	4.5
SCJ-R1/8-NPT1/8-L	3	●	R1/8 (PT1/8)	NPT1/8	16	15	13	4.5
SCJ-M6-M10	4	○	M6 × 1	M10 × 1	6	15	12	2.5
SCJ-M6-RC1/8	4	○	M6 × 1	Rc1/8 (PT1/8)	6	15	13	2.5
SCJ-M6-NPT1/8	4	●	M6 × 1	NPT1/8	6	15	13	2.5
SCJ-M8-RC1/8	4	○	M8 × 1	Rc1/8 (PT1/8)	6	15	13	3.5
SCJ-R1/8-M10	4	○	R1/8 (PT1/8)	M10 × 1	10	15	12	4.5
SCJ-R1/8-NPT1/8	4	●	R1/8 (PT1/8)	NPT1/8	10	15	13	4.5

● : Stock ○ : 1-2 week delivery 🔵 : Coolant through

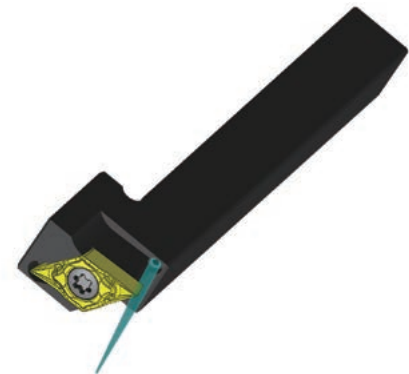
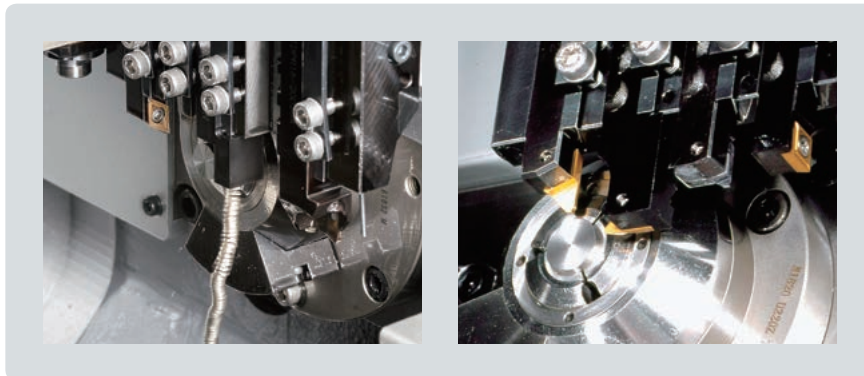
Y-axis Toolholders

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			
① T300				Select tool	① T300			
② G0	X .450	Z .000	T3	Position tool	② G0	Y .450	Z .000	T3
③					③	X .000		
④ G1	X .300		F .003	Move to OD to cut	④ G1	Y .300		F .003
⑤		Z .200	F .002	Cut .200" length	⑤		Z .200	F .002
⑥	X .400			Cut face	⑥	Y .450		
⑦ G0	X .450				⑦ G0	X .450		

Cut by X-axis

Cut by Y-axis

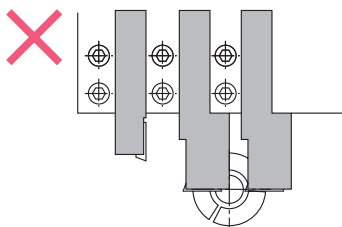
Note: Need Y-offset for holder shank size.

Machinable OD Dimensions

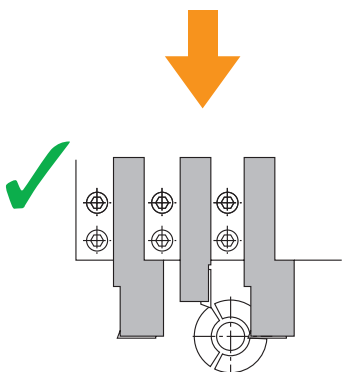
*Machinable ODs with Y-GTTR type grooving toolholders are shown as an example (The dimensions apply to other Y-axis toolholders as well)

Y-axis Holder Overhang	Tool Layout	Situation	Overhang Amount (L)		
			.787 (20mm)	.866 (22mm)	.984 (25mm)
.787 (20mm)		D1 Max machinable OD with Holder A	No limitation	No limitation	No limitation
		D2 Max machinable OD with Holder B	.512 (13mm)	.512 (13mm)	.512 (13mm)
		D3 Max machinable OD with Holder C	No limitation	No limitation	No limitation
.984 (25mm)		D1 Max machinable OD with Holder A	1.496 (38mm)	2.283 (58mm)	No limitation
		D2 Max machinable OD with Holder B	.587 (14.9mm)	.535 (13.6mm)	.512 (13mm)
		D3 Max machinable OD with Holder C	1.496 (38mm)	2.283 (58mm)	No limitation
1.181 (30mm)		D1 Max machinable OD with Holder A	1.055 (26.8mm)	1.142 (29mm)	1.516 (38.5mm)
		D2 Max machinable OD with Holder B	.811 (20.6mm)	.705 (17.9mm)	.587 (14.9mm)
		D3 Max machinable OD with Holder C	1.299 (33mm) 1.055 (26.8mm) for TBP style	1.457 (37mm) 1.142 (29mm) for TBP style	2.028 (51.5mm) 1.516 (38.5mm) for TBP style

Important Notes for Using Y-axis Toolholders



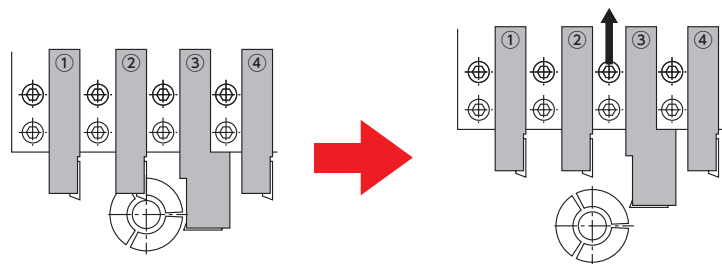
To avoid interference, two Y-axis toolholders should not be installed next to each other



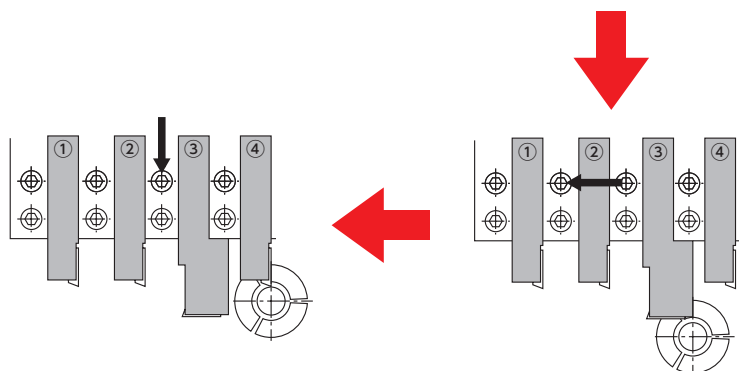
Install a standard toolholder between the two Y-axis toolholders

For tool change, determine a retraction point based on the overhang of the Y-axis toolholder

- Example: Tool change from No.2 to No.4



Retract the tool station based on the cutting edge location on the Y-axis toolholder



Front Turning

DC.. Series - Toolholders

Y-SDJC-OH (Coolant through)

NEW

Th (Thread type)

3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

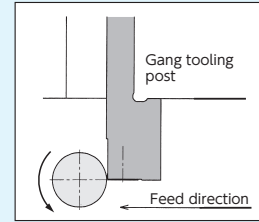
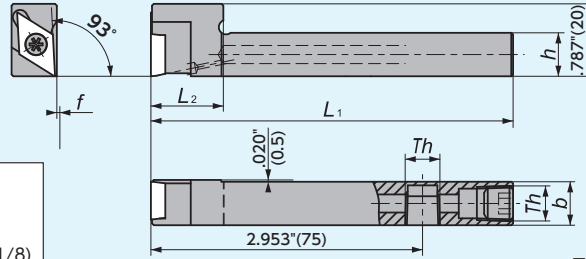


Figure-1

Right-Hand style shown
 Takes Right-hand or Neutral insert

Y-SDJC

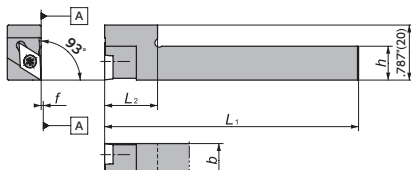


Figure-2

Right-Hand style shown
 Takes Right-hand or Neutral insert

Y-SDNC

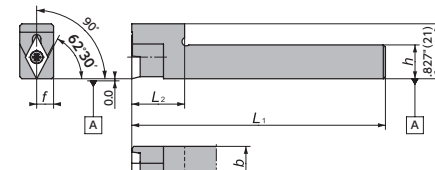


Figure-3

Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		h		b		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
DC..21.5..	Y-SDJCR062H-IN-OH	1	●		3/8	3/8	3.937	100	0	0	.984	25	M6 × 1	LRIS-2.5 × 7	CLR-15S		
DC..21.5..WP	Y-SDJCR082H-IN-OH	1	●		1/2	1/2	3.937	100	0	0	.984	25	NPT1/8	LRIS-2.5 × 7	CLR-15S		
DC..32.5..	Y-SDJCR083H-IN-OH	1	●		1/2	1/2	3.937	100	0	0	.984	25	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65		
	Y-SDJCR103H-IN-OH	1	●		5/8	5/8	3.937	100	0	0	.984	25	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65		
	Y-SDJCR1212H11S-OH	1	●		.472	12.0	.472	12.0	3.937	100	0	0	.787	20	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
DC..21.5..	Y-SDJCR1616H11-OH	1	○		.630	16.0	.630	16.0	3.937	100	0	0	.984	25	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR062-IN	2	●		3/8	3/8	4.724	120	0	0	.984	25	—	LRIS-2.5 × 7	CLR-15S		
	Y-SDJCR082-IN	2	●		1/2	1/2	4.724	120	0	0	.984	25	—	LRIS-2.5 × 7	CLR-15S		
DC..21.5..WP	Y-SDJCR10-07S	2	○		.394	10.0	.394	10	4.724	120	0	0	.787	20	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR12-07S	2	○		.472	12.0	.472	12	4.724	120	0	0	.787	20	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR083-IN	2	●		1/2	1/2	4.724	120	0	0	.984	25	—	LRIS-4 × 10	LLR-25S-20 × 65		
DC..32.5..	Y-SDJCR103-IN	2	●		5/8	5/8	4.724	120	0	0	.984	25	—	LRIS-4 × 10	LLR-25S-20 × 65		
	Y-SDJCR10-11MS	2	○		.394	10.0	.394	10	4.724	120	0	0	.866	22	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR10-11S	2	○		.394	10.0	.394	10	4.724	120	0	0	.787	20	—	LRIS-2.5 × 7	CLR-15S
DC..32.5..WP	Y-SDJCR12-11MS	2	○		.472	12.0	.630	16	4.724	120	0	0	.866	22	—	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR12-11S	2	○		.472	12.0	.630	16	4.724	120	0	0	.787	20	—	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR16-11S	2	○		.630	16.0	.630	16	4.724	120	0	0	.787	20	—	LRIS-4 × 10	LLR-25S-20 × 65
DC..32.5..	Y-SDNCN083-IN	3	●		1/2	1/2	4.724	120	1/4	6.35	.984	25	—	LRIS-4 × 10	LLR-25S-20 × 65		
	Y-SDNCN12-11S	3	○		.472	12.0	.472	12	4.724	120	.236	6.0	.787	20	—	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDNCN16-11S	3	○		.630	16.0	.630	16	4.724	120	.315	8.0	.787	20	—	LRIS-4 × 10	LLR-25S-20 × 65

Inserts → Q20

VC.. Series - Toolholders

Y-SVJCR-OH (Coolant through)

NEW

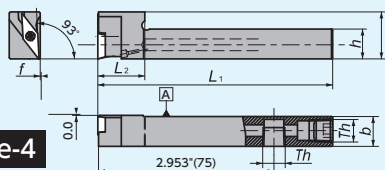


Figure-4

Th (Thread type)
 Inch size holder:
 NPT1/8

Y-SVJCR

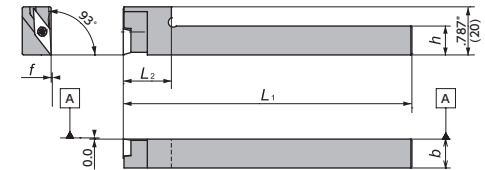


Figure-5

Gage Insert	Item Number	Figure	Stock		h		b		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)					
VC..22..	Y-SVJCR082HS-IN-OH	4	●		1/2	1/2	3.937	100	0.0	0.0	.787	20	NPT1/8	LRIS-2.5 × 7	CLR-15S		
	Y-SVJCR102H-IN-OH	4	●		5/8	5/8	3.937	100	0.0	0.0	.984	25	NPT1/8	LRIS-2.5 × 7	CLR-15S		
VC..22..	Y-SVJCR062-IN	5	●		3/8	3/8	4.724	120	0.0	0.0	.787	20	—	LRIS-2.5 × 7	CLR-15S		
	Y-SVJCR082-IN	5	●		1/2	1/2	4.724	120	0.0	0.0	.787	20	—	LRIS-2.5 × 7	CLR-15S		
	Y-SVJCR102-IN	5	●		5/8	5/8	4.724	120	0.0	0.0	.984	25	—	LRIS-2.5 × 7	CLR-15S		

Inserts → Q29

Back Turning

TBP Series - Toolholders

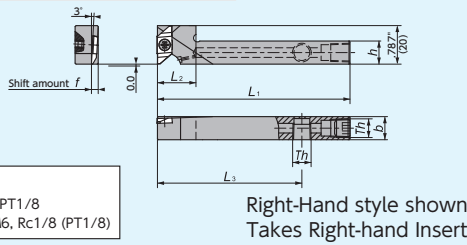
Y-TBP-OH (Coolant through)

Screw accessible from both sides

NEW

Figure-1

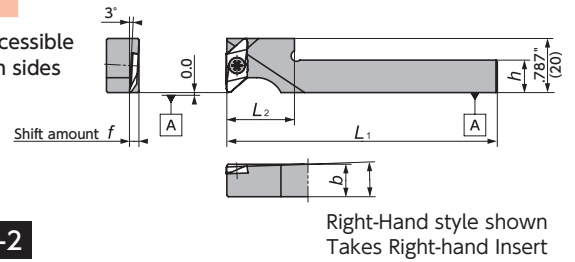
Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)




Y-TBP

Screw accessible from both sides

Figure-2



TBP

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
	Y-TBP%08H-IN-OH	1	●		1/2	1/2	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	NPT1/8	LR15-4 x 12PW CLR-15S
	Y-TBP%12HS-OH	1	●		.472 12	.472 12	—	3.937 100	.138 3.5	.787 20	—	—	2.953 75	Rc1/8(PT1/8)	LR15-4 x 12PW CLR-15S
	Y-TBP%16H-OH	1	○		.630 16	.630 16	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	Rc1/8(PT1/8)	LR15-4 x 12PW CLR-15S
	Y-TBP%06-IN	2	●		3/8	3/8	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LR15-4 x 10PW CLR-15S
	Y-TBP%08-IN	2	●		1/2	1/2	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LR15-4 x 12PW CLR-15S
	Y-TBP%10-IN	2	●		5/8	5/8	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LR15-4 x 12PW CLR-15S
	Y-TBP%10MS	2	○		.394 10	.394 10	—	4.724 120	.138 3.5	.866 22	—	—	—	—	LR15-4 x 10PW CLR-15S
	Y-TBP%10S	2	○		.394 10	.394 10	—	4.724 120	.138 3.5	.787 20	—	—	—	—	LR15-4 x 10PW CLR-15S
	Y-TBP%12MS	2	○		.472 12	.472 12	—	4.724 120	.138 3.5	.866 22	—	—	—	—	LR15-4 x 12PW CLR-15S
Y-TBP%12S	2	○		.472 12	.472 12	—	4.724 120	.138 3.5	.787 20	—	—	—	—	LR15-4 x 12PW CLR-15S	

Inserts →R9

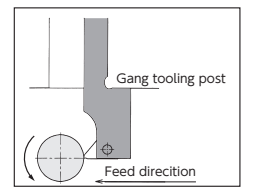
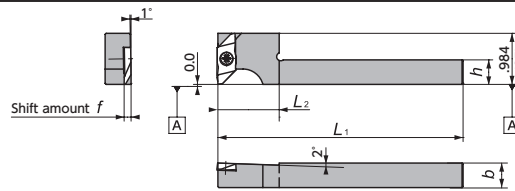
TBPA (CTPA) Series - Toolholders

Y-CTPA


Screw accessible from both sides

Figure-3

Right-Hand style shown
Takes Right-hand Insert



CTPA

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
	Y-CTPA%08L-IN	3	●		1/2	1/2	—	4.724 120	1.34 34	1.181 30	—	—	—	—	LR15-4 x 12PW CLR-15S

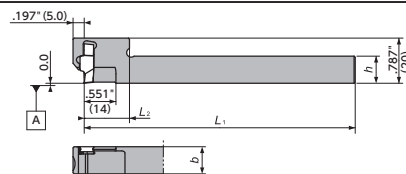
Inserts →R11

TBDP Series - Toolholders

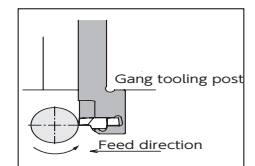
Y-TBDP

NEW


Figure-4



Right-Hand style shown



TBDP

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Clamp Screw	Wrench
			R	L										
	Y-TBDPR12S	4	○		.472 12	.472 12	—	4.724 120	.081 2.05	.787 20	—	—	—	LR15-4 x 12 LLR-25S

● : Stock ○ : 1-2 week delivery ● : Coolant through

Inserts →R12

Cutting condition →R3

Grooving / Side turning / Back turning

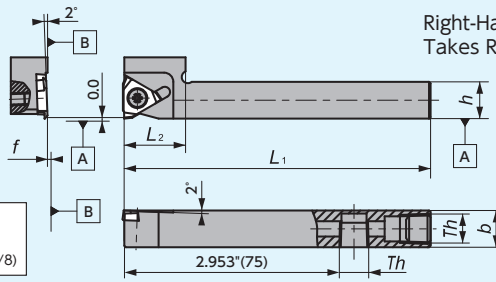
GTT Series

Y-GTT-OH (Coolant through)

Screw accessible from both sides

NEW

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown
Takes Right-hand Insert

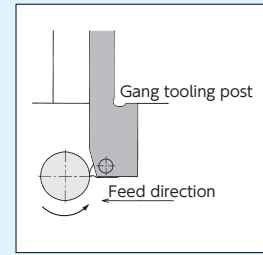
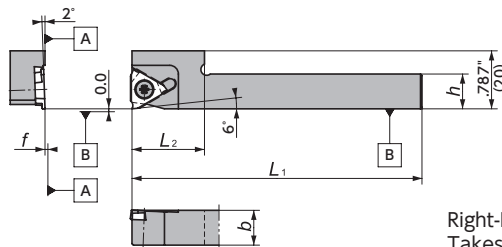


Figure-1

Y-GTT

Screw accessible from both sides



Right-Hand style shown
Takes Right-hand Insert

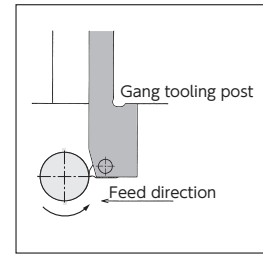


Figure-2

GTT

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	a _r (Inch) (mm)	h ₂ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L											
TBMH32.. GTM.32.. TMG32	Y-GTT $\frac{1}{8}$ OH-IN-OH	1	●		1/2	1/2	—	3.937 100	.000 0	.984 25.0	.063 1.6	—	NPT1/8	LR-5-4x10PW	CLR-15S
	Y-GTT $\frac{1}{8}$ 12H00S-OH	1	●		.472 12	.472 12	—	3.937 100	.000 0	.787 20.0	.063 1.6	—	Rc1/8(PT1/8)	LR-5-4x10PW	CLR-15S
	Y-GTT $\frac{1}{8}$ 16H00-OH	1	○		.630 16	.472 16	—	3.937 100	.000 0	.984 25.0	.063 1.6	—	Rc1/8(PT1/8)	LR-5-4x10PW	CLR-15S
	Y-GTTR $\frac{3}{8}$ IN	2	●		3/8	3/8	—	4.724 120	.000 0	.984 25.0	.063 1.6	—	—	LR-5-4x10PW	CLR-15S
	Y-GTTR $\frac{1}{2}$ IN	2	●		1/2	1/2	—	4.724 120	.000 0	.984 25.0	.063 1.6	—	—	LR-5-4x10PW	CLR-15S
	Y-GTTR $\frac{5}{8}$ IN	2	●		5/8	5/8	—	4.724 120	.000 0	.984 25.0	.063 1.6	—	—	LR-5-4x10PW	CLR-15S
	Y-GTT $\frac{1}{8}$ 10MS	2	○		.394 10	.394 10	—	4.724 120	.000 0	.866 22.0	.063 1.6	—	—	LR-5-4x10PW	CLR-15S
	Y-GTT $\frac{1}{8}$ 10S	2	○		.394 10	.394 10	—	4.724 120	.000 0	.787 20.0	.063 1.6	—	—	LR-5-4x10PW	CLR-15S
	Y-GTT $\frac{1}{8}$ 12MS	2	○		.472 12	.472 12	—	4.724 120	.000 0	.866 22.0	.063 1.6	—	—	LR-5-4x10PW	CLR-15S
Y-GTT $\frac{1}{8}$ 12S	2	○		.472 12	.472 12	—	4.724 120	.000 0	.787 20.0	.063 1.6	—	—	LR-5-4x10PW	CLR-15S	

Inserts GTM.32 **➔T12**

Inserts TBMH32.. **➔R19**

Multi-functional Grooving for non-ferrous material

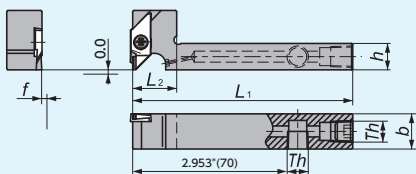
GTPA Series - Inserts

Y-GTPA-OH (Coolant through)

Screw Accessible from both sides

NEW

Th (Thread type)
Metric size holder:
Rc1/8 (PT1/8)

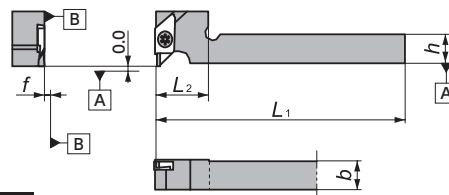


Right-Hand style shown

Figure-1

Y-GTPA

Screw Accessible from both sides



Right-Hand style shown

Figure-2

GTPA

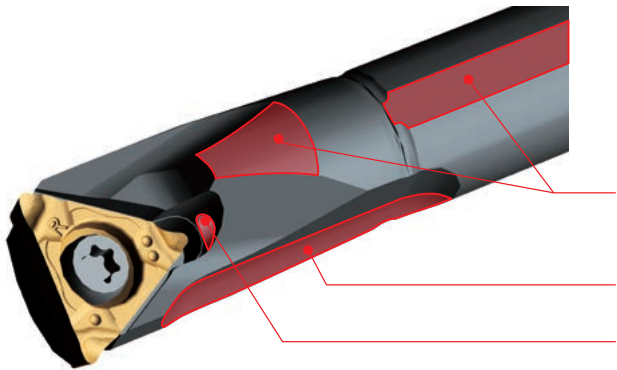
Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L									
GTPA	Y-GTPA $\frac{1}{8}$ 1216HS-OH	1	○		.472 12	.630 16	—	2.756 70	.004 0.1	.787 20	Rc1/8(PT1/8)	LR1S-4 x 12PW	CLR-15S
	Y-GTPA $\frac{1}{8}$ 1216H-OH	1	○		.630 16	.630 16	—	2.756 70	.004 0.1	.984 25	Rc1/8(PT1/8)	LR1S-4 x 12PW	CLR-15S
	Y-GTPA $\frac{1}{8}$ 1216	2	○		.472 12	.630 16	—	4.724 120	.004 0.1	.787 20	—	LR1S-4 x 12PW	CLR-15S

Inserts **➔T24**

Mogul Bar

High rigidity boring bars

WATCH ON
YouTube



Features

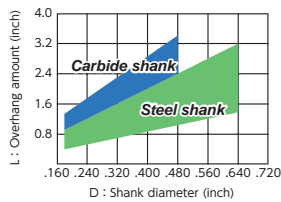
- High rigidity + Minimal flat widths
Reduce vibration
- Large clearance for improved chip evacuation
- All Mogul Bar boring bars are coolant through

NTK Unique Tooling

Recommended amount of overhang

Steel Shank $L/D \leq 5$

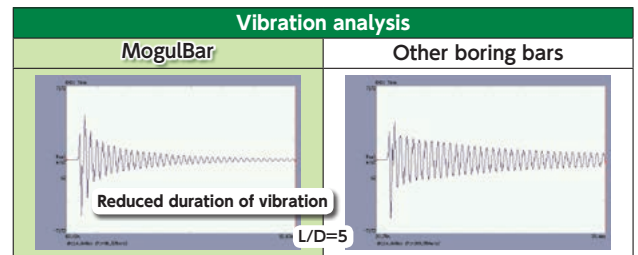
Carbide Shank $L/D \leq 7$



L : Overhang
D : Shank diameter

[Cutting condition example]

Work materials: Alloy steel, stainless
260 SFM, .002 - .004 IPR, .004" - .020" DOC WET



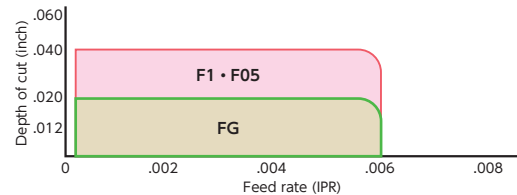
Note: Assuming a 100N load is applied. An equal amount of force was applied to both bars for vibration analysis.
Boring bar used in above analysis: S08H-STUPR09D10-OH

F Chipbreakers - Evacuate chips BACKWARD









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



Recommended Cutting Condition Range



F Chipbreakers - Features

	DOC (inch)	Feed (IPR)	
		.002	.004
FG Chipbreaker <ul style="list-style-type: none"> • Best for finishing • Works for small DOC (.020" or less) • High rake angle 	.004		
	.012		
F1/F05 Chipbreakers <ul style="list-style-type: none"> • Cover wide condition range • Ground chipbreaker 	.020		
	Note: Right-hand inserts with FG and F1 chipbreakers should be used with right-hand holders		[Cutting condition example] 4140 Carbon Steel Diameter : ϕ .472" 260 SFM Depth of Bore : .787" Wet Holder : S10K-STUPR11D12-OH Insert : TPGH221

DS-ACH Toolholders



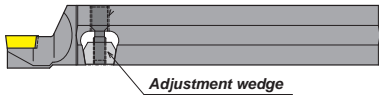
NTK Unique Tooling

Features

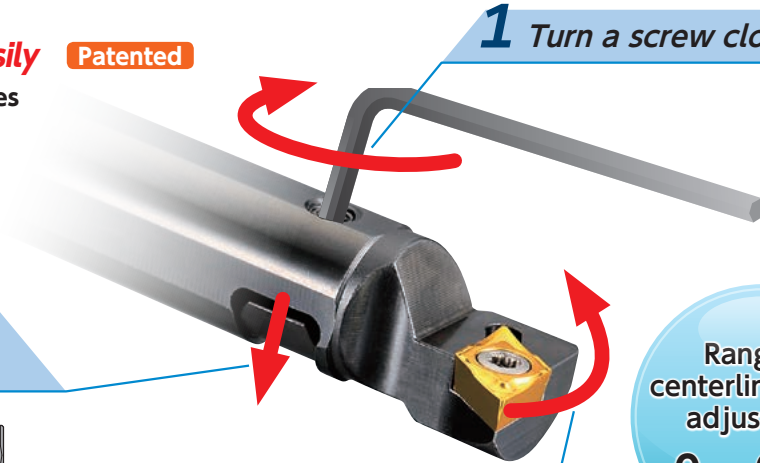
- Adjust centerline height simply with a wrench

- 1 Adjust centerline height easily** Patented
- Eliminate center boss on end faces
 - Provide constant OD dimension
 - Adjust easily in machine

2 Adjustment wedge goes down



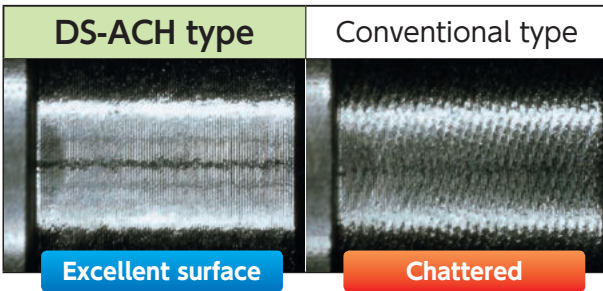
3 Insert edge moves up



Range of centerline height adjustment
0 - .008"

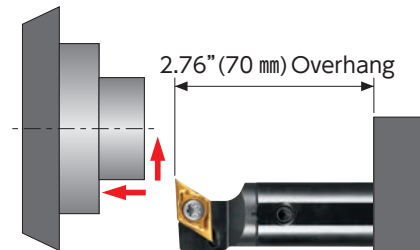
2 Optimized design reduces vibration

Improved chatter resistance.



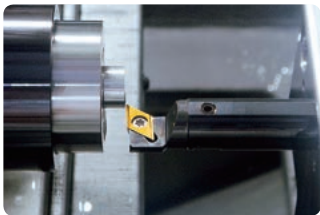
Tested cutting conditions (304 SS)

Work material : 304 SS
Holder : DS-SDUL19-11-ACH
Insert : DCGT32.508MCL TM4
Cutting condition : 250 SFM .002 IPR .079" DOC WET

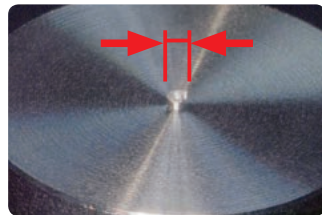


How to use

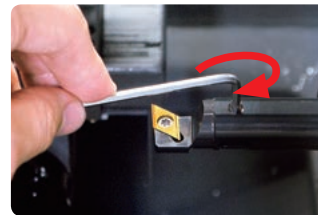
Insert moves in an upward direction only. (Loosen wedge screw before making any adjustment)



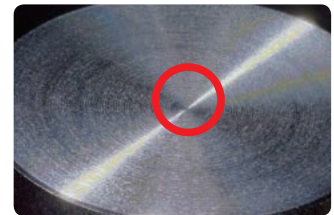
① Install the holder slightly below centerline. Then take a facing test cut.



② Measure the diameter of the centerboss.



③ Raise the center height by one half of the diameter of the boss. Adjustment references are available in the tool case.



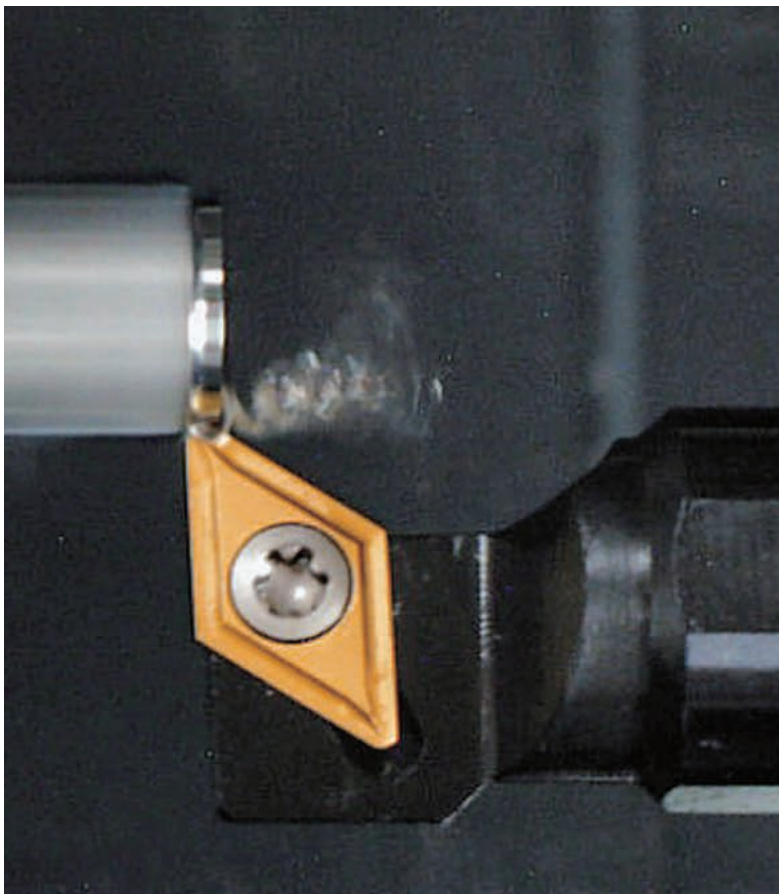
④ Re-machine the end face.

*Adjustment instructions are supplied in the tool case

DS Toolholders

For making the most of vacant drill sleeves

DS / DS-ACH Toolholders



Are you satisfied with the number of tool positions in your machine?
NTK DS type toolholder is useful when additional tool positions are required

Front turning, Back turning, Grooving, Threading, and Small boring which fit into the machines' vacant drill sleeves

DS Series toolholders can be used with both Swiss or non-Swiss type CNC lathes

Features

- More turning tools without any hassle
- Available for Front turning, Back turning, Grooving, Threading, Micro-boring, and interchangeable tooling
- Available shank size range: from .511"(14mm) to 1"(25.4mm)

Front Turning

CC.. Series - Toolholders

DS-SCLL-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ .866" (22)		
φ 1" (25.4)		

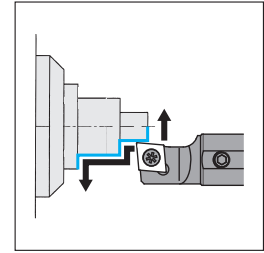
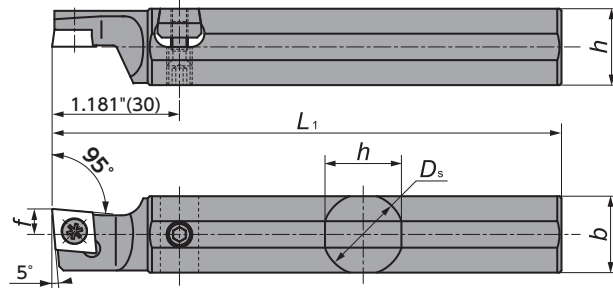


Figure-1

Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SCL

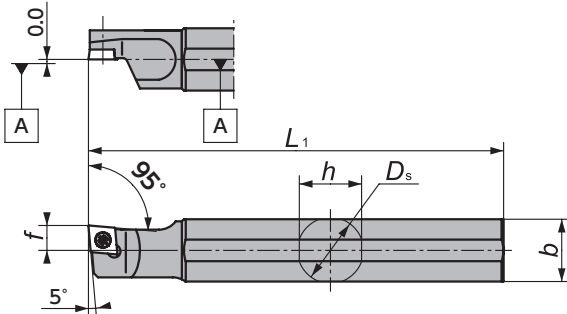


Figure-2

DS-SCL (Coolant through)

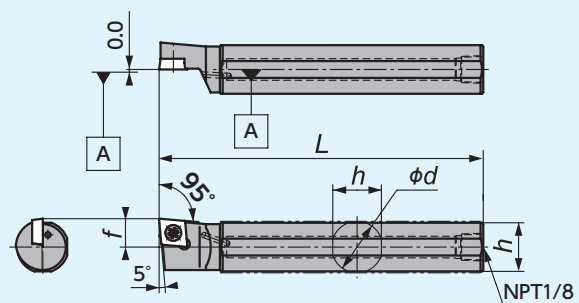


Figure-3

Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SCL (Takes right-hand or neutral insert)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CC..21.5..	DS-SCL%14F-06	2	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%15H-06	2	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%16F-06	2	○	○	.630	16.000	.591	15	.591	15	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%19-06	2	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%20X-06	2	○	○	.787	20.000	.748	19	.748	19	3.740	95	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%20-06	2	○	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%22-06	2	○	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SCL%25-06MET	2	○	○	.984	25.000	.945	24	.945	24	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
DS-SCL%25-06	2	○	○	1	25.400	.945	24	.945	24	5.906	150	.236	6.0	LRIS-2.5 × 7	CLR-15S	
CC..32.5..	DS-SCL%14F-09	2	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%15H-09	2	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%16F-09	2	○	○	.630	16.000	.591	15	.591	15	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19GX-09	2	○	○	3/4	19.050	.709	18	.709	18	3.346	85	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09	2	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09-004	3	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.413	10.5	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20X-09	2	○	○	.787	20.000	.748	19	.748	19	3.740	95	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20-09	2	○	○	.787	20.000	.748	19	.748	19	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09	2	○	○	.866	22.000	.827	21	.827	21	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09-005	3	○	○	.866	22.000	.827	21	.827	21	4.724	120	.472	12.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09MET	2	○	○	.984	25.000	.945	24	.945	24	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%25-09	2	○	○	1	25.400	.945	24	.945	24	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%32-09	2	○	○	1.260	32.000	1.181	30	1.181	30	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%16F-09-ACH	1	○	○	.630	16.000	.610	15.5	.610	15.5	3.150	80	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%19-09-ACH	1	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%20-09-ACH	1	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
	DS-SCL%22-09-ACH	1	○	○	.866	22.000	.827	21.0	.827	21.0	4.724	120	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65
DS-SCL%25-09MET-ACH	1	○	○	.984	25.000	.945	24.0	.945	24.0	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65	
DS-SCL%25-09-ACH	1	○	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.236	6.0	LRIS-4 × 8	LLR-25S-20 × 65	

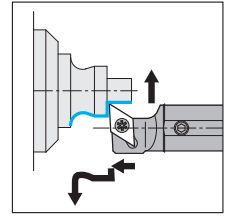
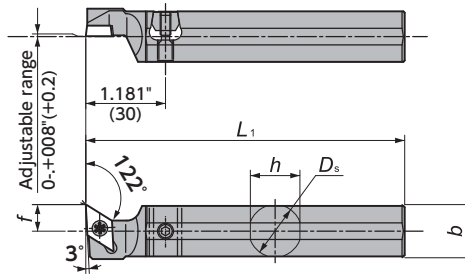
DC.. Series - Toolholders

DS-SDU-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ .866" (22)		
φ 1" (25.4)		

Figure-1



Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SDU

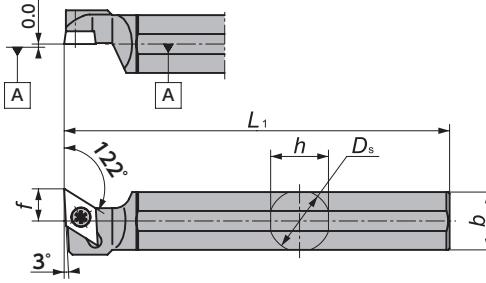
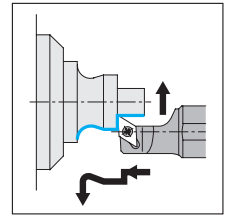


Figure-2



Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SDX / DS-SDX (Coolant through)

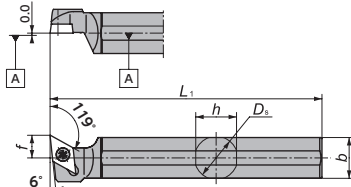


Figure-3

DS-SDXL22-11-006 (Coolant through)

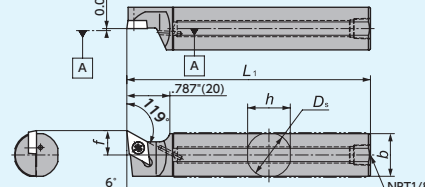
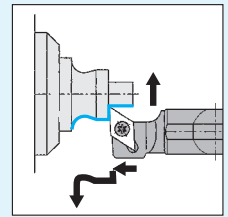


Figure-4



Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
DC..21.5.. DC..21.5..WP	DS-SDU%{14F-07	2	○	○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%{15H-07	2	○	○	.5/8	15.875	.591	15.0	.591	15.0	3.937	100	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%{16F-07	2	○	○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%{16X-07	2	○	○	.630	16.000	.591	15.0	.591	15.0	3.740	95	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%{19-07	2	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%{20X-07	2	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%{20-07	2	○	●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
DC..32.5.. DC..32.5..WP	DS-SDU%{22-07	2	○	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.236	6.0	LRIS-2.5 × 7	CLR-15S
	DS-SDU%{14F-11	2	○	○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{16F-11	2	○	○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{19-11	2	○	●	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{19-11SPL	2	○	○	3/4	19.050	.709	18.0	.709	18.0	6.300	160	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{20X-11	2	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{20-11	2	○	●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{22-11	2	○	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{23-11-007	2	○	○	.906	23.000	.866	22.0	.866	22.0	2.756	70	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11MET	2	○	●	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11	2	○	●	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11SPL	2	○	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.492	12.5	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{16F-11-ACH	1	○	●	.630	16.000	.610	15.5	.610	15.5	3.150	80	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{19-11-ACH	1	○	●	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{20-11-ACH	1	○	●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{22-11-ACH	1	○	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11MET-ACH	1	○	●	.984	25.000	.945	24.0	.945	24.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11-ACH	1	○	●	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDX%{22-11-006	4	○	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.472	12.0	LRIS-4 × 10	LLR-255-20 × 65
	DS-SDX%{19-11	3	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65
DS-SDX%{20X-11	3	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65	
DS-SDX%{20-11	3	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65	
DS-SDX%{25-11MET	3	○	○	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65	
DS-SDX%{32-11	3	○	○	1.260	32.000	1.181	30.0	1.181	30.0	5.906	150	.394	10.0	LRIS-4 × 10	LLR-255-20 × 65	

Inserts → Q20

● : Stock ○ : 1-2 week delivery 🔵 : Coolant through

Cutting condition → Q4

NTK Unique Tooling

VC.. Series - Toolholders

DS-SVX

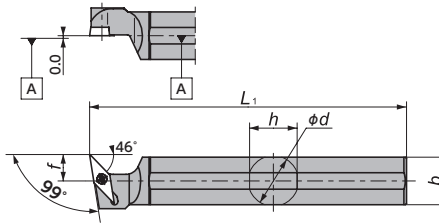


Figure-1

Gage Insert	Item Number	Figure	Stock		ϕd		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VC..22..	DS-SVX%14F-11	1	○	○	.551	14.000	.512	13	.512	13	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%15H-11	1	○	○	5/8	15.875	.591	15	.591	15	3.937	100	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%16F-11	1	●	○	.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%19-11	1	●	○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%19-11SPL	1	○	○	3/4	19.050	.709	18	.709	18	6.299	160	.433	11.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%20X-11	1	○	○	.787	20.000	.748	19	.748	19	3.740	95	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%20-11	1	●	○	.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%22-11	1	●	○	.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX%25-11MET	1	○	○	.984	25.000	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S
DS-SVX%25-11	1	●	○	1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S	

Inserts → Q29

VP..08 Series - Toolholders

DS-SVXP

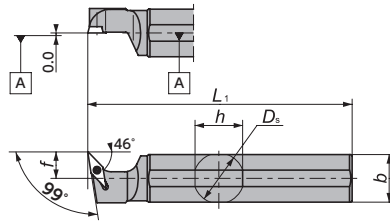
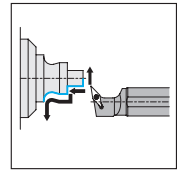


Figure-2



Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..0802	DS-SVXP%19-08	2	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP%20-08	2	○	○	.787	20.000	.748	19	.748	19	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP%22-08	2	○	○	.866	22.000	.827	21	.827	21	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP%25-08	2	○	○	1	25.400	.945	24	.945	24	5.906	150	.394	10	LRIS-2 × 6	CLR-13S

Inserts → Q30

VP..22 Series - Toolholders

DS-SVVP-ACH (Adjustable centerline height)

(Parts)

Shank	Wedge	Screw for Wedge
$\phi .630"$ (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
$\phi 3/4"$ (19.05)		
$\phi .787"$ (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
$\phi .866"$ (22)		
$\phi 1"$ (25.4)		

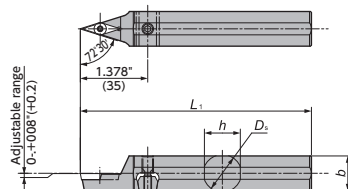


Figure-3

DS-SVVP

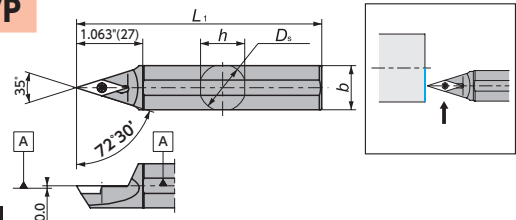


Figure-4

Gage Insert	Item Number	Figure	Stock	D_s		h		b		L_1		Clamp Screw	Wrench
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..22	DS-SVVPN19-11	4	○	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN22-11	4	○	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN16-11-ACH	3	●	.630	16.000	.610	15.5	.610	15	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN19-11-ACH	3	●	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN20-11-ACH	3	●	.787	20.000	.748	19.0	.748	19	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN22-11-ACH	3	●	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN25-11-ACH	3	●	1	25.400	.945	24.0	.945	24	5.906	150	LRIS-2.5 × 7	CLR-15S

Inserts → Q31

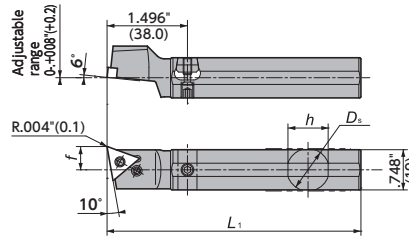
TN.. Series - Toolholders

DS-PTX-ACH (Adjustable centerline height)

(Parts)		
Shank	Wedge	Screw for Wedge
φ.630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ.3/4" (19.05)		
φ.787" (20)		
φ.866" (22)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ.1" (25.4)		

Figure-1

Shim	Clamp Pin	Spring
-	LCL33N	-



Left-Hand style shown
Takes Right-hand or Neutral insert.

DS-PTX

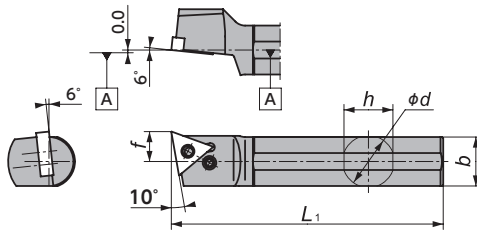
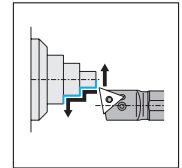


Figure-2

Shim	Clamp Pin	Spring
-	LCL33N	-

Left-Hand style shown
Takes Right-hand or Neutral insert.



DS-PTX / DS-PTX-ACH



Gage Insert	Item Number	Figure	Stock		D_s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
			R	L							
TN..33..	DS-PTX $\frac{1}{2}$ 19-33	2	○	○	3/4 19.050	.709 18.0	.709 18	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 20-33	2	○	○	.787 20.000	.748 19.0	.748 19	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 22-33	2	○	○	.866 22.000	.827 21.0	.827 21	4.724 120	.472 12.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 25M-33	2	○	○	1 25.400	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2
TN..33..	DS-PTX $\frac{1}{2}$ 16-33-ACH	1	●	○	.630 16.000	.610 15.5	.591 15	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 19-33-ACH	1	●	○	3/4 19.050	.709 18.0	.709 18	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 20-33-ACH	1	●	○	.787 20.000	.748 19.0	.748 19	4.724 120	.433 11.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 22-33-ACH	1	●	○	.866 22.000	.827 21.0	.827 21	4.724 120	.472 12.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 25-33MET-ACH	1	●	○	1 25.000	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2
	DS-PTX $\frac{1}{2}$ 25-33-ACH	1	●	○	1 25.400	.945 24.0	.945 24	5.906 150	.512 13.0	LCS33	LW-2

Inserts →Q36

Cutting condition →Q4

Back Turning

TBP.. Series - Toolholders

DS-TBP

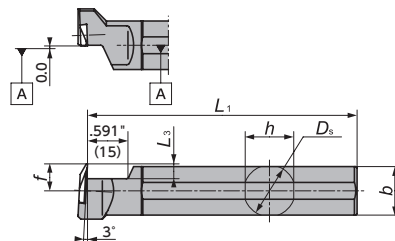
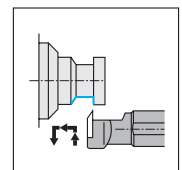


Figure-1

Left-Hand style shown
Takes Right-hand Insert



DS-TBP (Takes right-hand inserts)

Gage Insert	Item Number	Figure	Stock		D_s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	L_3 (Inch) (mm)	Clamp Screw	Wrench
			R	L								
TBP..FR..	DS-TBP $\frac{1}{2}$ 19	1	○	○	3/4 19.050	.709 18	.709 18	4.724 120	.433 11.0	.217 5.5	LRIS-4 × 10	LLR-25S-20×65
	DS-TBP $\frac{1}{2}$ 20	1	○	○	.787 20.000	.748 19	.748 19	4.724 120	.433 11.0	.217 5.5	LRIS-4 × 10	LLR-25S-20×65
	DS-TBP $\frac{1}{2}$ 25	1	○	○	1.00 25.400	.945 24	.945 24	5.906 150	.512 13.0	.217 5.5	LRIS-4 × 10	LLR-25S-20×65

Inserts →R9

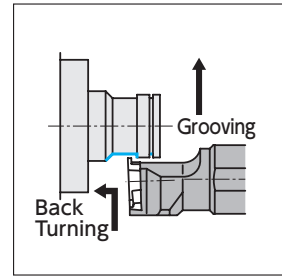
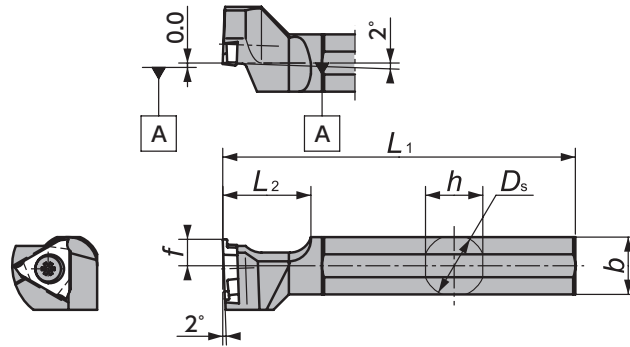
Cutting condition →R3

● : Stock ○ : 1-2 week delivery

Grooving / Side Turning / Back Turning

GTT.. Series - Toolholders


DS-GTT



Left-Hand style shown
Takes Right-hand Insert

Figure-1

DS-GTT

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		L_2	Clamp Screw	Wrench	
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)				
 TBMH32.. GTM.32 TMG32	DS-GTT $\frac{1}{4}$ 14F	1	○	○	.551	14.000	.512	13	.512	13	3.150	80	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 15H	1	○	○	.518	15.875	.591	15	.591	15	3.937	100	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 16X	1	●	●	.630	16.000	.591	15	.591	15	3.740	95	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 19	1	●	●	3/4	19.050	.709	18	.709	18	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 20	1	●	●	.787	20.000	.748	19	.748	19	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 22	1	●	●	.866	22.000	.827	21	.827	21	4.724	120	.236	6	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 25-MET	1	○	○	.984	25.000	.945	24	.945	24	4.724	120	.394	10	.787	20	LR-5-4 × 9	RLR-20S
	DS-GTT $\frac{1}{4}$ 25	1	●	●	1	25.400	.945	24	.945	24	5.906	150	.394	10	.787	20	LR-5-4 × 9	RLR-20S
DS-GTT $\frac{1}{4}$ 32	1	○	○	1.260	32.000	1.181	30	1.181	30	5.906	150	.394	10	.787	20	LR-5-4 × 9	RLR-20S	

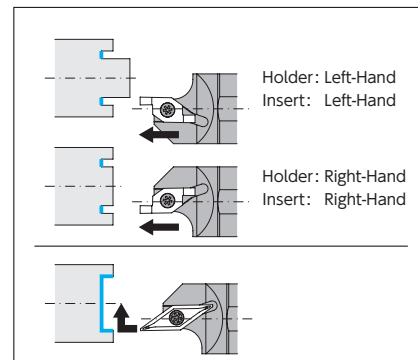
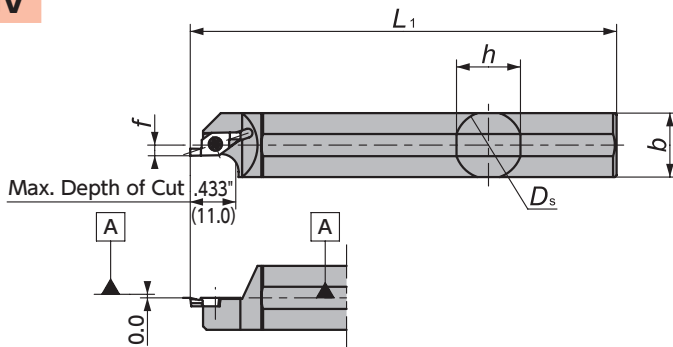
Inserts GTM..32 ➔T12

Inserts TBMH32.. ➔R19

Face Grooving

FGV.. Series - Toolholders

DS-FGV




Only right hand holder is available when using FGV insert

Figure-1

Right-Hand with FGV style shown

DS-FGV

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 FGV FBV	DS-FGV $\frac{1}{4}$ 16-012	1	○	○	.630	16.000	.591	15	.591	15	3.150	80	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 19	1	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 20	1	○	○	.787	20.000	.748	19	.748	19	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 22	1	○	○	.866	22.000	.827	21	.827	21	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 22M	1	○	○	.866	22.000	.827	21	.827	21	5.906	150	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 25-MET	1	○	○	.984	25.000	.945	24	.945	24	5.906	150	.118	3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV $\frac{1}{4}$ 25	1	○	○	1	25.400	.965	24.5	.965	24.5	4.724	120	.118	3.0	LRIS-2.5 × 7	CLR-15S

Inserts ➔T23

Cutting condition ➔T4 • T21

Threading

TTP.. Series - Toolholders

DS-TTP

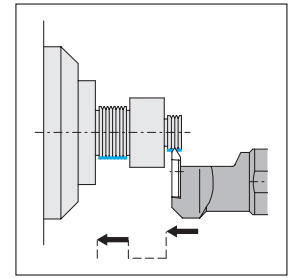
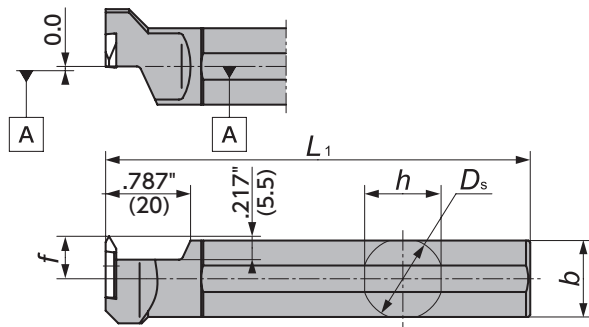


Figure-1

Left-Hand style shown
Takes Right-Hand insert.

NTK Unique Tooling

DS-TTP

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	DS-TTP $\frac{1}{4}$ 16F	1	○		.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 19	1	●		3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 20	1	●		.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 22	1	●		.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 25-MET	1	○		.984	25.000	.945	24	.945	24	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP $\frac{1}{4}$ 25	1	●		1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65

Inserts →U11

STTN.. Series - Toolholders

DS-STT

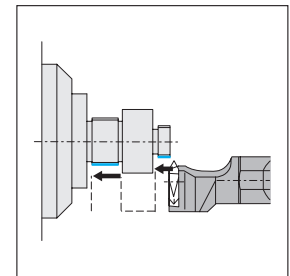
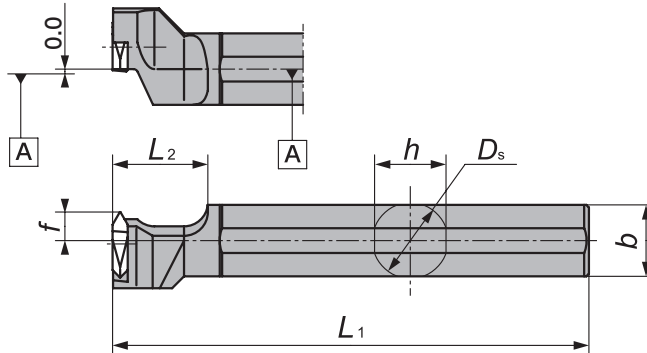


Figure-2

Left-Hand style shown
Takes Right-Hand insert.

DS-STT $\frac{1}{4}$

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	DS-STT $\frac{1}{4}$ 14F	2	○		.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT $\frac{1}{4}$ 15H	2	○		5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT $\frac{1}{4}$ 16X*	2	○		.630	16.000	.591	15	.591	15	3.346	85	.236	6.0	LR-S-4 × 9	RLR-20S

Inserts →U14

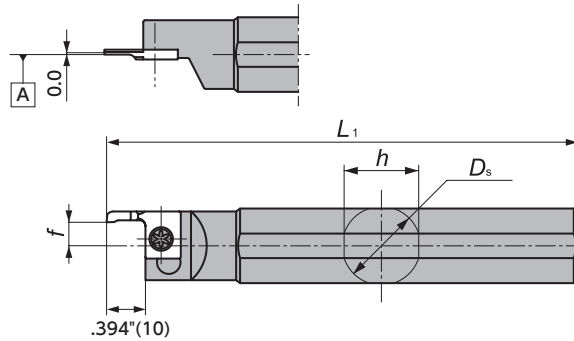
● : Stock ○ : 1-2 week delivery

Cutting condition →U4

ID Boring

LBM.. Series - Toolholders


DS-LBMB



Left-Hand style shown

Figure-1

LBMAR / CH-TTPL

Gage Insert	Item Number	Figure	Stock	D_s		h		b		h_1		L_1		f		Clamp Screw	Wrench
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 Long type	DS-LBMBL14F	1	○	.551	14.000	.512	13	.512	13	—	—	3.150	80 *1	*3	*3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL15H	1	○	5/8	15.875	.591	15	.591	15	—	—	3.937	100 *1	*3	*3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL16X	1	●	.630	16.000	.591	15	.591	15	—	—	3.740	95 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL19	1	●	3/4	19.050	.709	18	.709	18	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL20	1	●	.787	20.000	.748	19	.748	19	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL22	1	●	.866	22.000	.827	21	.827	21	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25-MET	1	○	.984	25.000	.945	24	.945	24	—	—	4.724	120 *1	*2	*2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25	1	○	1	25.400	.945	24	.945	24	—	—	5.906	150 *1	*2	*2	LRIS-4 × 10PW	CLR-15S

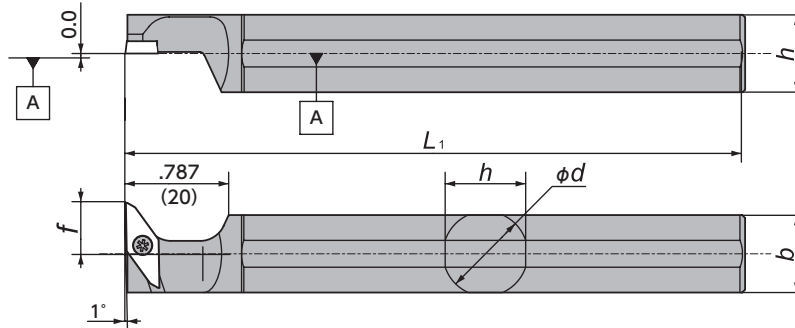
Inserts →V7

Cutting condition →V4

Interchangeable Tooling

CSV.. Series - Toolholders


DS-CSVL



Left-Hand style shown
Takes right-hand inserts

Figure-1

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	1	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

Inserts →O29

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(.886") and 34mm(1.339") round shank stations
- Compatible with 16mm(.630") / 22mm(.886") round shank DS Series holders

WATCH ON
YouTube



NTK Unique Tooling

First Recommendation for Turning

✗

Coolant and chips sneak in.

When DS holders are used directly in live tool stations, coolant and chips sneak in from the flat of holders to damage the live stations

How it works

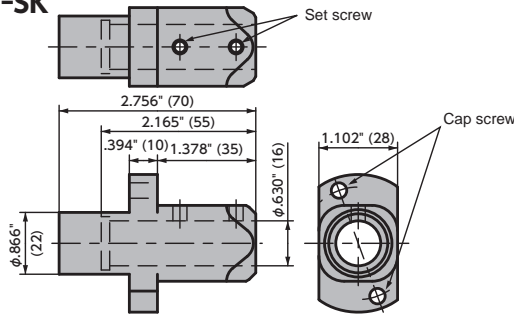
✓

Stop coolant and chips from damaging live tool stations.

By using the DS Sleeve, you can use the DS Series holders without any worry about damaging live stations

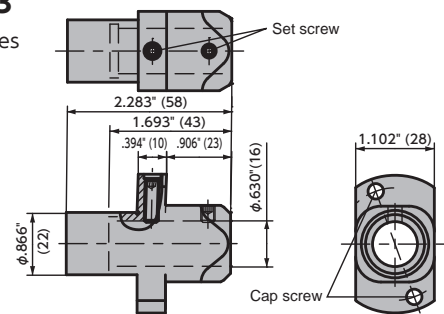
For Back 4-spindle unit

SS-DSU-SK



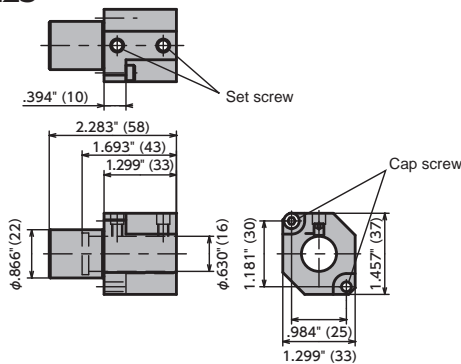
SS-DSU-L23

For DS-ACH series

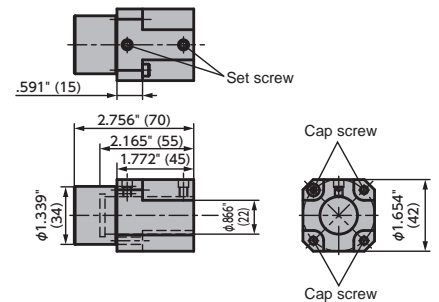


For Back 8-spindle unit

SS-DSU-B8L23



SS-DSU-B8D34



Item number	Stock	Spare parts				Coment
		Cap screw	Wrench	Set screw	Wrench	
SS-DSU-SK	●	CS0515	LW-4	SS0506	LW-2.5	
SS-DSU-L23	●	CS0515	LW-4	SS0506 SS0515	LW-2.5	For DS-ACH Series
SS-DSU-B8L23	●	CS0415	LW-3	SS0506	LW-2.5	Can take DS-ACH Series
SS-DSU-B8D34	●	CS0506	LW-3	SS0506	LW-2.5	

● : Stock ○ : 1-2 week delivery

CSV Series

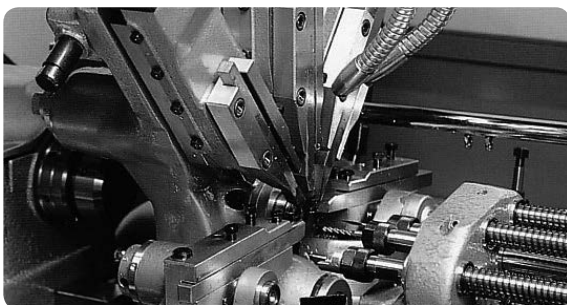
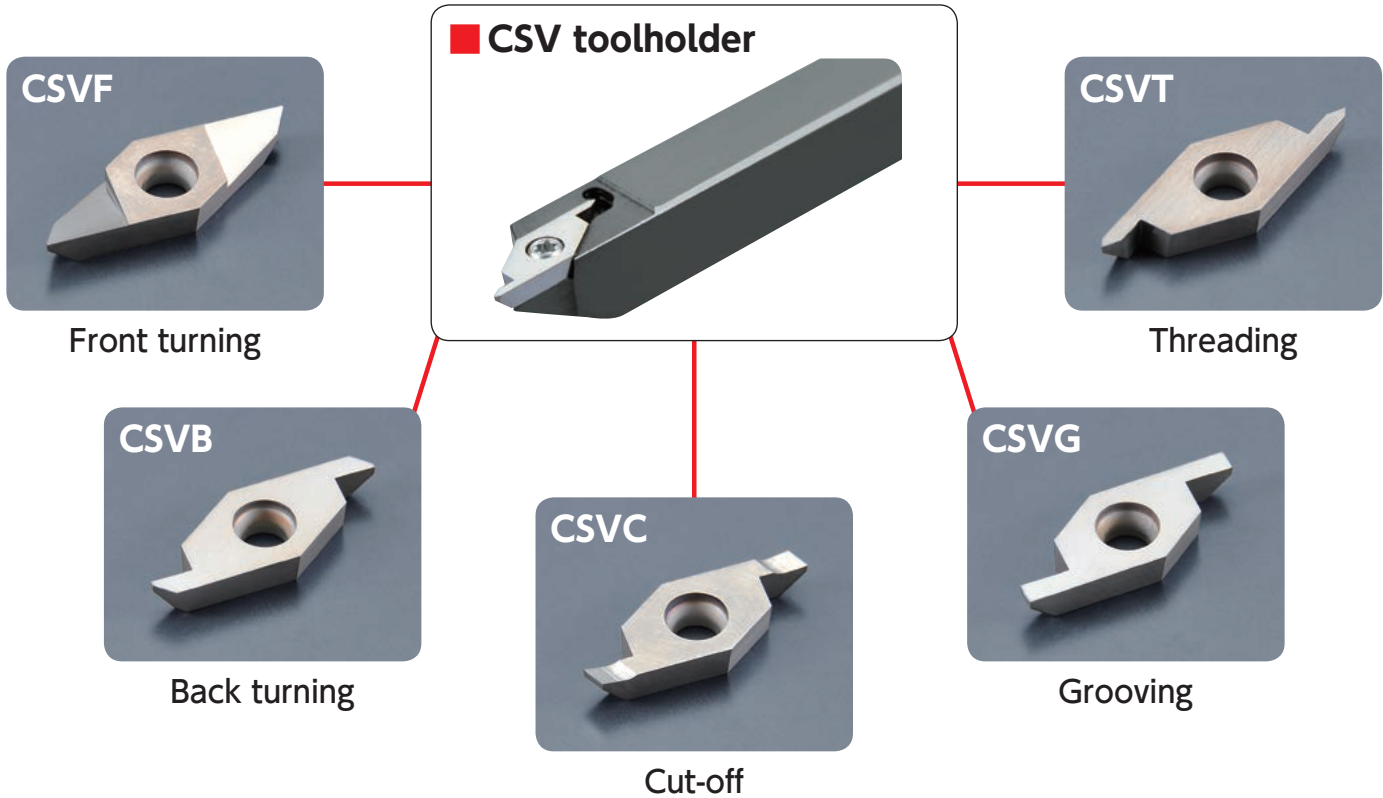
Tooling for small diameter parts

Best tool for up to .200" diameter material



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



- Holders for Cam-style machine also available

CSV Series - Toolholders

Best for up to .200" diameter material

CSV-NC

For Gang-style machine

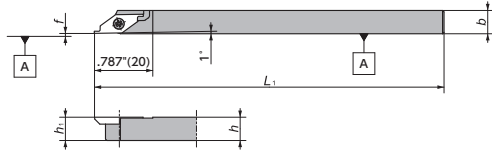


Figure-1

Right-Hand style shown

CSV

For Cam-style machine

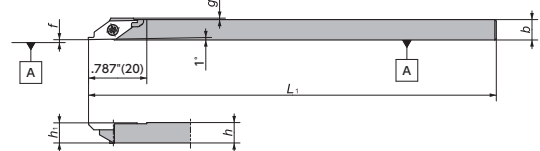


Figure-2

Right-Hand style shown

DS-CSVL

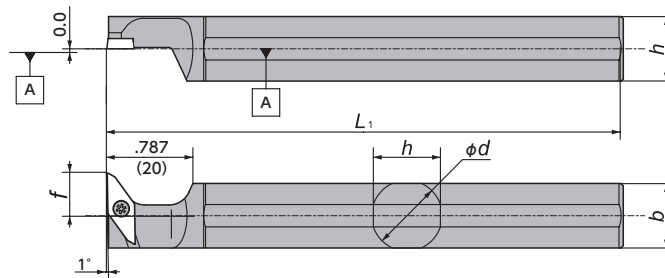



Figure-3


Left-Hand style shown
Takes right-hand inserts

CSV Series - Toolholders

CSV^{R/L} / CSV^{R/L}-NC

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV ^{R/L} 06-IN-NC	1	●	●	3/8	8	3/8	8	3/8	8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08-IN-NC	1	●	●	1/2	12	1/2	12	1/2	12	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 12NC	1	●	●	.472	12	.472	12	.472	12	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 08	2	●	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 10	2	●	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^{R/L} 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV ^{R/L} 12	2	●	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

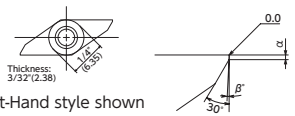
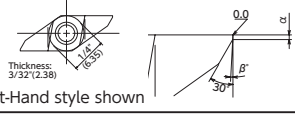
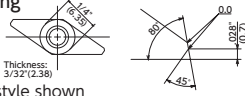
DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	3	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

CSV Series - Inserts

Front turning

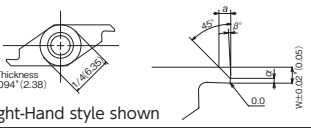
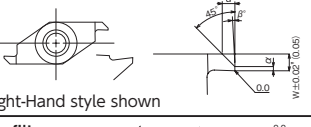

■ CSVF Mirror finish

Shape	Item Number	Chip-breaker	Max Depth of Cut		Edge Geometry ($\alpha \times \beta^\circ$)		Coated Carbide					
			(Inch)	(mm)	(Inch)	(mm)	DT4		VM1		ZM3	
							R	L	R	L	R	L
 Right-Hand style shown	CSVF11F%LV	No	—	—	.012 × 5°	0.3 × 5°			○	○		
	CSVF11F%LV-A	No	—	—	.012 × 2°	0.3 × 2°			○			
	CSVF11F%LV-M	No	—	—	.006 × 2°	0.15 × 2°	●	●	●	○		
	CSVF11F%LV-C	No	—	—	.006 × 5°	0.15 × 5°			○			
 Right-Hand style shown	CSVF11F%VB	Yes	.118	3	.012 × 5°	0.3 × 5°			●	○		
	CSVF11F%VB-A	Yes	.118	3	.012 × 2°	0.3 × 2°			○			
	CSVF11F%VB-M	Yes	.118	3	.006 × 2°	0.15 × 2°	●	●	●	○		
	CSVF11F%VB-C	Yes	.118	3	.006 × 5°	0.15 × 5°			○			
 For Profiling Left-Hand style shown	CSVF11F%VX	No	—	—							○	

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

Back turning

■ CSVB Mirror finish

Shape	Item Number	Chip-breaker	Length of Blade		Max Depth of Cut		W		Edge Geometry ($\alpha \times \beta^\circ$)		Coated Carbide					
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	DT4		VM1		ZM3	
											R	L	R	L	R	L
 Right-Hand style shown	CSVB11F%LV	No	.028	0.7	.079	2.0	.039	1.00	.012 × 5°	0.3 × 5°			○	○		
	CSVB11F%LV-A	No	.028	0.7	.079	2.0	.039	1.00	.012 × 2°	0.3 × 2°			○			
	CSVB11F%LV-M	No	.028	0.7	.079	2.0	.039	1.00	.006 × 2°	0.15 × 2°	●	●	○	○		
	CSVB11F%LV-C	No	.028	0.7	.079	2.0	.039	1.00	.006 × 5°	0.15 × 5°			○			
	CSVB11F%LV12	No	.031	0.8	.079	2.0	.047	1.20	.012 × 5°	0.3 × 5°			○			
	CSVB11F%LV14	No	.039	1.0	.079	2.0	.055	1.40	.012 × 5°	0.3 × 5°			○			
 Right-Hand style shown	CSVB11F%VB	Yes	.028	0.7	.079	2.0	.039	1.00	.012 × 5°	0.3 × 5°			○			
	CSVB11F%VB-A	Yes	.028	0.7	.079	2.0	.039	1.00	.012 × 2°	0.3 × 2°			○			
	CSVB11F%VB-M	Yes	.028	0.7	.079	2.0	.039	1.00	.006 × 2°	0.15 × 2°	●	●	○	○		
	CSVB11F%VB-C	Yes	.028	0.7	.079	2.0	.039	1.00	.006 × 5°	0.15 × 5°			○			
	CSVB11F%VB12	Yes	.031	0.8	.079	2.0	.047	1.20	.012 × 2°	0.3 × 5°			○			
	CSVB11F%VB14	Yes	.039	1.0	.079	2.0	.055	1.40	.012 × 2°	0.3 × 5°			○			
 Profiling Left-Hand style shown	CSVB11F%VX	No	—	—	—	—	—	—							○	

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

Cut-off

■ CSVC Mirror finish

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		r_ϵ		VM1	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L
 Right-Hand style shown	CSVC11F%V06	No	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	
	CSVC11F%V07	No	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	●
	CSVC11F%V08	No	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	○
	CSVC11F%V09	No	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	○
	CSVC11F%V10	No	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	●
	CSVC11F%V13	No	.197	5.0	.051	1.3	.118	3.0	0	0.0	○	○
	CSVC11F%V15	No	.197	5.0	.059	1.5	.118	3.0	0	0.0	○	○
 Right-Hand style shown	CSVC11F%VB06	Yes	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	
	CSVC11F%VB07	Yes	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	
	CSVC11F%VB08	Yes	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	
	CSVC11F%VB09	Yes	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	
	CSVC11F%VB10	Yes	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	
	CSVC11F%VB13	Yes	.197	5.0	.051	1.3	.118	3.0	0	0.0	○	
	CSVC11F%VB15	Yes	.197	5.0	.059	1.5	.118	3.0	0	0.0	○	

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

Grooving

■ CSVG **Mirror finish**

Shape	Item Number	Chip-breaker	Groove Width W		Max Depth of Cut		L		r _ε		Coated Carbide VM1	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L
<p>Thickness: .094" (2.38)</p> <p>1/4" (6.35)</p> <p>W +.001" (0.03)</p> <p>0.0</p> <p>L</p> <p>Right-Hand style shown</p>	CSVG11F ^R V025 M	No	.010	0.25	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R V030 M	No	.012	0.30	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R V035 M	No	.014	0.35	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R V040 M	No	.016	0.40	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R V045 M	No	.018	0.45	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R V050 M	No	.020	0.50	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R V055 M	No	.022	0.55	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R V060 M	No	.024	0.60	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R V065 M	No	.026	0.65	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R V070 M	No	.028	0.70	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R V075 M	No	.030	0.75	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F ^R V080 M	No	.031	0.80	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R V085 M	No	.033	0.85	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R V090 M	No	.035	0.90	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R V095 M	No	.037	0.95	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F ^R V100 M	No	.039	1.00	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R V110 M	No	.043	1.10	.102	2.60	.102	2.60	0.0	0.0	●	
	CSVG11F ^R V120 M	No	.047	1.20	.102	2.60	.102	2.60	0.0	0.0	●	○
	CSVG11F ^R V130 M	No	.051	1.30	.102	2.60	.102	2.60	0.0	0.0	●	
	CSVG11F ^R V140 M	No	.055	1.40	.102	2.60	.102	2.60	0.0	0.0	●	
CSVG11F ^R V150 M	No	.059	1.50	.102	2.60	.102	2.60	0.0	0.0	●		

NTK Unique Tooling

Threading

■ CSVT **Mirror finish**

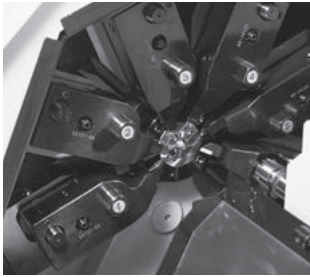
Shape	Item Number	Chip-breaker	r _ε		Pitch		Coated Carbide VM1	
			(TPI)	(mm)	(TPI)	(mm)	R	L
(A type) <p>thickness .094" (2.38)</p> <p>Right-Hand style shown</p>	CSVT11F ^R P60-035A M	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●
(B type) <p>thickness .094" (2.38)</p> <p>Right-Hand style shown</p>	CSVT11F ^R P60-035B M	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●

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

● : Stock ○ : 1-2 week delivery **M** : Mirror finish

CTPS Series

Tooling for Radial-style tool station



Features

- Best fit for Radial-style tool station.
- Interchangeable tools

CTPS Series

SVACR1010X11N
(Designed for Radial-style tool station)

Front turning Back turning Cut-off Grooving Threading

CTPS Series - Toolholders

CTPS

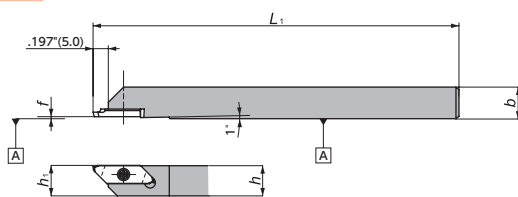


Figure-1

Right-Hand style shown

CTPSR-SUB

Max. Cut-off Dia. .157" (4.0mm)

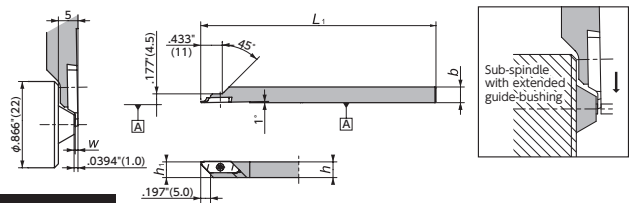


Figure-2

Right-Hand style shown

CTPS / CTPSR

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	CTPSR06-IN	1	●		.394	10.0	3/8	3/8	3/8	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S			
	CTPSR08-IN	1	●		.394	10.0	1/2	1/2	1/2	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S			
	CTPSR10	1	○		.394	10.0	.394	10	.394	10	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S		
	CTPSR12	1	○		.394	10.0	.472	12	.472	12	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S		
CTPS-001	CTPSR08-SUB04	2	○		.157	4.0	.315	8	.315	8	4.724	120	—	LRIS-2.5 × 5	CLR-15S			

CTPS Series - Inserts

Back turning

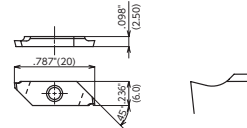
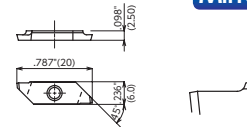


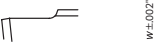
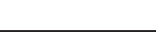
TBPS

Shape	Item Number	Chip-breaker	Length of Blade a		Max Depth of Cut b		θ	r_ϵ		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	VM1	ZM3
with Chipbreaker 	TBPS60FR00	Yes	.122	3.1	.138	3.5	60°	0.0	0.0	○	○
Right-Hand style shown	TBPS60FR10	Yes	.122	3.1	.138	3.5	60°	.004	0.1	○	○
without Chipbreaker 	TBPS60FRV	No	.189	4.8	.189	4.8	60°	0.0	0.0	○	○
Right-Hand style shown											

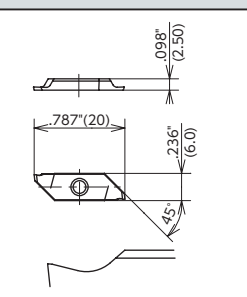

Note: All angles shown are obtained when insert is set in the holder

Cut-off

CTPS

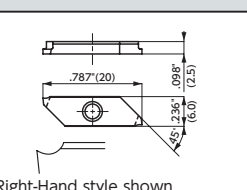
Shape	Item Number	Chip-breaker	Max. Cut-off Dia.		w		L	θ	r_e		Coated Carbide				
			ϕD	(Inch)	(mm)	(Inch)			(mm)	(Inch)	(mm)	VM1		ZM3	
												R	L	R	L
 <p>Right-Hand style shown</p>	CTPS12FR	Yes	.157	4.0	.047	1.2	.138	3.5	16°	.002	0.05	○	●	○	
	CTPS15FR	Yes	.197	5.0	.059	1.5	.157	4.0	16°	.002	0.05	○	●	○	
	CTPS18FR	Yes	.335	8.5	.071	1.8	.217	5.5	16°	.002	0.05	○	●	○	
	CTPS20FR	Yes	.394	10.0	.079	2.0	.236	6.0	16°	.002	0.05	○	○	○	
 <p>Right-Hand style shown</p>	CTPS12FRV 	No	.157	4.0	.047	1.2	.138	3.5	20°	0	0.0	●	○	○	
	CTPS15FRV 	No	.197	5.0	.059	1.5	.157	4.0	20°	0	0.0	○	○	○	
	CTPS18FRV 	No	.335	8.5	.071	1.8	.217	5.5	20°	0	0.0	○	○	○	
	CTPS20FRV 	No	.394	10.0	.079	2.0	.236	6.0	20°	0	0.0	○	○	○	

CTPS-001

Shape	Item Number	Chip-breaker	Max. Cut-off Dia.		w		θ	r_e		Coated Carbide		
			ϕD	(Inch)	(mm)	(Inch)		(mm)	(Inch)	(mm)	ZM3	
											R	L
 <p>Right-Hand style shown</p>	CTPS07FRN-001	Yes	.157	4.0	.028	0.7	0°	.002	0.05	○	○	
	CTPS07FR-001	Yes	.157	4.0	.028	0.7	16°	.002	0.05	○	○	
	CTPS07FRV-001 	No	.157	4.0	.028	0.7	20°	0	0.0	○	○	

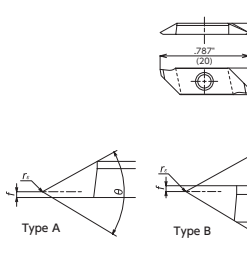
Grooving

GTPS

Shape	Item Number	Groove Width w		Max Depth of Cut		r_e		L		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	ZM3
										○	○
 <p>Right-Hand style shown ☆ θ shows the angle when the holder is set.</p>	GTGS075FR	.030	0.75	.039	1.0	0.0	0.0	.059	1.5	○	○
	GTGS095FR	.037	0.95	.059	1.5	0.0	0.0	.079	2.0	○	○
	GTGS100FR	.039	1.00	.059	1.5	0.0	0.0	.079	2.0	○	○
	GTGS120FR	.047	1.20	.098	2.5	0.0	0.0	.118	3.0	○	○
	GTGS150FR	.059	1.50	.098	2.5	0.0	0.0	.118	3.0	○	○
	GTGS200FR	.079	2.00	.098	2.5	0.0	0.0	.118	3.0	○	○

Threading

TTPS - Threading

Shape	Item Number	Type	θ	f		r_e		Pitch		Coated Carbide	
				(Inch)	(mm)	(Inch)	(mm)	(TPI)	(mm)	VM1	ZM3
										○	○
 <p>Right-Hand style shown</p>	TTPS60FR4A	A	60°	.016	0.4	.002	(0.05)	127 - 34	0.2 - 0.75	○	○
	TTPS60FR4B	B	60°	.016	0.4	.002	(0.05)	127 - 34	0.2 - 0.75	○	○
	TTPS60FR8A	A	60°	.031	0.8	R.002	(0.05)	63 - 21	0.4 - 1.25	○	○
	TTPS60FR8B	B	60°	.031	0.8	R.002	(0.05)	63 - 21	0.4 - 1.25	○	○
	TTPS60FR-N	N	60°	.049	1.25	R.004	(0.1)	25 - 17	1.0 - 1.5	○	○

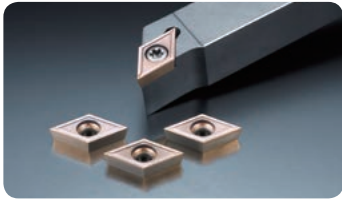
Note: All angles shown are obtained when insert is set in the holder **032**

WP Series

Wiper insert with ISO style



NTK Unique Tooling



Features

- Wiper shape provides superior surface finish
- Higher feed rate brings shorter cycle time and good chip control
- AM3 chipbreaker is now available with DCGT style

DCGT-WP(55°) <TFD style> * Can be used in SDJC and SDUC toolholders

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide						Legend		
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated						
										QM3	DT4	DM4	TM4	VM1	ZM3		KM1	
	DCGT 32.502 AM3-WP	TFD 11FR05AM3	3/8	.002														
	DCGT 32.506 AM3-WP	TFD 11FR15AM3	3/8	.006														
	DCGT 21.502 R/4 S-WP	TFD 07F%105	1/4	.002														
	DCGT 21.506 R/4 S-WP	TFD 07F%115	1/4	.006														
	DCGT 32.502 R/4 S-WP	TFD 11F%105	3/8	.002														
	DCGT 32.506 R/4 S-WP	TFD 11F%115	3/8	.006														
	DCGT 21.502 R/4 U-WP	TFD 07F%105U	1/4	.002														
	DCGT 21.506 R/4 U-WP	TFD 07F%115U	1/4	.006														
	DCGT 32.502 R/4 U1-WP	TFD 11F%105U1	3/8	.002														
	DCGT 32.506 R/4 U1-WP	TFD 11F%115U1	3/8	.006														
	DCGW 21.502RH-WP	TFD 07FR05H	1/4	.002														
	DCGW 32.502RH-WP	TFD 11FR05H	3/8	.006														

VCGT-WP(35°) <TFV style> * Can be used in SVAC toolholders

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

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide						Legend		
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated						
										QM3	DT4	DM4	TM4	VM1	ZM3		KM1	
	VCGT 2202 R/4 S-WP	TFV 11F%105SX	1/4	.002														
	VCGT 2204 R/4 S-WP	TFV 11F%110SX	1/4	.004														
	VCGT 2202 R/4 U-WP	TFV 11F%105U	1/4	.002														
	VCGT 2204 R/4 U-WP	TFV 11F%110U	1/4	.004														

TCGT-WP(60°) <TFT style> * Can be used in STAC toolholders

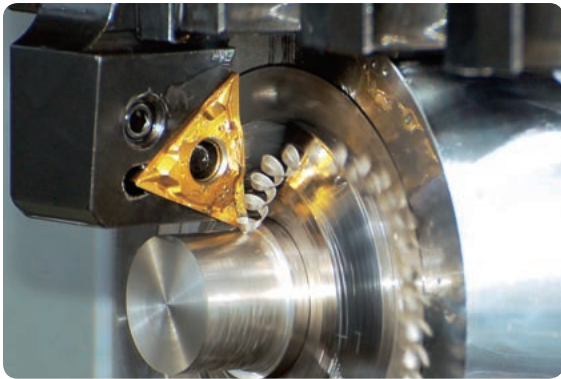
(inch)	IC	T	(inch)	IC	T
TC..21	1/4	3/32	TC..73	7/32	3/32

Shape	Item Number	ISO Item Number	IC	R	Cermet					Carbide						Legend		
					XT3	C7X	XN4	Q15	C7Z	PVD Coated		PVD Coated						
										QM3	DT4	DM4	TM4	VM1	ZM3		KM1	
	TCGT 7302 R/4 S-WP	TFT 09F%105	.002	0.05														
	TCGT 7306 R/4 S-WP	TFT 09F%115	.006	0.15														
	TCGT 21.502 R/4 S-WP	TFT 11F%105	.002	0.05														
	TCGT 21.506 R/4 S-WP	TFT 11F%115	.006	0.15														
	TCGT 7302 R/4 U-WP	TFT 09F%105U	.002	0.05														
	TCGT 7306 R/4 U-WP	TFT 09F%115U	.006	0.15														
	TCGT 21.502 R/4 U1-WP	TFT 11F%105U1	.002	0.05														
	TCGT 21.506 R/4 U1-WP	TFT 11F%115U1	.006	0.15														

UL Chipbreaker

6 corner insert for Swiss machines

WATCH ON
YouTube

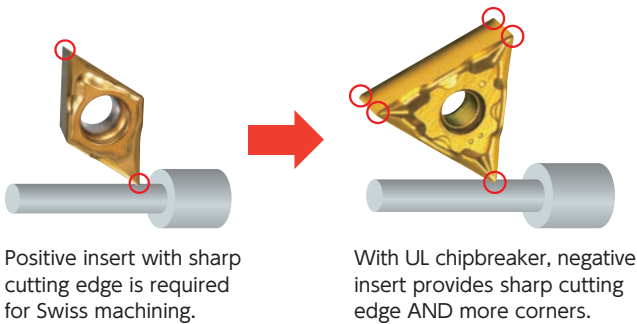


Features

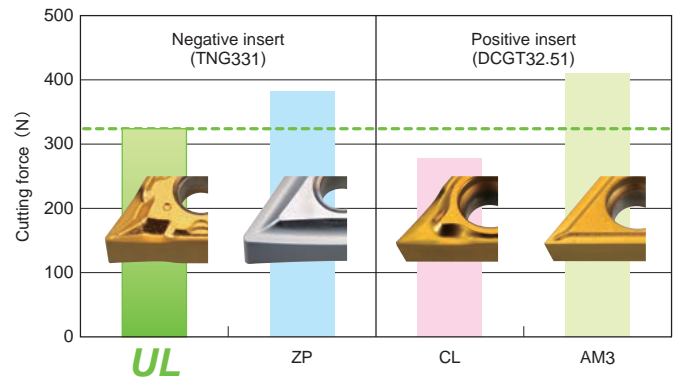
- First negative style insert designed for Swiss machines
- Less tool pressure and good chip control

NTK Unique Tooling

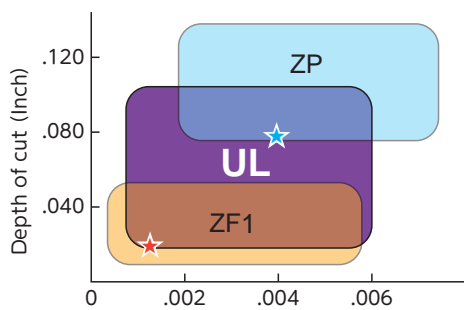
Reduce Cost in Swiss Machining



Cuts Like Positive Inserts



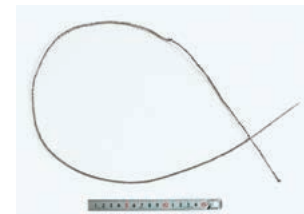
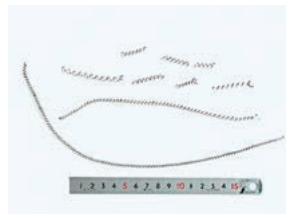
Covers a Wide Range of Cutting Conditions with Good Chip Control



《304 SS》 260 SFM WET

★ .001 IPR .020" DOC

★ .004 IPR .079" DOC



Toolholders for Swiss Machines



Available in ACH (Adjustable centerline height) toolholder

Holders → Q34

Inserts → Q36

Shifted Toolholders

Toolholders for extended guide-bushing

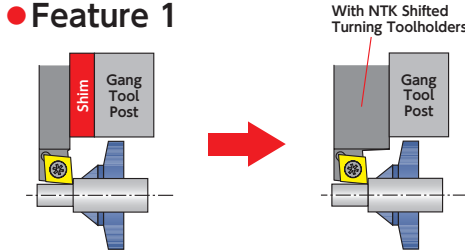


Two Major Features



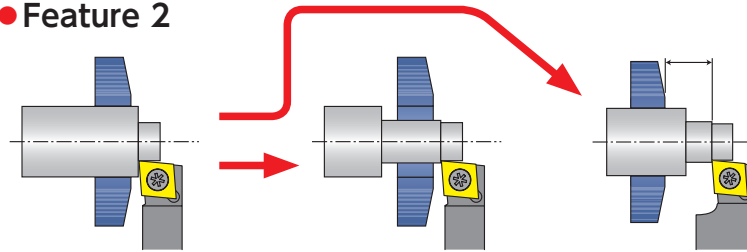
1. Eliminate shims for turning holders when extended guide bushing is used (especially in thread whirling)
2. Performs finish cut without retracting roughed section (bar) from guide bushing

● 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

→Q10•Q16•Q26

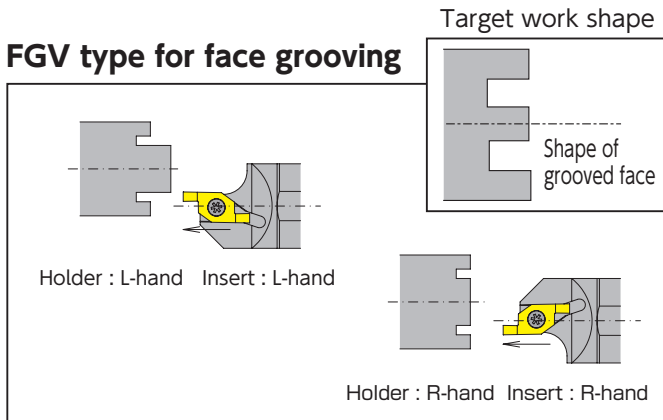
SATURN DUO

Face turning / grooving tools

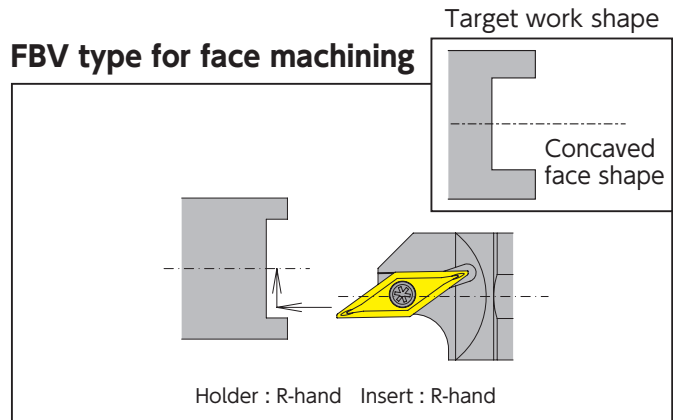


Features

- FGV type for face grooving and FBV type for face machining
- Economical double-corner specification
- Improved tool rigidity by optimizing the overhang and holder shape
- Selection includes : gang-type, front-gang-type and sleeve holder type



- Grooving possible under a wide range of cutting conditions due to strengthened rigidity of both insert and holder
- Minimum machining diameter of $\phi .236"$, and groove width of $.039"$
- Left-hand types available for machining work with a boss



- Further improved face machining efficiency
- Minimum machining diameter of $\phi .315"$

→T20

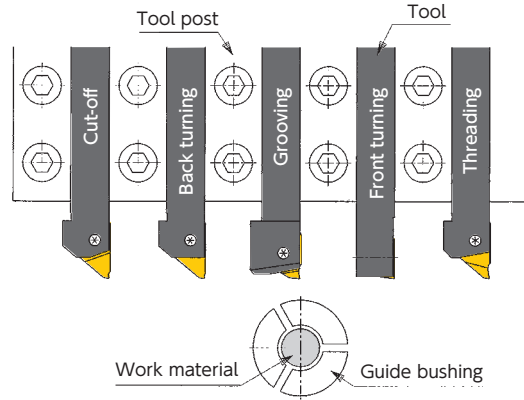
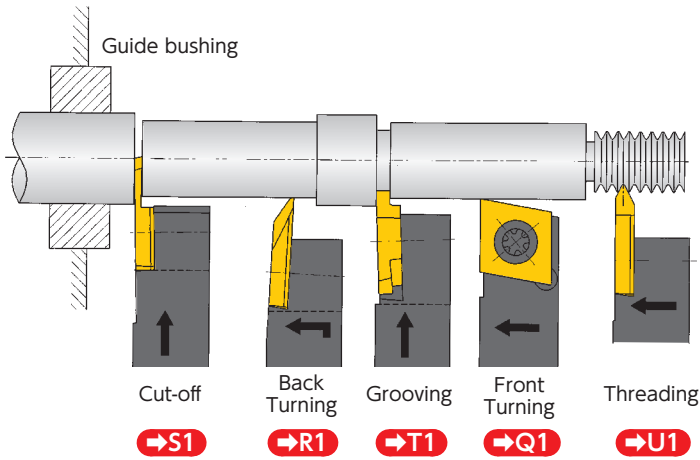
P



Tooling for Swiss-type Lathes

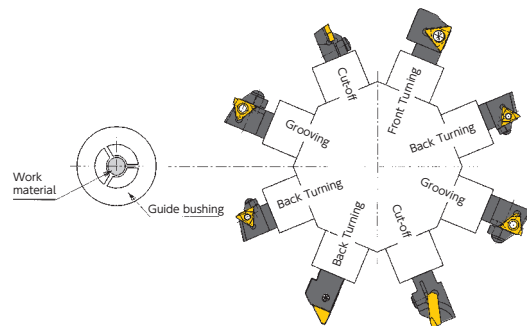
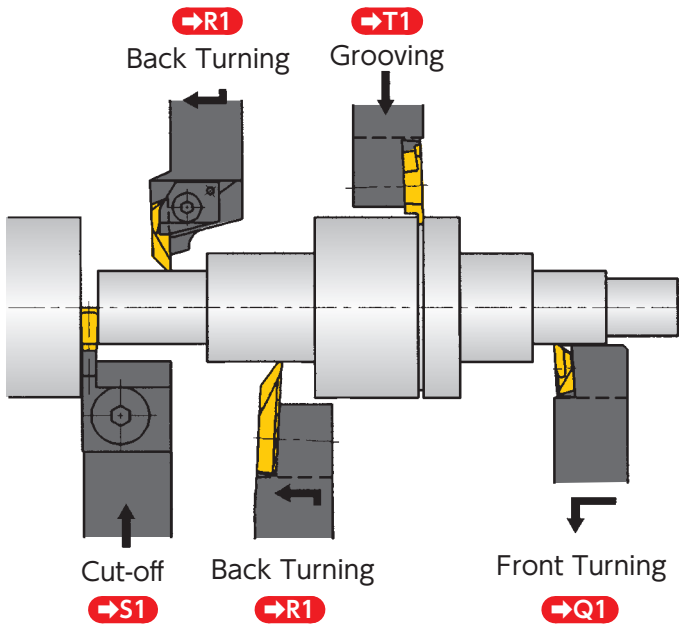
- Tooling P2
- Grade Introduction P5
- Recommended Insert Grade
and Cutting Conditions P17
- Chipbreaker Introduction P21

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



Tooling for gang type tool post

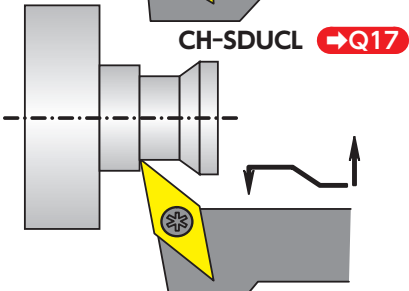
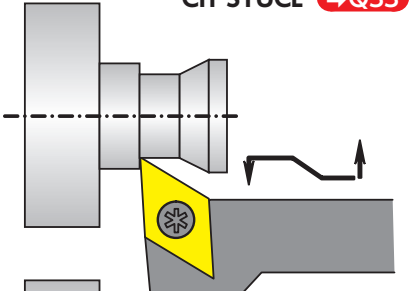
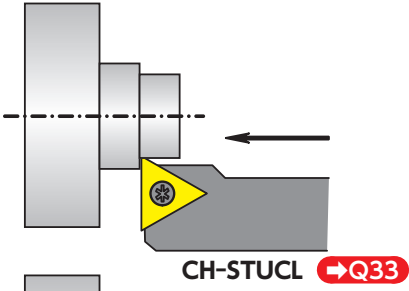
Tooling example for a small CNC automatic lathe (turret type)



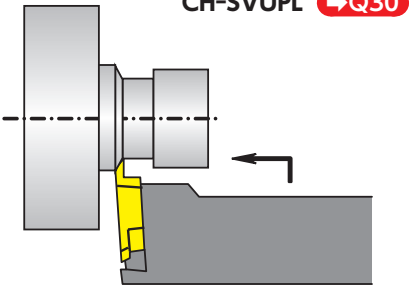
Tooling for turret type tool post

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

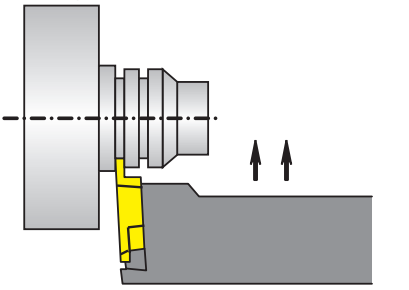
■ Front Turning



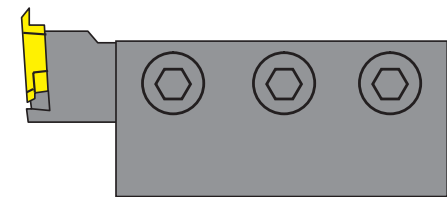
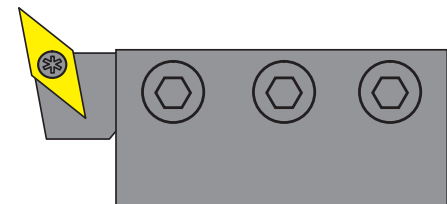
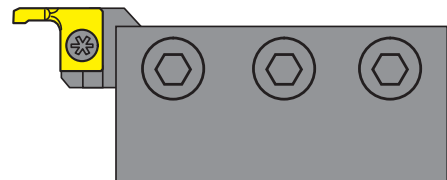
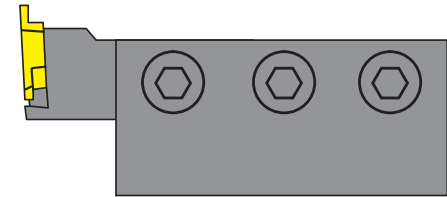
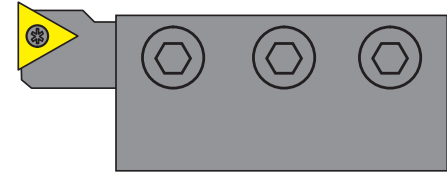
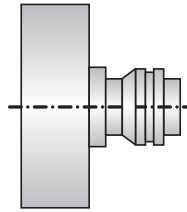
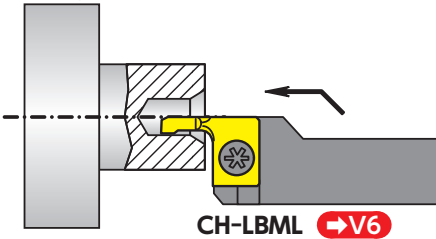
■ back Turning



■ Grooving



■ ID Boring



Micro-grain Carbide and PVD/CVD-coated Carbide

Micro-grain Carbide and PVD/CVD-coated Carbide



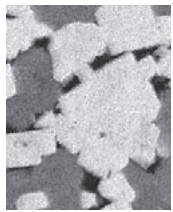
Excellence in precision machining and machining of hard-to-cut materials

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

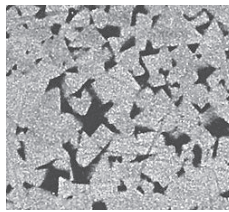
The result of intensive research and development for improving carbide grades

The NTK carbide grade series shows very stable performance under a wide range of conditions. NTK uses micro-grain carbide well balanced between wear resistance and toughness, as substrate.

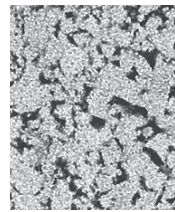
Carbide grade



General carbide structure

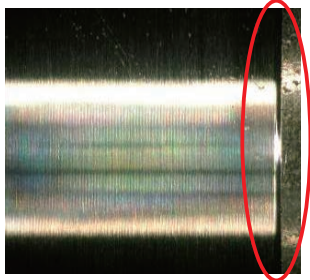


Micro-grain carbide structure



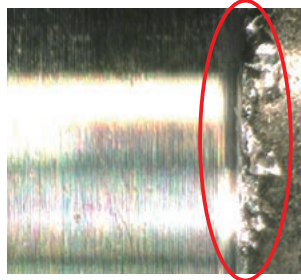
Super micro-grain carbide structure

Features Superior cutting performance



No burrs

Machined with our insert with a sharp cutting edge



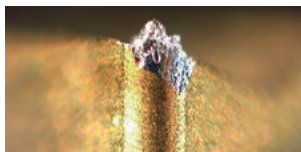
Burrs

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

Relentless pursuit of better cutting performance

NTK takes pride in its carbide grade series for their outstanding cutting performance as a result of grinding ultra sharp cutting edges. This outstanding cutting performance benefits in better burr control, lower tool pressure, stabilized dimensions and improved work hardening control.

Features Precise analysis on insert wear patterns



Build-up edge



Chipping / fracture




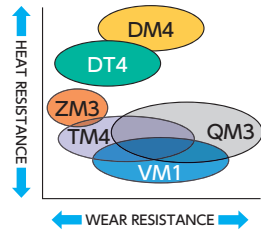


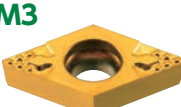



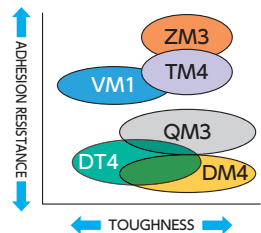
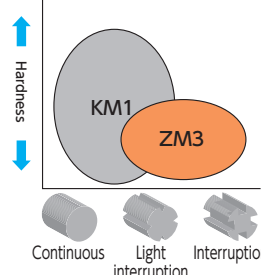
Flank wear



Wear on rake

Continuous research on insert tool life

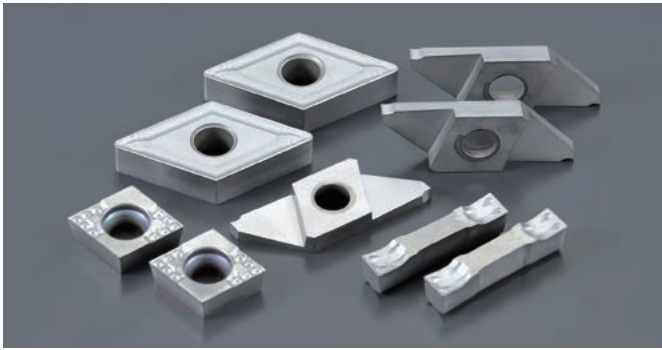
Damage to insert cutting edges varies depending on the machining process and the work material. There are various types of coatings that reduce such damage to prolong the tool life. NTK carbide series offers a variety of coated insert grades which have been developed to improve their resistance characteristics, including wear, fracture, adhesion, oxidation and the like, by utilizing our state-of-the-art technologies.

	Grade / Coating	Applications / Features	Physical properties*					Applications map	
			Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K		Thermal conductivity W/m · K
PVD coated	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	 <p>■ Correlation chart 1</p> <p>HEAT RESISTANCE ↑</p> <p>WEAR RESISTANCE ↔</p>
	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	
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	 <p>■ Correlation chart 2</p> <p>ADHESION RESISTANCE ↑</p> <p>TOUGHNESS ↔</p>
									 <p>■ Aluminum / Brass</p> <p>Hardness ↑</p> <p>Continuous Light Interruption</p>

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

QM3

Superb wear resistance and fracture resistance in interrupted cutting !



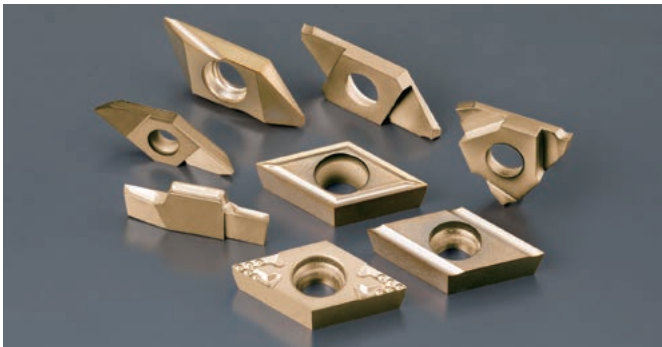
Features

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

Spindle		
4135		
330 SFM		
.0012 IPR		
.008" DOC		
WET		
NTK : QM3	600 pcs	
Competitor's PVD-coated carbide	300 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Heat resistant alloys 	Swiss-type lathes Conventional lathes	Wear resistance

NEW DT4

Excellent heat resistance for Swiss-type lathes !



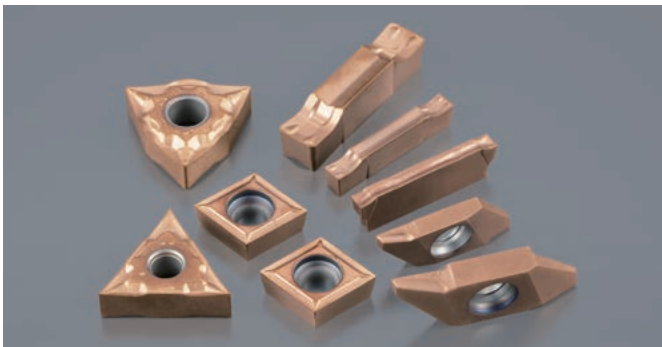
Features

- Excellent oxidation resistance for Swiss-type lathes

Pin		
440 CSS		
260 SFM		
.002 IPR		
.039" DOC		
WET		
NTK : DT4	1100 pcs	
Competitor's PVD-coated carbide	800 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Swiss-type lathes	Oxidation Heat resistance

NEW DM4

Excellent oxidation resistance !



Features

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

Case		
Inco 718		
130 SFM		
.001 IPR		
.008" DOC		
WET		
NTK : DM4	110 pcs	
Competitor's PVD-coated carbide	90 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Titanium alloys ● Stainless steels ● Alloy steels ● Carbon steels ● Heat resistant alloys 	Conventional lathes Swiss-type lathes	Oxidation Heat resistance

TM4 Next generation standard insert grade for Swiss-type lathes !

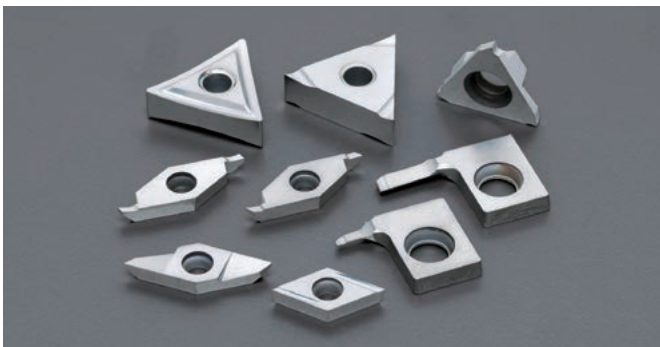


Features

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

Automobile parts		
304 SS		
260 SFM		
.0008 IPR		
.047" DOC		
WET		
NTK : TM4	950 pcs	
Competitor's PVD-coated carbide	500 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Balance

VM1 High precision machining of small diameter parts !

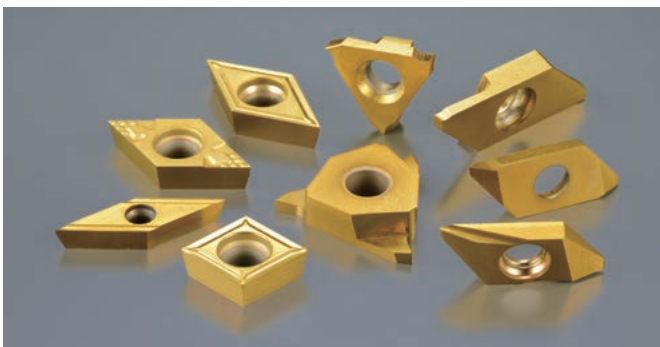


Features

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

Plug		
12L14		
460 SFM		
.0006 IPR		
.004" DOC		
WET		
NTK : VM1	800-1000 pcs	
Competitor's PVD-coated carbide	150 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels 	Swiss-type lathes	Edge sharpness

ZM3 The best selling grade for automatic 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 automatic lathes

Case		
1010		
330 SFM		
.0047 IPR		
.012"-.015" DOC		
WET		
NTK : ZM3	6000 pcs	
Competitor's PVD-coated carbide	150 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Carbon steels ● Stainless steels ● Alloy steels ● Non-ferrous materials 	Swiss-type lathes Conventional lathes	Adhesion resistance

KM1

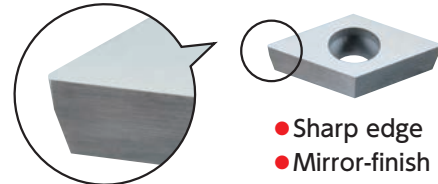
Good for non-ferrous materials like PEEK, Brass, Aluminum and Copper



Features

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

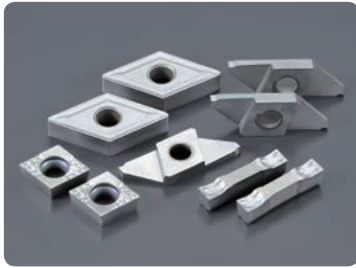
Spool machining		
5056 (Aluminium)		
300 ~ 560 SFM		
.0016 IPR		
.02"-.20" DOC		
WET		
NTK : KM1	300 pcs	
Competitor's PVD-coated carbide	200 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> ● Aluminium ● Plastic ● Non-ferrous materials 	Swiss-type lathes	Edge sharpness



PVD Coatings

QM3/Q15

Q-Coat

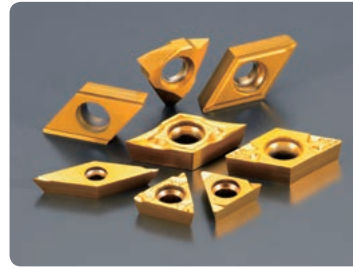


Best wear resistance

- stainless steel
- Carbon steel
- Alloy steel

TM4

TM-Coat



Best balance of wear resistance and adhesion resistance

- For small part machining in general

DM4

DM-Coat



Best heat resistance

- Heat resistant alloy
- Stainless steel
- Hardened material

DT4

DT-Coat

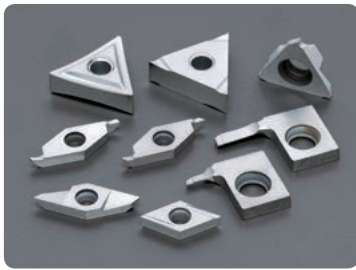


Best balance of heat resistance and sharp edges

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

VM1

V-Coat



Best edge sharpness

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

ZM3/C7Z

Z-Coat



Best adhesion resistance

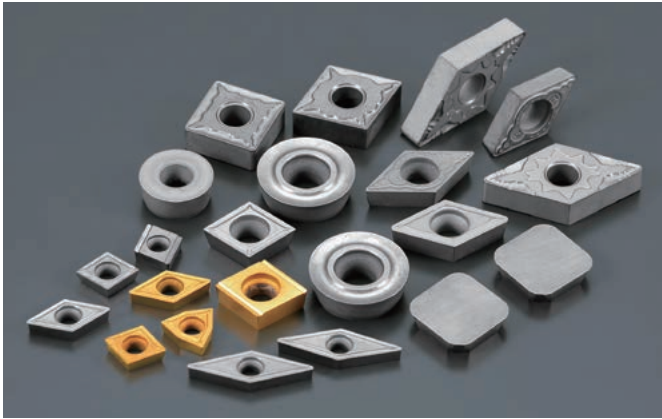
- General purpose machining

Coating Specifications

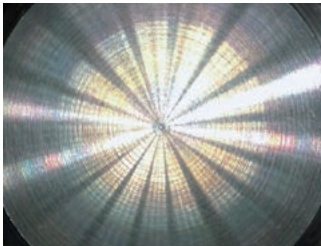
	Q-Coat	TM-Coat	DM-Coat	DT-Coat	V-Coat	Z-Coat
Thickness	Thick	Thin	Thick	Thin	Thin	Thick
Wear Resistance	◎	○	○	○	○	○
Heat Resistance			◎	◎		○
Adhesion Resistance		○				◎
Edge Sharpness		○		○	◎	
Composition	TiCN	Multilayer	Multilayer	Multilayer	TiCN	TiN

◎1st choice ○2nd choice

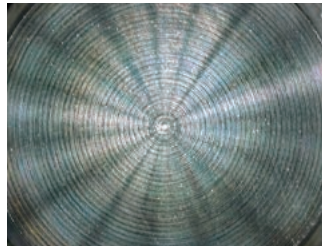
Cermet series



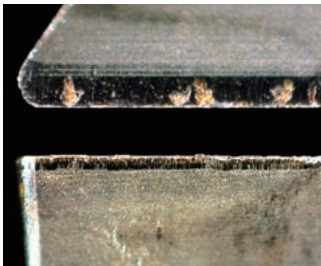
Cermet is a cutting tool material composed mainly of TiC (Titanium Carbide) and TiN (Titanium Nitride). The name, cermet, is derived from the words CERAMIC and METAL (representing carbide). As the name suggests, cutting performance is also in the mid-range of ceramic's and carbide's. The advantages of this material grade are high-quality and excellent surface finishes can be achieved with elevated cutting speeds. Cermets provide extended tool life.



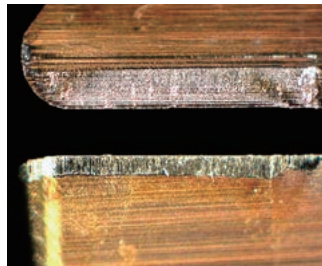
Surface finished with cermet



Surface finished with carbide



Cermet

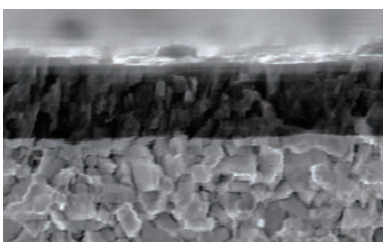


Carbide

PVD-coated cermet series



PVD TiN or TiCN coated cermet grades bring improved wear resistance. Since the coating layer does not contain any binder components, the coating maximizes the wear resistance of the titanium which delivers excellent performance and the tool life.



Smooth coating layer offers excellent adhesion resistance

Outstanding coating bonding with substrate

Features

High quality surface finish

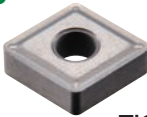
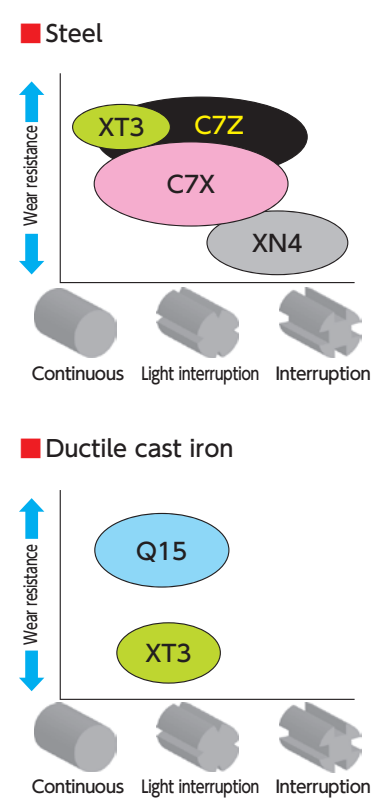

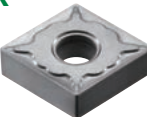
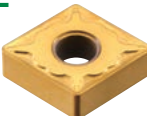

The main components, TiC and TiN, have good BUE resistance as they have low affinity with work materials. Thus, machining with cermets brings high quality surface finish over extended periods of time.

High speed cutting

The main components, TiC and TiN, are more resistant to wear and oxidation at high temperature than WC (tungsten carbide), which is the main component of carbide tools. Because of excellent wear and oxidation resistance, cermet grades are less reactive with work materials and make stable high speed machining possible.

Features

PVD coating with superb hardness and surface smoothness provide excellent wear resistance and adhesion resistance.

Grade / Coating	Applications / Features	Physical properties*						Applications and ceramic property map
		Density g/cm ³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10 ⁻⁶ /K	Thermal conductivity W/m · K	
XT3  TiC+TiN base	P M K N • Well balanced between wear resistance and toughness	6.3	92.5	1,700	450	8.4	21	
Q15  TiC+TiN base+TiCN coat	P M K • Superior wear resistance and toughness	6.3	92.5	1,700	450	8.4	21	
C7X  TiCN base	P M K N • Good combination of heat resistance and toughness	7.0	91.5	1,800	440	8.2	31	
C7Z  TiCN base + TiN coat	P M K N • Perfect combination of heat resistance and toughness	7.0	91.5	1,800	440	8.2	31	
XN4  TiN base	P M • Excellent toughness	5.9	91.5	1,900	450	8.9	42	

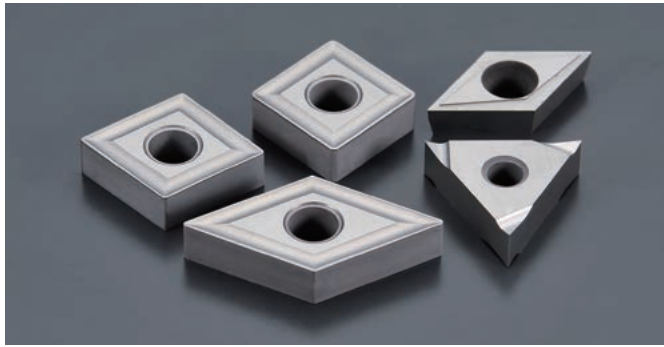
*For coated grades, the values of the base material are indicated.

■ Applications

Material	General steel Carbon steel , Alloy steel					Stainless steel Stainless steel , Cast steel					Cast iron Gray cast iron , Ductile cast iron			
	Finish ← → Rough					Finish ← → Rough					Finish ← → Rough			
Range	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30
Cermets	XT3		C7X			XT3					XT3			
PVD Coated cermets	Q15		C7Z			Q15					Q15			

XT3

Well balanced combination of wear resistance and toughness !



Features

- Well-balanced combination of wear resistance and toughness
- Covers a wide range of steel cutting, from medium cutting to finishing of steel

Crank shaft	
1049	
250 SFM	
.002 IPR	
.001" DOC	
WET	
NTK : XT3	
Competitor's cermet	

Best for

- Carbon steels
- Stainless steels
- Alloy steels
- Cast iron

Optimized for

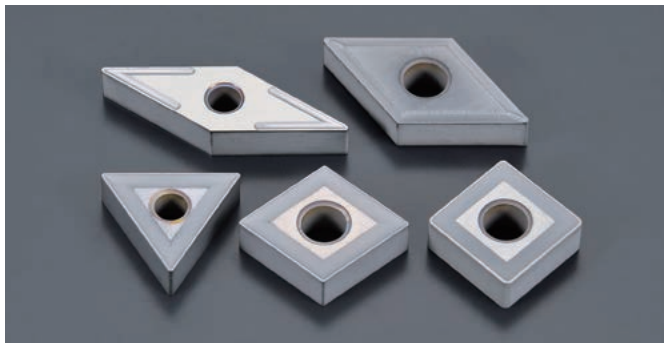
Conventional lathes

Excellent in

Wear resistance

Q15

Coated cermet for high-speed finishing of ductile cast iron !



Features

- Further improved wear resistance and toughness from the TiCN-based coating
- The recommended grade for high-speed finishing of ductile cast iron

Differential case	
Ductile cast iron	
525 SFM	
.004 IPR	
.008" DOC	
WET	
NTK : Q15	
Competitor's cermet	

Best for

- Carbon steels
- Stainless steels
- Alloy steels
- Cast iron
- Ductile cast iron

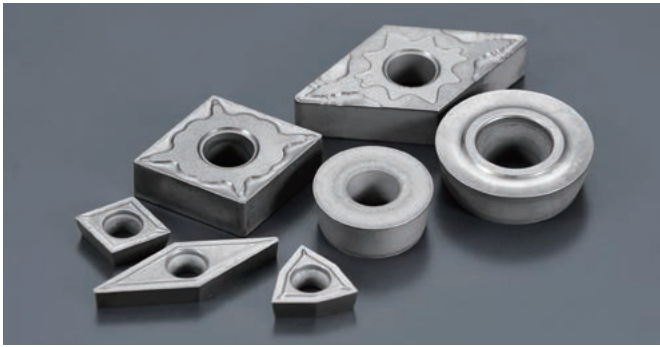
Optimized for

Conventional lathes

Excellent in

Wear resistance

C7X High-strength cermet grade that offers remarkable machining stability !

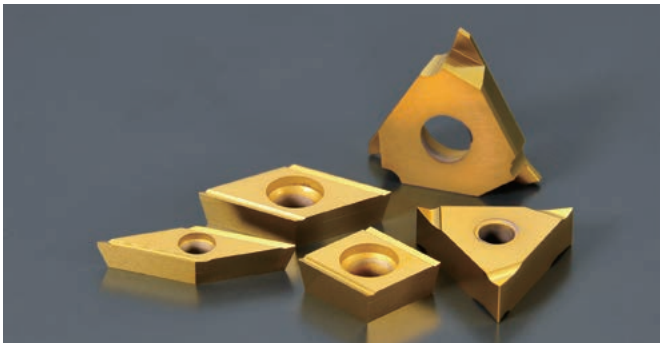


Features

- Overcomes the traditional weakness of conventional cermet grades with improved thermal shock resistance
- Excellent grade for grooving and bearing machining

AT clutch		
SS		
800 SFM		
.0008-.0016 IPR		
.060" DOC		
WET		
NTK : C7X	200 pcs	
Competitor's cermet	100 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels • Cast iron 	Swiss-type lathes Conventional lathes	Balance

C7Z Combining the advantages of thermal shock resistance and fracture resistance !

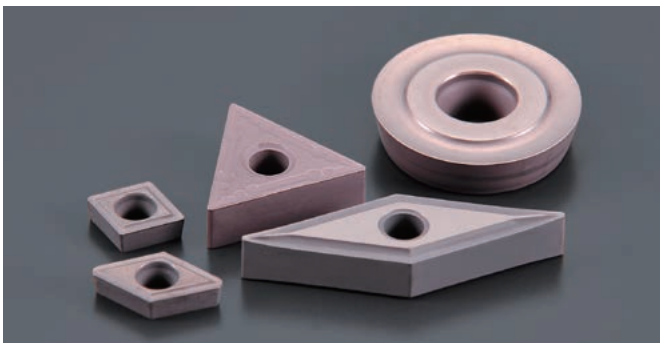


Features

- Further improvement in wear resistance and thermal shock resistance with a TiN-based coating
- Excellent performance in grooving and bearing machining
- The most recommended grade for high-speed machining of steel

Spring		
SS		
430 SFM		
.002 IPR		
.012" DOC		
WET		
NTK : C7Z	1600 pcs	
Competitor's cermet	1200 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels • Cast iron 	Swiss-type lathes Conventional lathes	Balance

XN4 Toughest cermet grade with excellent fracture resistance !



Features

- Allows for stable machining with longer tool life thanks to its excellent fracture resistance

Gear		
5120H		
360 SFM		
.004 IPR		
WET		
WET		
NTK : XN4	300 pcs	
Competitor's cermet	200 pcs	
Best for	Optimized for	Excellent in
<ul style="list-style-type: none"> • Carbon steels • Stainless steels • Alloy steels 	Conventional lathes	Toughness

Tooling for Swiss-type Lathes

[Cermet]

EZCUBE

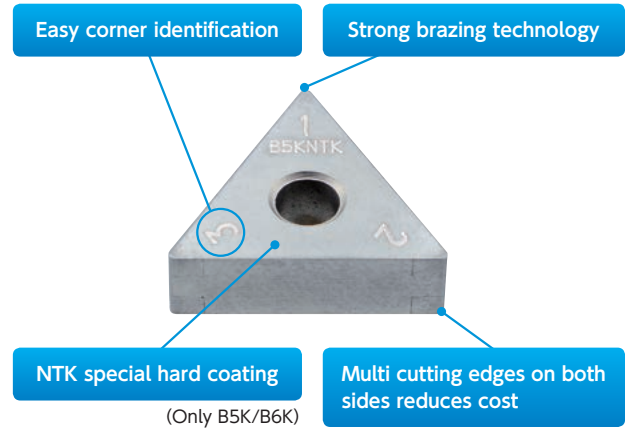
Excellent performance with superb versatility at a low price !



CBN (Cubic Boron Nitride)

Features

- Seven grades available to cover a variety of work materials
- A wide selection in geometries
- Multiple corners on both insert sides contributes to cost reduction



● NTKEZCUBE / EZ CUBE

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

B23

Features

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

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Cast iron	Turning	Rough Semi finish	1300-3300	.004-.020	.008-.080	○	●
Sintered alloy	Turning	Rough-Finish	150-1000	.001-.008	.002-.020	●	●

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

B30

Features

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

[Recommended cutting conditions]

Work material	Application	Purpose	Cutting speed (SFM)	Feed (IPR)	Depth of cut (inch)	DRY	WET
Cast iron	Turning	Semi finish Finish	1300-3300	.004-.020	.008-.080	○	●

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

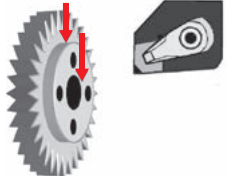
NEW B6K/B36

Features

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

[Recommended cutting conditions]

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

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

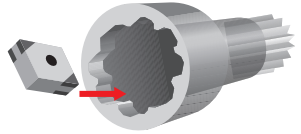
B40

Features

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

[Recommended cutting conditions]

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

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

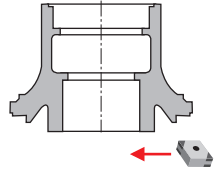
NEW B5K/B52

Features

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

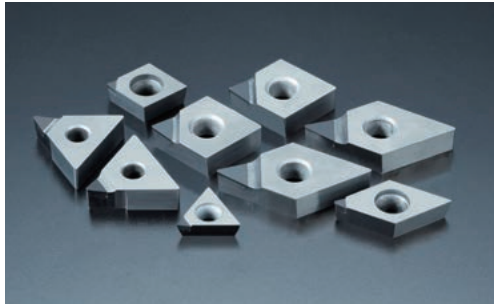
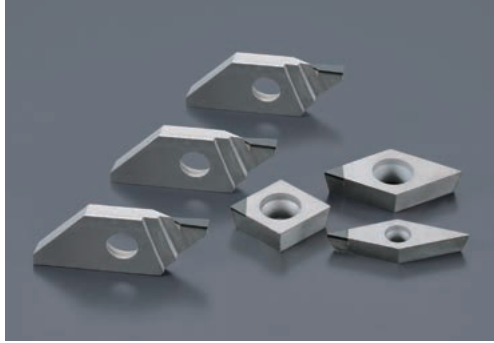
[Recommended cutting conditions]

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

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

Tooling for Swiss-type Lathes

PCD (Polycrystalline Diamond)



Features

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

[Recommended cutting conditions]

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

PD1

Features

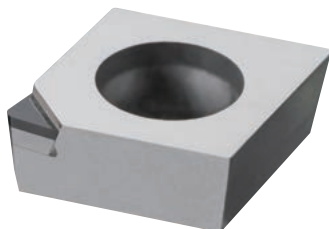
- *Sharp cutting edges*
- *Enables high precision and stable machining by controlling the potential for built-up edge*

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

NEW PD2

Features

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



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

Tooling for Swiss-type Lathes

[CBN / PCD]

Recommended Insert Grade and Cutting Conditions

Front Turning

CSVF / CC.. / DC.. / VC.. / VB.. / TN.. / TF

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut 304 316 17-4PH	Free cutting 303 430F	5120 4137	1045 1046	
Grade	1st choice	DT4			DT4	TM4	QM3		
	2nd choice	TM4 / QM3			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)		
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	Carbide C7Z(X) 150 300 500 400 500 800		
Recommended Chipbreaker Feed Rate (IPR)	≤.004 DOC	AMX KHG .0004 .0008 .0012				AMX KHG .0004 .0012 .0016			
	.004 to .060 DOC	CL S AM3 .0008 .0016 .0024				CL AM3 AZ7 ZR S U/U1 UL .0008 .0020 .0032			
	≥ .060 DOC	CL S AM3 .0008 .0015 .0025				CL AM3 ZP .0012 .0024 .0040			

Back Turning

CSVB

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut 304 316 17-4PH	Free cutting 303 430F	5120 4137	1045 1046
Grade	1st choice	DT4						VM1
	2nd choice	VM1						DT4
Cutting Speed (SFM)		75 125 225	100 200 275			100 200 300		
Feed Rate (IPR)	X Direction	.0004 .0008 .0012						
	Z Direction	.0004 .0012 .0016						

TBDP / TBMH / TBP / TBPA / TBVC

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut 304 316 17-4PH	Free cutting 303 430F	5120 4137	1045 1046
Grade	1st choice	DT4			DT4 / QM3	TM4	QM3	
	2nd choice	TM4 / QM3			VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (SFM)		75 125 225	100 200 275			150 300 500		
Feed Rate (IPR)	X Direction	.0004 .0008 .0012				.0004 .0008 .0016		
	Z Direction	.0008 .0016 .0024				.0008 .0016 .0031		

TB32 / TB43

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut 304 316 17-4PH	Free cutting 303 430F	5120 4137	1045 1046	
Grade	1st choice	ZM3						ZM3	
	2nd choice	ZM3						Z15	
Cutting Speed (SFM)		50 100 150				ZM3 150 300 425 Z15 400 600 800			
Feed Rate (IPR)	X Direction	.0004 .0012 .0020				.0004 .0012 .0020			
	Z Direction	.0016 .0020 .0031				.0016 .0031 .0059			

Tooling for Swiss-type Lathes

[Recommended cutting conditions]

Recommended Insert Grade and Cutting Conditions

Cut Off

CSV T

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4					VM1	
	2nd choice	VM1					DT4	
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0004 .0008 .0012			.0004 .0012 .0020			

CTP / CTPA / CTPS / CTPW

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4				TM4	QM3	
	2nd choice	TM4		QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)		
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0008 .0012 .0020			.0008 .0016 .0024			

CTDP / CTV

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4				TM4	QM3	
	2nd choice	TM4 / QM3				QM3	TM4 / DM4	
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0012 .0020 .0031			.0016 .0031 .0047			

Grooving

CSV / GTG / GTMH / GTMT / GTMX / SBG

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
				Hard to cut	Free cutting		
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4		DM4 / DT4	TM4	QM3	
	2nd choice	TM4 / QM3		QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (SFM)		75 125 225	100 200 275	130 230 330	150 300 600	Carbide C7Z(X)	150 300 500 400 500 800
Feed Rate (IPR) A. Grooving B. Side turning*	Width .010-.020	A. .0002 - .0012					
		B. .0001 - .0002					
	.020-.040	A. .0008 - .0024					A. .0008 - .0028
		B. .0002 - .0004					B. .0002 - .0004
	.040-.080	A. .0012 - .0028					A. .0012 - .0031
		B. .0008 - .0020					B. .0012 - .0024
	> .080	A. .0012 - .0079					
		B. .0012 - .0024					

*When side turning, Max. DOC is under .0079". Under .016" width side turning impossible

GVW / Groove Duo

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
				Hard to cut	Free cutting		
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	QM3					
	2nd choice	QM3					
Cutting Speed (SFM)		75 125 225	100 200 275	130 230 330	150 300 600	150 300 500	
Feed Rate (IPR) A. Grooving B. Side turning*	Width .118-.157	A. .0020 - .0059					
	.157-.197	A. .0039 - .0079				A. .0039 - .0098	
	> .197	A. .0059 - .0138					

*Max DOC is 80% of width

GTPA

Work Material	Aluminum Alloy	
Common Name	ASTM 5056 ASTM 6061	
Grade	1st choice	PD1
	2nd choice	KM1
Cutting Speed (SFM)		PD1 330 650 1000 KM1 160 330 650
Feed Rate (IPR) A. Grooving B. Side turning	A. .0020 - .0079	
	B. .0039 - .0079	

Recommended Insert Grade and Cutting Conditions

Threading

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	VM1		VM1 / ZM3		QM3		
	2nd choice	ZM3		QM3		VM1 / ZM3		
Cutting Speed (SFM)		75 125 225	100 200 275	130 230 330	150 300 600	150 300 500		

*Unless your machine is equipped with high speed threading program, please set the feed rate to 80 IPM or lower to prevent making incomplete threads

ID Boring

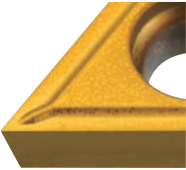
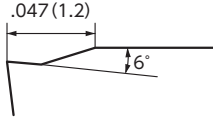
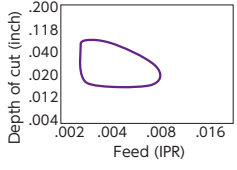

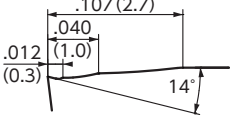
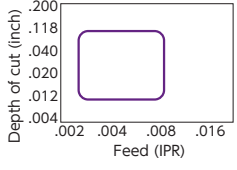
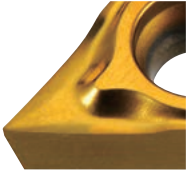
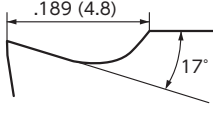
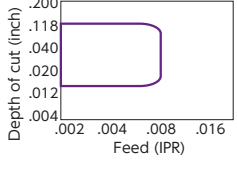

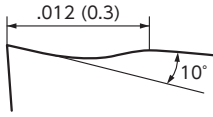
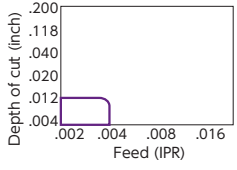
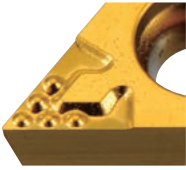
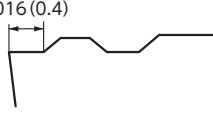
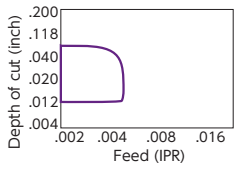


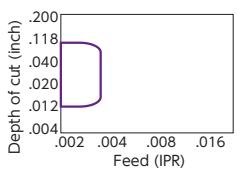
diameter ≤ .240" (LBM / STICK DUO)

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	TM4					VM1 / TM4	
	2nd choice	VM1 / ZM3					ZM3	
Cutting Speed (SFM)		60 160 230			100 200 300			
Feed Rate (IPR)		.0004 .0012 .0020						
Depth Of Cut (DOC)		.0020 .0031 .0039						

diameter > .240"

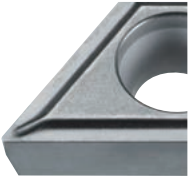
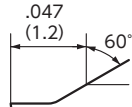
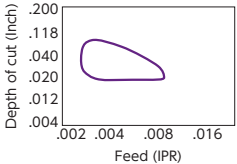

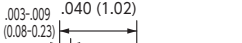
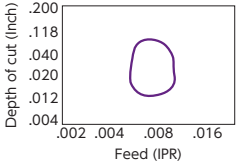

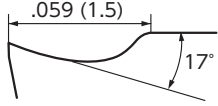
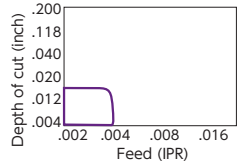
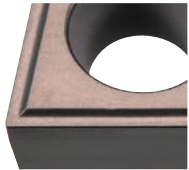
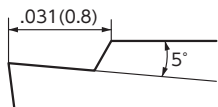
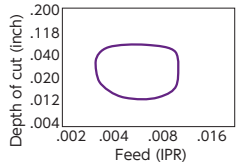
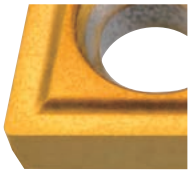
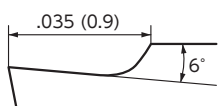
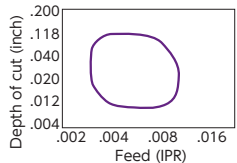

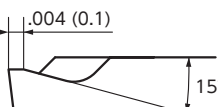
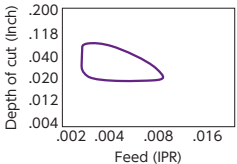
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					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4		DT4	TM4	QM3		
	2nd choice	TM4		QM3 / TM4	QM3	TM4 / DT4 / C7Z(X)		
Cutting Speed (SFM)		150 230 330		130 230 330	150 300 600	Carbide C7Z(X)	150 300 500 400 500 800	
Feed Rate (IPR)		.0008 .0024 .0047						
Depth Of Cut (DOC)		.0039 .0197 .0787						

Molded Chipbreakers for Positive Inserts

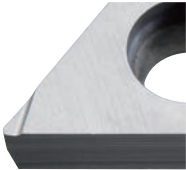
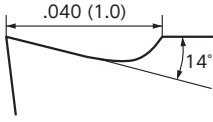
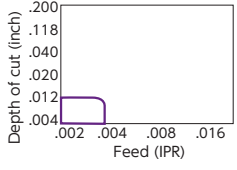

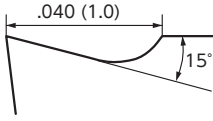
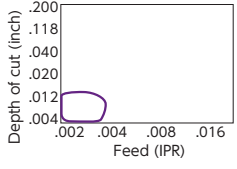
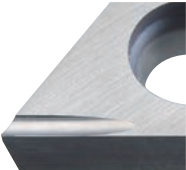
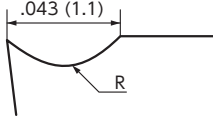
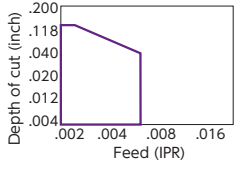
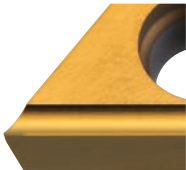
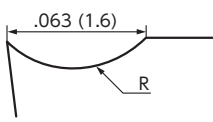
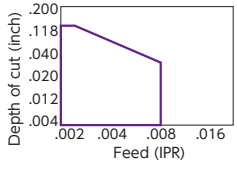
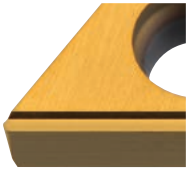
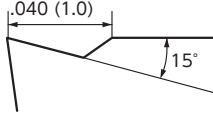
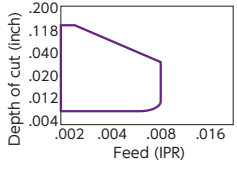

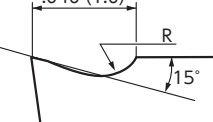
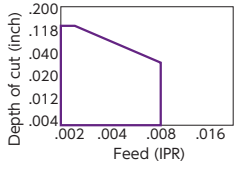

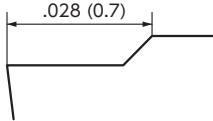
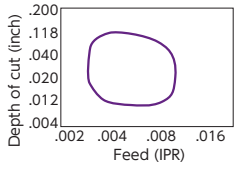
Name	Chipbreaker Geometry	Features	Chip Control Range
AM3	  <p>DCGT32.508 shown</p> <p>→N8</p>	<ul style="list-style-type: none"> ● All purpose chipbreaker ● Sharp edge with toughness 	
YL	<p>NEW</p>   <p>DCGT11T302MYL</p> <p>WATCH ON YouTube →N8</p>	<ul style="list-style-type: none"> ● Great combination of sharpness and toughness ● Covers extremely wide range ● Excellent chip control 	
CL	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →N8</p>	<ul style="list-style-type: none"> ● Sharpest molded Chipbreaker ● Excellent chip control ● Less tool pressure 	
AMX	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube →N8</p>	<ul style="list-style-type: none"> ● Designed for very light depth of cut ● Good sharpness 	
AZ7	  <p>DCGT32.508M shown</p> <p>WATCH ON YouTube</p>	<ul style="list-style-type: none"> ● Excellent chip control at light feed and light depth of cut 	
ZR	  <p>DCMT32.508 shown</p>	<ul style="list-style-type: none"> ● Covers a wide depth of cut range under high-speed and low-feed conditions 	

Chipbreakers for Positive Inserts

Molded Chipbreakers for Positive Inserts (continued)

Name	Chipbreaker Geometry		Features	Chip Control Range
AF3		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Good chip control 	
GA		 VBGT332 shown	<ul style="list-style-type: none"> ● Sharp and tough cutting edge 	
FG	 →O16	 TPGH221 shown	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD at light depth of cut ● Sharp cutting edge with high rake angle 	
AF1		 CCGT32.508 shown	<ul style="list-style-type: none"> ● Produces remarkable surfaces in semi-finishing of steels 	
AM5		 CPGH21.508 shown	<ul style="list-style-type: none"> ● Chipbreaker for boring ● Provides both good cutting performance and chip control 	
QB		 WCGT5208 shown	<ul style="list-style-type: none"> ● Sharp and tough cutting edge 	

Ground Chipbreakers for Positive Inserts


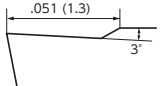
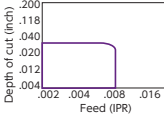

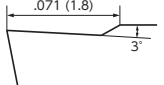
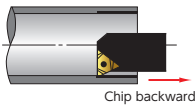

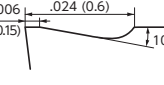
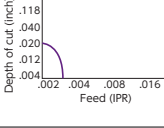
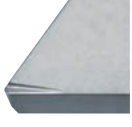
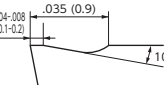
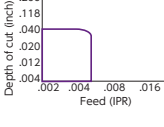

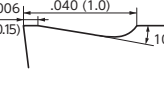
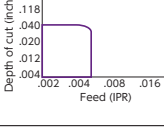

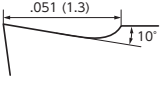
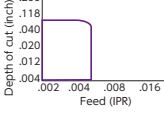

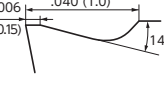
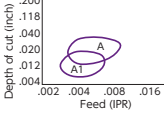

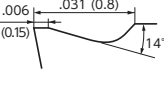

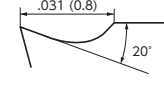
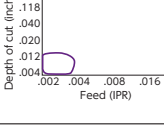
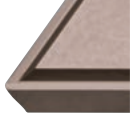
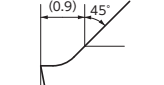
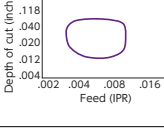

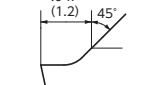
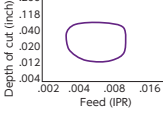
Name	Chipbreaker Geometry		Features	Chip Control Range
KHG		 DCET32.508 shown	<ul style="list-style-type: none"> ● Excellent chip control on finishing cuts ● For super high-precision machining <p>* Precision tolerance in corner radius: ±.0004"</p>	
K		 TPGHP7308 shown	<ul style="list-style-type: none"> ● Superb chip control on finishing applications ● Sharp cutting edge with the high rake angle 	
UHG		 DCET32.504M shown	<ul style="list-style-type: none"> ● Sharp cutting edge ● Covers wide cutting condition range <p>* Precision tolerance in corner radius: ±.0004"</p>	
U/U1		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Sharp cutting edge prevents materials from work hardening 	
S		 DCGT320.508 shown	<ul style="list-style-type: none"> ● Standard ground chipbreaker with wide cutting condition coverage ● Sharp cutting edge with excellent chip control 	
AT		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Excellent adhesion resistance with dimensional stability ● Best for small diameter parts and for machining low carbon steels 	
FM		 DCGT32.508 shown	<ul style="list-style-type: none"> ● Full-peripheral ground chipbreaker 	

Chipbreakers for Positive Inserts


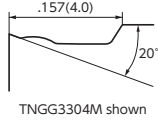
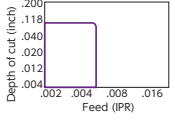

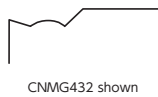
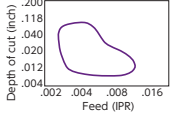


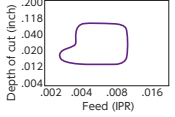

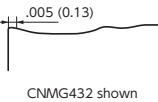
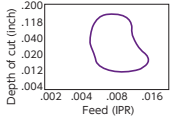
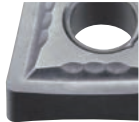

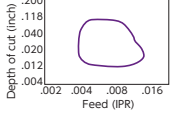

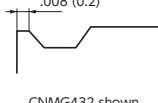
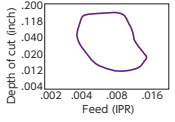

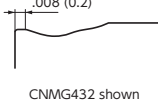
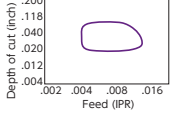

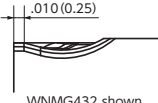
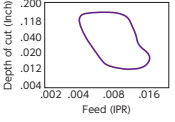

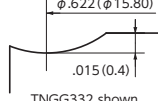
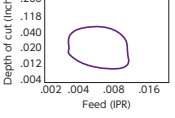
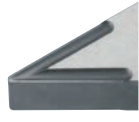
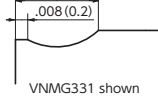
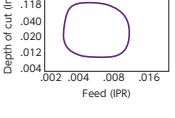
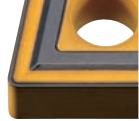
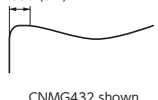
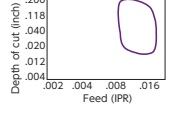
Ground Chipbreakers for Positive Inserts (continued)

Tooling for Swiss-type Lathes

[Ground Chipbreakers for Positive Inserts]

Name	Chipbreaker Geometry		Features	Chip Control Range
F05		 TPGP5208 shown	<ul style="list-style-type: none"> ● Exclusively designed for ID boring ● Evacuates chips BACKWARD ● Excellent choice for blind hole machining 	
F1		 TPGP2208 shown		
B1		 TCGP5208 shown	<ul style="list-style-type: none"> ● Stable cutting when boring thanks to sharp and tough cutting edge 	
P1		 TPGR321R shown		
B2		 TPGP7308 shown		
B3		 TPGP6308 shown		
A		 CPGP0308 shown	<ul style="list-style-type: none"> ● Tough cutting edge and good chip control ● General-purpose ID chipbreaker 	
A1		 CPGP8308 shown		
A2		 ERGP52Y shown	<ul style="list-style-type: none"> ● Control chips at light feed and light depth of cut ● Sharp cutting edge due to large rake angle 	
A283		 TPMR221 shown	<ul style="list-style-type: none"> ● Breaks chip into small pieces 	
A305		 TPMR332 shown		

Molded Chipbreakers for Negative Inserts


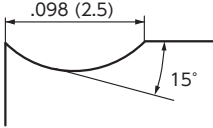
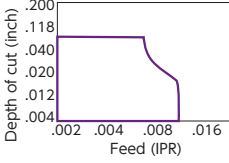

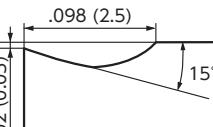
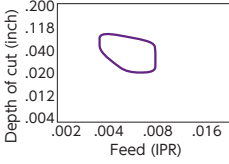

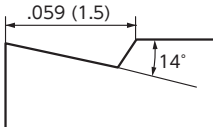
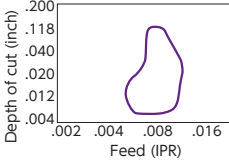
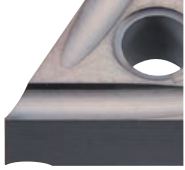
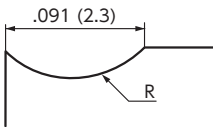
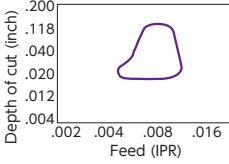

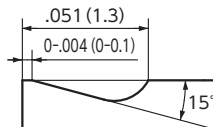
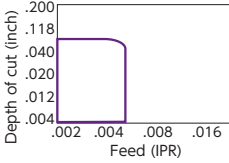

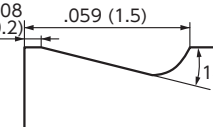
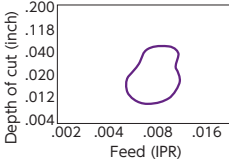

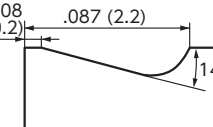
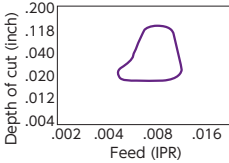
Name	Chipbreaker Geometry		Features	Chip Control Range
UL			<ul style="list-style-type: none"> ● Negative insert with a positive insert's chipbreaker ● Reduced burr ● Improved microfinish ● Superb advantage in cost per corner over positive inserts 	
ZF1			<ul style="list-style-type: none"> ● Produce small curled chips on finishing cuts 	
WM			<ul style="list-style-type: none"> ● Remarkable chip control in the low feed range 	
ZW1			<ul style="list-style-type: none"> ● Versatile chipbreaker with remarkable chip control performance in a wide range of conditions 	
ZP			<ul style="list-style-type: none"> ● Double-positive rake and sharp cutting edge ● Low tool pressure even at heavy depth of cut 	
Z5			<ul style="list-style-type: none"> ● Very tough insert ● Designed for machining with heavy interruption 	
WV			<ul style="list-style-type: none"> ● Offers the advantages of both a tough cutting edge and chip control 	
WR			<ul style="list-style-type: none"> ● Designed for cermet ● Covers wide range of conditions 	
R1			<ul style="list-style-type: none"> ● Sharp cutting edge ● Good chip control 	
GE			<ul style="list-style-type: none"> ● Sharp and tough cutting edge 	
G			<ul style="list-style-type: none"> ● Tough chipbreaker for roughing with exceptional stability 	

Tooling for Swiss-type Lathes

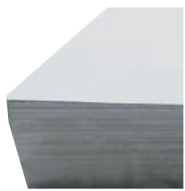
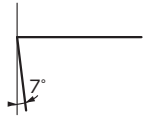
[Molded Chipbreakers for Negative Inserts]

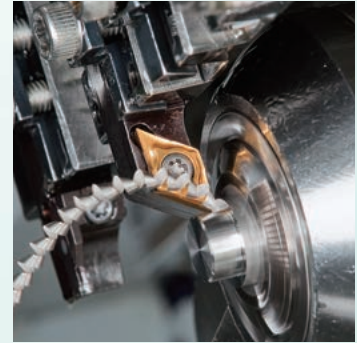
Chipbreakers for Negative Inserts

Ground Chipbreakers for Negative Inserts

Name	Chipbreaker Geometry		Features	Chip Control Range
DA		 TNGG3304 shown	<ul style="list-style-type: none"> ● Excellent chip control and sharp cutting edge 	
D1		 TNEG3308 shown		
N1		 TNGG3308 shown	<ul style="list-style-type: none"> ● Double-positive design with the large rake angle ● Excellent chip control 	
U2		 TNGG3308 shown	<ul style="list-style-type: none"> ● Reduced burr and work hardening due to high rake design 	
L2		 TNGG332R shown		
B		 TNGG331 shown	<ul style="list-style-type: none"> ● General-purpose chipbreaker with excellent toughness and chip control 	
C		 TNGG3308 shown		

Flat Top with Mirror Finish - Good for non-ferrous materials like PEEK, Brass, Aluminum and Copper-

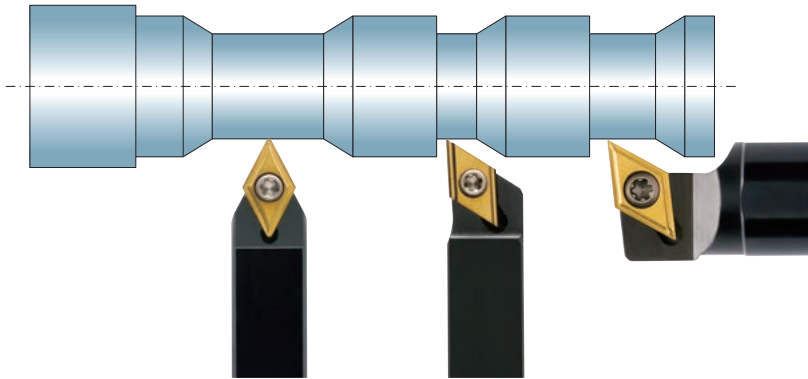
Name	Chipbreaker Geometry		Features	Chip Control Range
V P H			<ul style="list-style-type: none"> ● Very up-sharp edge with mirror finish V: Mirror finish on Top and Flank side with R0 nose radius P: Mirror finish on Top and Flank side H: Mirror finish on Top side 	—



General Turning / Front Turning

- **Front Turning Tools** Q2
- **Recommended Cutting Conditions**..... Q4
- **General Information** Q4
- **ANSI / ISO Insert Nomenclature** Q6
- **Tool List** Q8
 - CSV Series Q8
 - CC.. Series..... Q10
 - DC.. Series Q16
 - VB.. Series..... Q24
 - VC.. Series Q25
 - VP.. Series..... Q30
 - TFT Series Q32
 - TC.. Series..... Q33
 - TN.. Series..... Q34
 - CN.. Series Q37
 - DN.. Series Q38

NTK General / Front Turning Tools - Product Lines



Insert	CSVF →Q9	
	CSV	DS-CSV
Holder	 91° →Q8	 91° →Q8

Insert	CC..21/32.5.. →Q12					
	SCAC	SCLC	SCLC-OH	SCLC-F	DS-SCLL	DS-SCLL-ACH
Holder	 91° →Q10	 95° →Q10	 95° →Q10 Coolant through	 95° →Q10 Shifted	 95° →Q10	 95° →Q10 DS-ACH

Insert	DC..21/32.5..			DC..21/32.5..WP.. →Q20		
	SDJC	SDJC-OH	SDJC-F	Y-SDJC	Y-SDJC-OH	CH-SDUC
Holder	 93° →Q16	 93° →Q16 Coolant through	 93° →Q16 Shifted	 93° →Q18 Y-axis	 93° →Q18 Y-axis w/ Coolant through	 93° →Q17

Insert	DC..21/32.5..WP.. →Q20		DC..21/32.5.. →Q20				
	DS-SDUL	DS-SDUL-ACH	SDXC	DS-SDX	SDQC	SDNC	Y-SDNC
Holder	 93° →Q19	 93° →Q19 DS-ACH	 96° →Q16	 96° →Q19	 107°30' →Q16	 62°30' →Q16	 62°30' →Q18 Y-axis

Insert	VB..33 →Q24	VC..22..-WP					VC..22.. →Q29
Holder	SVJB-OH NEW 93° →Q24 Coolant through	SVAC 91° →Q26	SVJC 93° →Q26	SVJC-OH NEW 93° →Q26 Coolant through	SVJC-F 93° →Q26 Shifted	Y-SVJC 93° →Q28 Y-axis	Y-SVJC-OH NEW 93° →Q28 Y-axis w/ Coolant through

Insert	VC..22.. →Q29				VCGT21.5.. →Q25
Holder	SVXC 99° →Q26	DS-SVXC 99° →Q28	SVQC 117°30' →Q27	SVVCN 72°30' →Q27	SVAC-1L 91° →Q25

Insert	VP..08020.. →Q30			VP..22.. →Q31		
Holder	SVQP 117°30' →Q30	CH-SVUP 93° →Q30	DS-SVXP 99° →Q30	SVXP 99° →Q31	DS-SVVPN 72°30' →Q31	DS-SVVPN-ACH 72°30' →Q31 DS-ACH


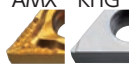
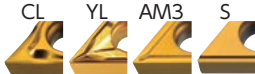

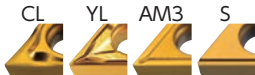
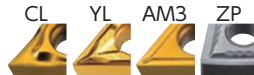
Insert	TF33.. →Q32	TC..73../..21..-WP		TC..73../..21.. →Q33
Holder	TFT 93° →Q32	STAC 91° →Q33	CH-STUC 93° →Q33	

Insert	TN..33.. →Q36				CN..43.. →Q37	DN..43.. →Q38	
Holder	PTXN 100° →Q34	DS-PTX 100° →Q34	DS-PTX-ACH 100° →Q34 DS-ACH	PTAN 91° →Q34	PTLN 95° →Q34	PCLN 95° →Q37	PDJN 93° →Q38

Recommended Insert Grade and Cutting Conditions

Front Turning

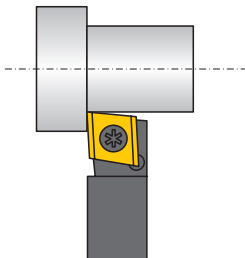
CSVF / CC.. / DC.. / VC.. / VB.. / TN.. / TF

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4			DT4	TM4	QM3	
	2nd choice	TM4 / QM3			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	Carbide C7Z(X)	150 300 500 400 500 800
Recommended Chipbreaker Feed Rate (IPR)	≤.004 DOC	AMX KHG 			AMX KHG 			
		.0004 .0008 .0012			.0004 .0012 .0016			
	.004 to .060 DOC	CL YL AM3 S 			CL YL AM3 AZ7 S U/U1 UL 			
		.0008 .0016 .0024			.0008 .0020 .0032			
	≥ .060 DOC	CL YL AM3 S 			CL YL AM3 ZP 			
		.0008 .0015 .0025			.0012 .0024 .0040			

General Turning Inserts Explained

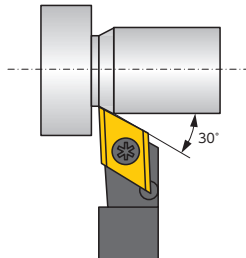
Advantage for each geometry

CC.. Style (80°)



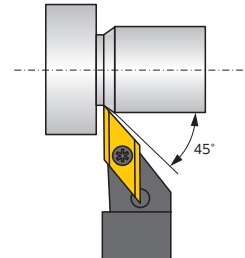
- Increased toughness. Cutting edge is close to insert pocket.
- Not applicable to undercut

DC.. Style (55°)



- Versatile geometry. Toughness of CC.. with flexibility of VC..
- Up to 30 deg. undercuts

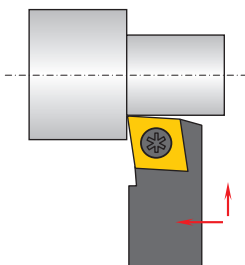
VB / VC / VP Style (35°)



- Wide coverage in work geometry.
- Up to 45 deg. undercuts

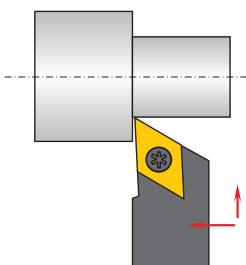
Chip Control and Finish

SCLCR →Q10



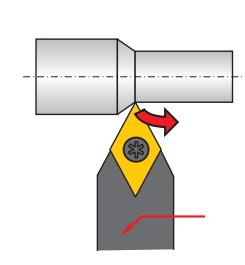
Rigid clamping
High dimensional repeatability

SDJCR →Q16



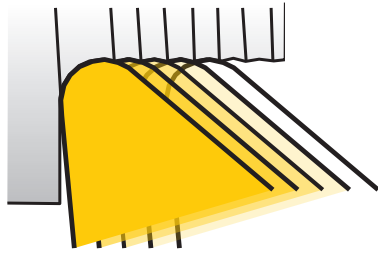
Increased room for chip evacuation
creates better surface finish

SDNCN →Q16

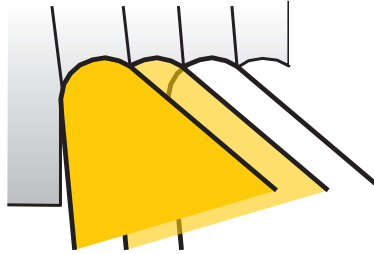


Chips flow away from the work

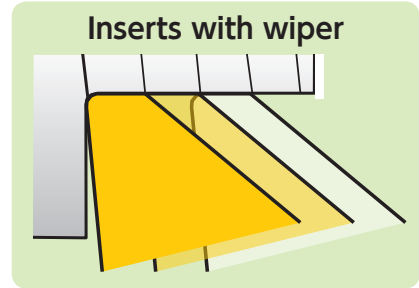
Surface Finish in General Turning Using Inserts with Wiper Flat



Slower feed rates create better finishes but sacrifices cycle time, chip control, and tool life.



Fast feed rates improve chip control but produce a bad surface finish.



Inserts with a wiper flat create good chip control and surface finish.

Wiper Flat Insert - WP series

DCGT.. -WP (TFD) →Q20·Q22



for SDJC toolholders

TCGT.. -WP (TFT) →Q33



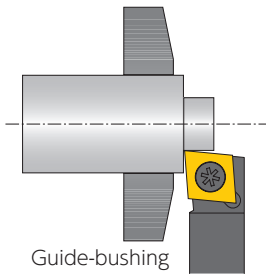
for STAC toolholders

VCGT.. -WP (TFV) →Q29



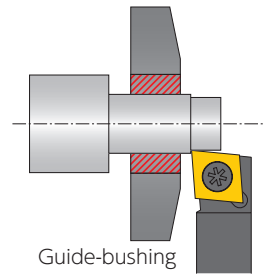
for SVAC toolholders

Roughing and Finishing Long Work on Swiss Lathes



Guide-bushing

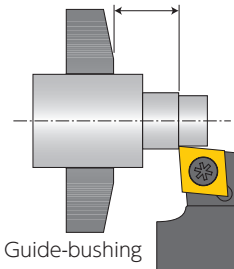
Single pass machining is common in Swiss front turning operations.



Guide-bushing

Conventional toolholders are not suitable for roughing or finishing of long parts. The guide-bushing cannot hold machined bar stock.

Shifted Holders



Guide-bushing

Shifted Holders make a finishing process possible without worrying about the bar stock coming out of the guide-bushing.

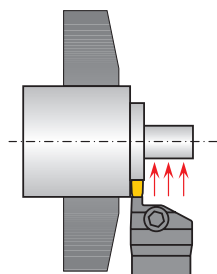
Coolant flows effectively which improves chip control thanks to the increased room between the tools and guide-bushing.

SCLC-N-F →Q10

SDJC-N-F →Q16

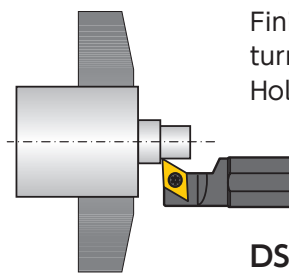
SVJC-N-F →Q26

Combination of Grooving Tool and DS Holders



Rough with grooving tool for good chip control

GTWP Holders →T9

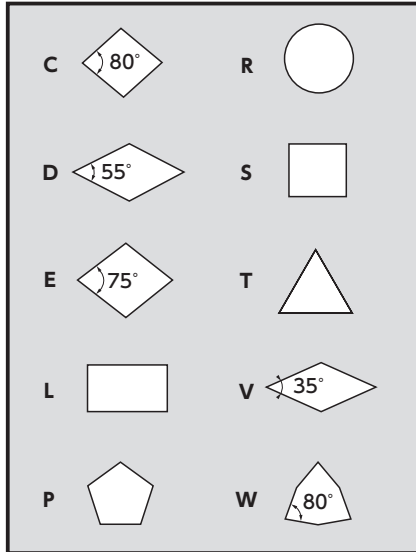


Finish by using general turning inserts with DS Holders

DS Holders

ANSI / ISO Insert Nomenclature

1 Shape



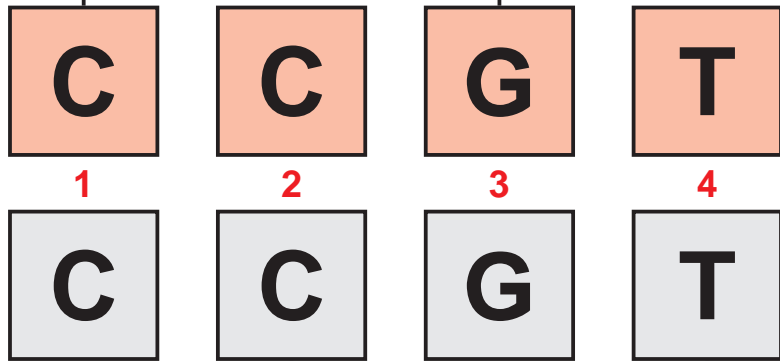
3 Tolerance Class

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

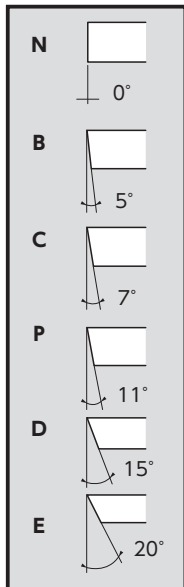
Inscribed Circle	M tolerance	
	d (inch)	m (inch)
1/4	±.002	±.003
3/8	±.002	±.003
1/2	±.003	±.005
5/8	±.004	±.006
3/4	±.004	±.006
1	±.005	±.007

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

Inch



2 Clearances



4 Type

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

6 Thickness

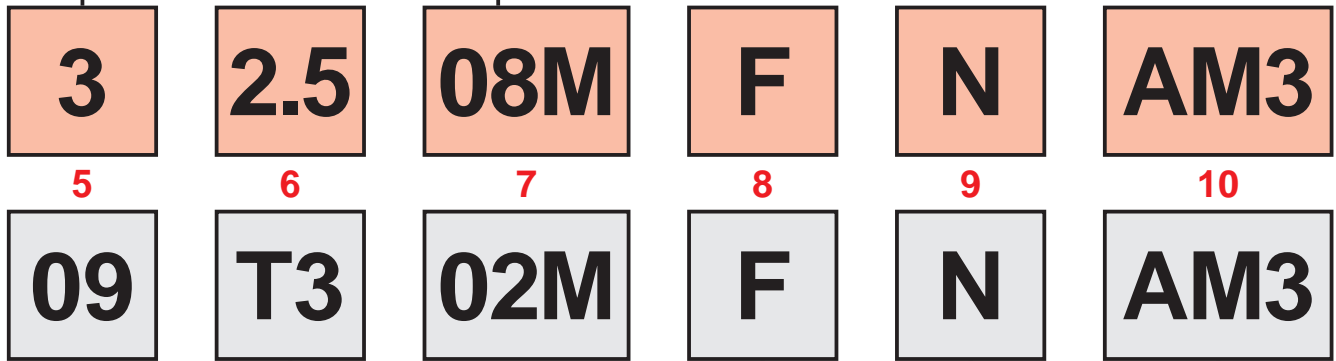
Thickness S(inch)	Inch	Metric
3/32	1.5	02
1/8	2	03
5/32	2.5	T3
3/16	3	04
1/4	4	06
5/16	5	07
3/8	6	09
1/2	8	12

5 Cutting Edge Length

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

7 Nose Radius

Corner Radius	Inch	Metric
	.001	01
	.003	04M
	.004	04
	.007	08M
	.008	08
	.015	1M
	.016 (1/64)	1
	.031 (1/32)	2



8 Edge Sharpness

F	Up-sharp edge (without any edge preparation)
(Blank)	Non up-sharp edge

9 Hand of Chipbreaker

N	Neutral*
R	Right-hand
L	Left-hand

* Omitted when edge is not "up-sharp"

10 Type of Chipbreaker

See page C8 to C13 for chipbreaker information

11 Wiper insert

"-WP" after chipbreaker

Front Turning

CSV Series

Best for up to .200" diameter material

CSV-NC

For Gang-style machine

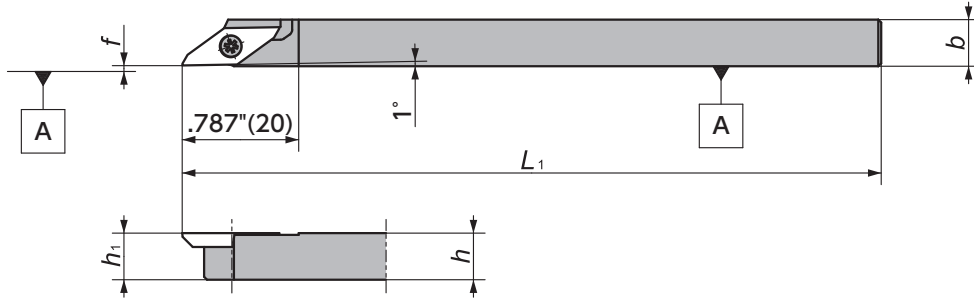


Figure-1

Right-Hand style shown

CSV

For Cam-style machine

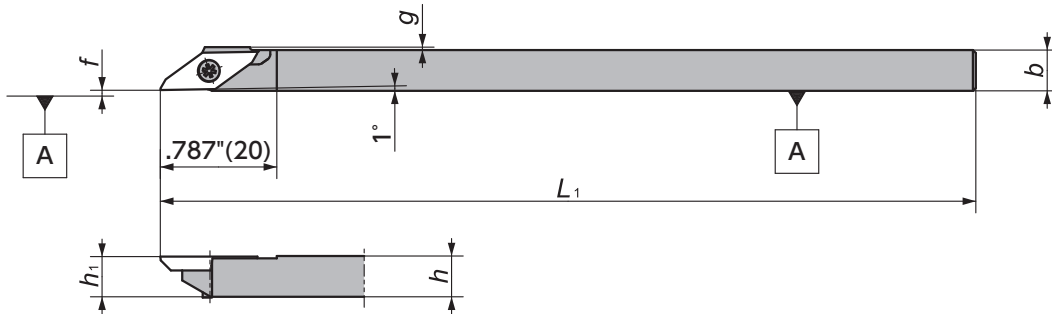


Figure-2

Right-Hand style shown

DS-CSVL

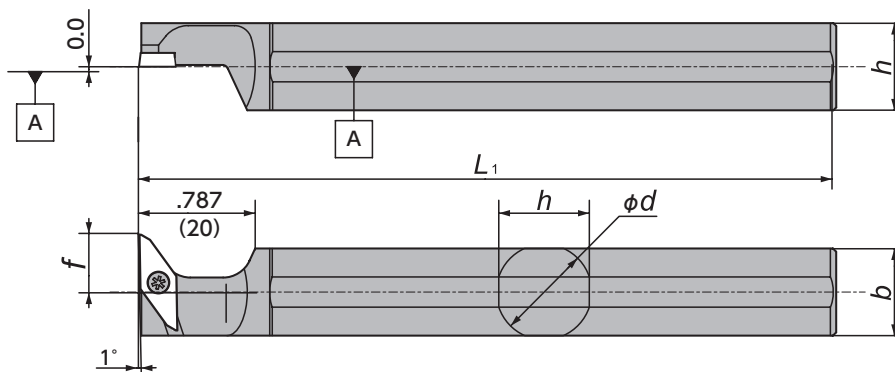



Figure-3


Left-Hand style shown
Takes Right-hand insert

CSV Series - Toolholders

CSV_{R/L} / CSV_{R/L}-NC

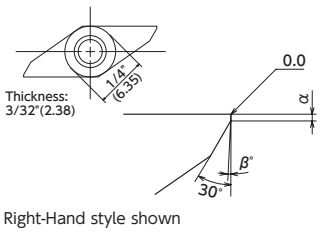
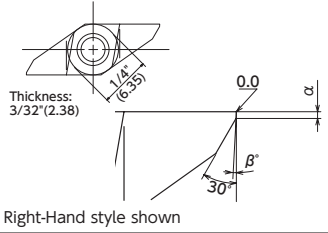
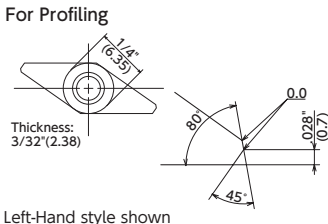
Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV _{R/L} 06-IN-NC	1	●	●	3/8		3/8		3/8		4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08-IN-NC	1	●	●	1/2		1/2		1/2		4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 12NC	1	●	●	.472	12	.472	12	.472	12	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08	2	●	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10	2	●	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV _{R/L} 12	2	●	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	3	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

CSV Series - Inserts

CSVF - Front Turning Mirror finish

Shape	Item Number	Chip-breaker	Max Depth of Cut		Edge Geometry ($\alpha \times \beta^\circ$)		Coated Carbide					
			(Inch)	(mm)	(Inch)	(mm)	DT4		VM1		ZM3	
							R	L	R	L	R	L
 <p>Thickness: 3/32" (2.38)</p> <p>Right-Hand style shown</p>	CSVF11F _{R/L} V M	No	—	—	.012 × 5°	0.3 × 5°			○	○		
	CSVF11F _{R/L} V-A M		—	—	.012 × 2°	0.3 × 2°			○			
	CSVF11F _{R/L} V-M M		—	—	.006 × 2°	0.15 × 2°	●		●	●	○	
	CSVF11F _{R/L} V-C M		—	—	.006 × 5°	0.15 × 5°			○			
 <p>Thickness: 3/32" (2.38)</p> <p>Right-Hand style shown</p>	CSVF11F _{R/L} VB M	Yes	.118	3	.012 × 5°	0.3 × 5°			●	○		
	CSVF11F _{R/L} VB-A M		.118	3	.012 × 2°	0.3 × 2°			○			
	CSVF11F _{R/L} VB-M M		.118	3	.006 × 2°	0.15 × 2°	●		●	●	○	
	CSVF11F _{R/L} VB-C M		.118	3	.006 × 5°	0.15 × 5°			○			
 <p>Thickness: 3/32" (2.38)</p> <p>Left-Hand style shown</p>	CSVF11F _{R/L} VX M	No	—	—					○			

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

● : Stock

○ : 1-2 week delivery

M : Mirror finish

CSV series Q27

Cutting condition Q4

Toolholders for CC.. Inserts

SCAC-N

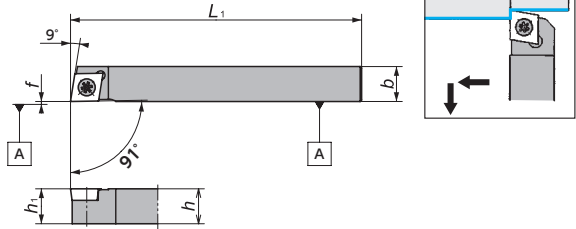


Figure-1

Right-Hand style shown

SCLC-N

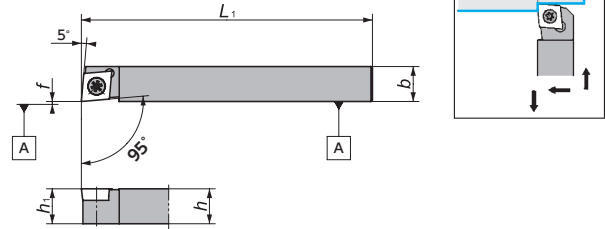


Figure-2

Right-Hand style shown

SCLC-N-OH (Coolant through)

NEW

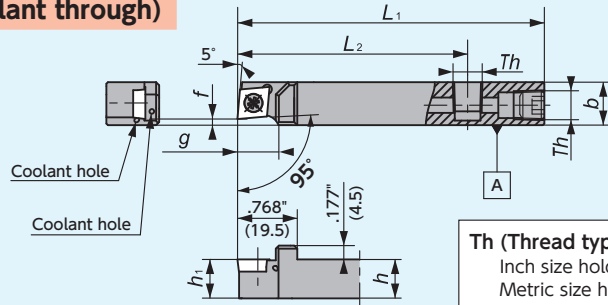
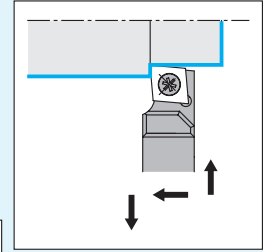


Figure-3

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown

SCLC-N-F (Shifted)

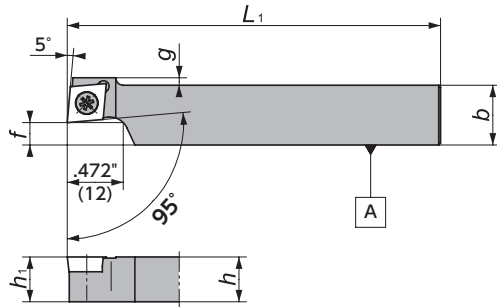
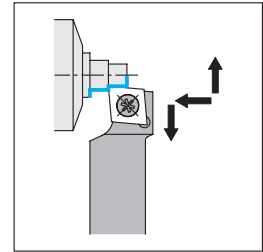


Figure-4



Right-Hand style shown

DS-SCL

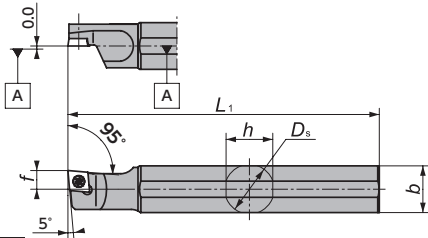


Figure-5

DS-SCL (Coolant through)

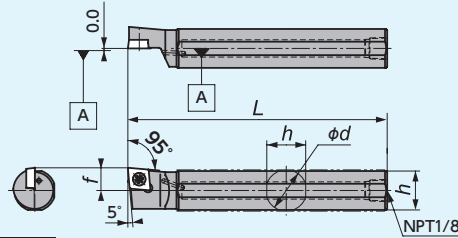
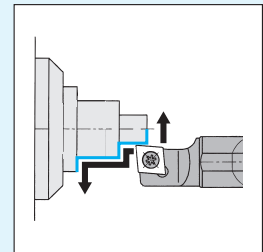


Figure-6



Left-Hand style shown
 Takes Right-hand or Neutral insert

DS-SCLL-ACH (Adjustable centerline height)

Parts		
Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)		
φ .866" (22)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ 1" (25.4)		

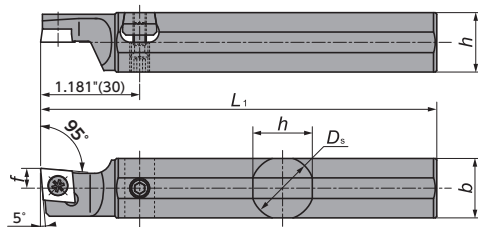
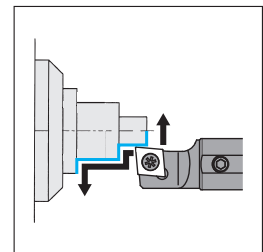

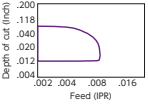

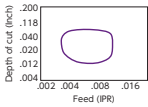

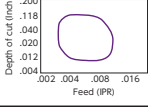

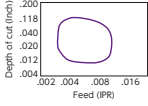

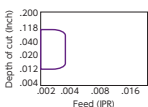


Figure-7



Left-Hand style shown
 Takes Right-hand or Neutral insert

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet					Depth of cut (inch) Feed (IPR)
					PVD Coated							PVD Coated					
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z	
	CCGT 21.501 AZ7*	CCGT 060200 AZ7	1/4	.001	○												
	CCGT 21.504M AZ7*	CCGT 060201M AZ7	1/4	.003	○												
	CCGT 21.508M AZ7*	CCGT 060202M AZ7	1/4	.007	○												
	CCGT 32.501 AZ7*	CCGT 09T300 AZ7	3/8	.001	●	○		○		○							
	CCGT 32.504M AZ7*	CCGT 09T301M AZ7	3/8	.003	●	○		○		○							
	CCGT 32.508M AZ7*	CCGT 09T302M AZ7	3/8	.007	●	○		○		○							
	CCGT 32.51M AZ7*	CCGT 09T304M AZ7	3/8	.015	●	○		○		○							
	CCGT 21.504 AF1	CCGT 060201 ENBAF1	1/4	.004								●					
	CCGT 21.508 AF1	CCGT 060202 ENBAF1	1/4	.008								●					
	CCGT 21.51 AF1	CCGT 060204 ENBAF1	1/4	.016								●					
	CCGT 21.51 FNAF1	CCGT 060204 FNAF1	1/4	.016								●					
	CCGT 21.52 AF1	CCGT 060208 ENBAF1	1/4	.031								●					
	CCGT 32.508 AF1	CCGT 09T302 ENBAF1	3/8	.008							○						
	CCGT 32.508 FNAF1	CCGT 09T302 FNAF1	3/8	.008							●						
	CCGT 32.51 FNAF1	CCGT 09T304 FNAF1	3/8	.016							●						
	CCGT 32.51 AF1	CCGT 09T304 ENBAF1	3/8	.016							○						
	CCGT 32.52 FNAF1	CCGT 09T308 FNAF1	3/8	.031							●						
CCGT 32.52 AF1	CCGT 09T308 ENBAF1	3/8	.031							○							
	CCMT 21.51 AM5	CCMT 060204 ENBAM5	1/4	.016									○				
	CCMT 32.51 AM5	CCMT 09T304 ENBAM5	3/8	.016									○				
	CCMT 32.52 AM5	CCMT 09T308 ENBAM5	3/8	.031									○				
	CCGT 21.508 ENBFM	CCGT 060202 ENBFM	1/4	.008								○					
	CCGT 21.51 ENBFM	CCGT 060204 ENBFM	1/4	.016								○					
	CCMT 21.508 ENBZR	CCMT 060202 ENBZR	1/4	.008								○			○		
	CCMT 21.51 ENBZR	CCMT 060204 ENBZR	1/4	.016								○			○		
	CCMT 32.508 ENBZR	CCMT 09T302 ENBZR	3/8	.008								○			○		
	CCMT 32.51 ENBZR	CCMT 09T304 ENBZR	3/8	.016								○			○		
	CCMT 32.52 ENBZR	CCMT 09T308 ENBZR	3/8	.031								○			○		

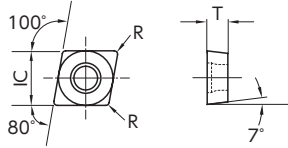
*To be replaced by version which has 0.2mm higher edge.

● : Stock ○ : 1-2 week delivery

Holders → **Q10**
 Cutting condition → **Q4**
 Chipbreaker → **P21**

Front Turning

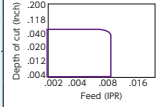
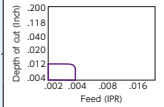
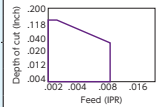
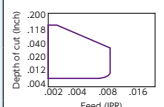
[Ground Chipbreakers]



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

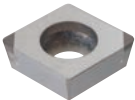
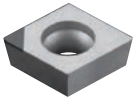

• : 1st Choice
• : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet				
					PVD Coated							PVD Coated				
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z
	CCGT 21.501 R $\frac{1}{4}$ S	CCGT 060200 R $\frac{1}{4}$ S	1/4	.001	R	®				®L	®L					
	CCGT 21.504M R $\frac{1}{4}$ S	CCGT 060201M R $\frac{1}{4}$ S	1/4	.003	R	®										
	CCGT 21.504 R $\frac{1}{4}$ S	CCGT 060201 R $\frac{1}{4}$ S	1/4	.004						®L	®L		®L			
	CCGT 21.508M R $\frac{1}{4}$ S	CCGT 060202M R $\frac{1}{4}$ S	1/4	.007	R											
	CCGT 21.508 R $\frac{1}{4}$ S	CCGT 060202 R $\frac{1}{4}$ S	1/4	.008						®L	®L		®L			
	CCGT 21.51 R $\frac{1}{4}$ S	CCGT 060204 R $\frac{1}{4}$ S	1/4	.016	R											
	CCGT 32.501 R $\frac{1}{4}$ S	CCGT 09T300 R $\frac{1}{4}$ S	3/8	.001	R	R		R	®L	®						
	CCGT 32.504M R $\frac{1}{4}$ S	CCGT 09T301M R $\frac{1}{4}$ S	3/8	.003	®	R		R								
	CCGT 32.504 R $\frac{1}{4}$ S	CCGT 09T301 R $\frac{1}{4}$ S	3/8	.004	®				®L	®L						
	CCGT 32.508M R $\frac{1}{4}$ S	CCGT 09T302M R $\frac{1}{4}$ S	3/8	.007	®	R		R								
	CCGT 32.508 R $\frac{1}{4}$ S	CCGT 09T302 R $\frac{1}{4}$ S	3/8	.008	R				®L	®						
	CCGT 32.51M R $\frac{1}{4}$ S	CCGT 09T304M R $\frac{1}{4}$ S	3/8	.015	®			R								
	CCGT 32.51 R $\frac{1}{4}$ S	CCGT 09T304 R $\frac{1}{4}$ S	3/8	.016	R											
	CCMT 21.504 T R $\frac{1}{4}$ AS	CCMT 060201 T R $\frac{1}{4}$ AS	1/4	.004									®L			®L
CCMT 21.508 T R $\frac{1}{4}$ AS	CCMT 060202 T R $\frac{1}{4}$ AS	1/4	.008									®L			®L	
CCMT 21.51 T R $\frac{1}{4}$ AS	CCMT 060204 T R $\frac{1}{4}$ AS	1/4	.016									®L			®L	
CCMT 32.504 T R $\frac{1}{4}$ AS	CCMT 09T301 T R $\frac{1}{4}$ AS	3/8	.004									®L			®L	
CCMT 32.508 T R $\frac{1}{4}$ AS	CCMT 09T302 T R $\frac{1}{4}$ AS	3/8	.008									®L			®L	
CCMT 32.51 T R $\frac{1}{4}$ AS	CCMT 09T304 T R $\frac{1}{4}$ AS	3/8	.016									®L			®L	
	CCGT 21.501 R $\frac{1}{4}$ U	CCGT 060200 R $\frac{1}{4}$ U	1/4	.001		®				®						
	CCGT 21.504 R $\frac{1}{4}$ U	CCGT 060201 R $\frac{1}{4}$ U	1/4	.004		®				®L						
	CCGT 21.508 R $\frac{1}{4}$ U	CCGT 060202 R $\frac{1}{4}$ U	1/4	.008		®				®L						
	CCGT 32.501 R $\frac{1}{4}$ U1	CCGT 09T300 R $\frac{1}{4}$ U1	3/8	.001				®		®L						
	CCGT 32.504 R $\frac{1}{4}$ U1	CCGT 09T301 R $\frac{1}{4}$ U1	3/8	.004		®		®		®L						
	CCGT 32.508 R $\frac{1}{4}$ U1	CCGT 09T302 R $\frac{1}{4}$ U1	3/8	.008		®		®		®L						
CCGT 21.501 R $\frac{1}{4}$ U1	CCGT 09T304 R $\frac{1}{4}$ U1	3/8	.016				®		®L							
	CCET 21.502 R $\frac{1}{4}$ KHG	CCET 0602005 R $\frac{1}{4}$ KHG	1/4	.002						®L						
	CCET 21.503 R $\frac{1}{4}$ KHG	CCET 0602008 R $\frac{1}{4}$ KHG	1/4	.003						®L						
	CCET 21.507 R $\frac{1}{4}$ KHG	CCET 0602018 R $\frac{1}{4}$ KHG	1/4	.007						®L						
	CCET 21.508 R $\frac{1}{4}$ KHG	CCET 060202 R $\frac{1}{4}$ KHG	1/4	.008						®L						
	CCET 32.502 R $\frac{1}{4}$ KHG	CCET 09T3005 R $\frac{1}{4}$ KHG	3/8	.002				®		®L						
	CCET 32.503 R $\frac{1}{4}$ KHG	CCET 09T3008 R $\frac{1}{4}$ KHG	3/8	.003				®		®L						
	CCET 32.507 R $\frac{1}{4}$ KHG	CCET 09T3018 R $\frac{1}{4}$ KHG	3/8	.007				®		®L						
	CCET 32.508 R $\frac{1}{4}$ KHG	CCET 09T302 R $\frac{1}{4}$ KHG	3/8	.008				®		®L						
	CCGT 21.508 F R $\frac{1}{4}$ F1	CCGT 060202 F R $\frac{1}{4}$ F1	1/4	.008				®								
	CCGT 21.51 F R $\frac{1}{4}$ F1	CCGT 060204 F R $\frac{1}{4}$ F1	1/4	.016				®								
	CCGT 32.508 F R $\frac{1}{4}$ F1	CCGT 09T302 F R $\frac{1}{4}$ F1	3/8	.008				®								
	CCGT 32.51 F R $\frac{1}{4}$ F1	CCGT 09T304 F R $\frac{1}{4}$ F1	3/8	.016				®								
	CCGW 21.501 FN	CCGW 060200 FN	1/4	.001						○						
	CCGW 21.501 H	CCGW 060200 H	1/4	.001							●					
	CCGW 21.504 FN	CCGW 060201 FN	1/4	.004						○						
	CCGW 21.504 H	CCGW 060201 H	1/4	.004							●					
	CCGW 21.508 H	CCGW 060202 H	1/4	.008							●					
	CCGW 21.51 FN	CCGW 060204 FN	1/4	.016						○						
	CCGW 21.52 FN	CCGW 060208 FN	1/4	.031						○	■					
	CCGW 32.500 V	CCGW 09T30 V	3/8	0						○						
	CCGW 32.501 FN	CCGW 09T300 FN	3/8	.001							○					
	CCGW 32.501 H	CCGW 09T300 H	3/8	.001								●				
	CCGW 32.504 FN	CCGW 09T301 FN	3/8	.004							○					
	CCGW 32.504 H	CCGW 09T301 H	3/8	.004								●				
	CCGW 32.504 P	CCGW 09T301 P	3/8	.004									●			
	CCGW 32.508M P	CCGW 09T302M P	3/8	.007		○					○					
	CCGW 32.508 H	CCGW 09T302 H	3/8	.008									●			
	CCGW 32.508 P	CCGW 09T302 P	3/8	.008										●		



Front Turning

CC.. inserts - CBN / PCD

				Steel	P												
				Stainless Steel	M												
				Cast Iron	K	●	●						●	●			
				Non-Ferrous Material	N											●	●
				Heat Resistant Alloy	S												
				Hardened Material	H	●	●	●	●	●							
Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)							PCD		
								Coated		Coated							
								B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2	
	CCGW 21.51 PD	CCGW 060204 PD	S0415	1/4	.016	2	.091		●								
	CCGW 32.508 PD	CCGW 09T302 PD	S0415	3/8	.008	2	.091		●								
	CCGW 32.508 PD	CCGW 09T302 PD	S0635	3/8	.008	2	.091					●					
	CCGW 32.51 PD	CCGW 09T304 PD	S0415	3/8	.016	2	.091		●								
	CCGW 32.51 PD	CCGW 09T304 PD	S0635	3/8	.016	2	.091					●					
	CCGW 32.52 PD	CCGW 09T308 PD	S0415	3/8	.031	2	.087		●								
	CCMW 32.504	CCMW 09T301	None	3/8	.004	1	—								○		
	CCMW 32.508	CCMW 09T302	None	3/8	.008	1	—								○		
	CCMW 32.51	CCMW 09T304	None	3/8	.016	1	—								○		
	CCMW 32.52	CCMW 09T308	None	3/8	.031	1	—								○		
 with chipbreaker	CCMT 32.508 PF	CCMT 09T302PF	None	3/8	.008	1	—									●	
	CCMT 32.51 PF	CCMT 09T304PF	None	3/8	.016	1	—									●	

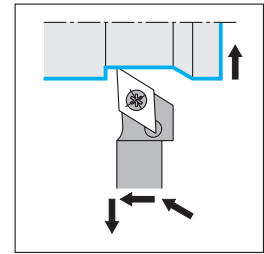
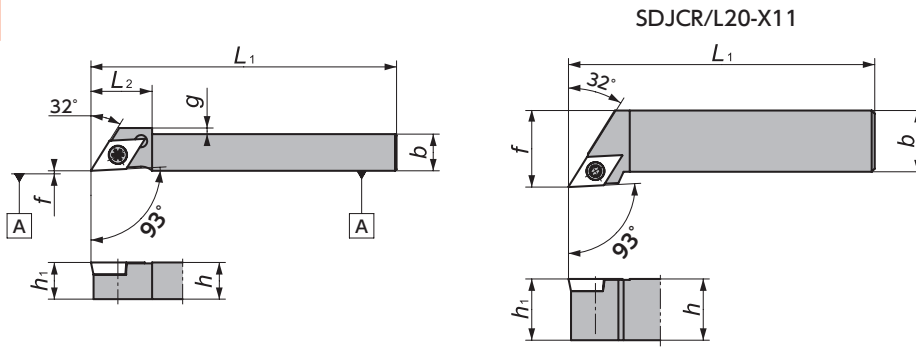
Front Turning

● : Stock ○ : 1-2 week delivery ■ : While stock lasts
 R : Stock (Right-hand only) L : Stock (Left-hand only)
 ® : 1-2 week delivery (Right-hand only) ℒ : 1-2 week delivery (Left-hand only) M : Mirror finish

Holders → **Q10**
 Cutting condition → **Q4**
 Chipbreaker → **P21**

Toolholders for DC.. Inserts

SDJC-N

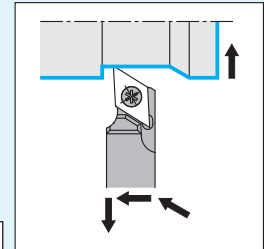
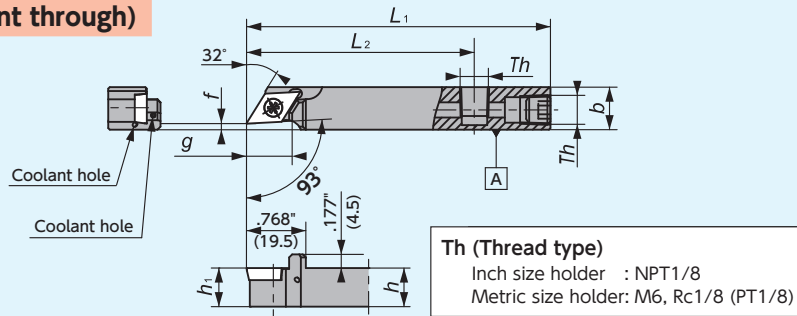


Right-Hand style shown

Figure-1

SDJC-N-OH (Coolant through)

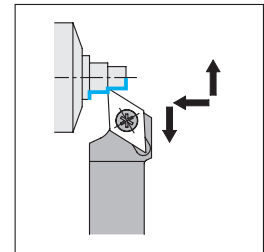
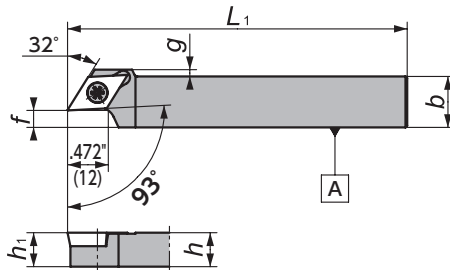
NEW



Right-Hand style shown

Figure-2

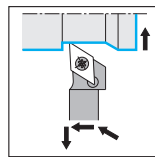
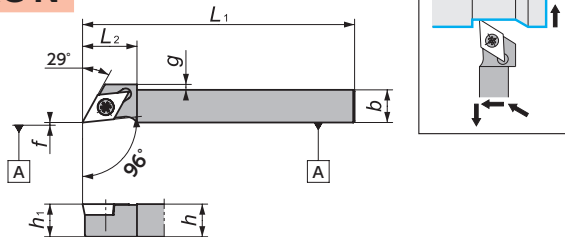
SDJC-N-F (Shifted)



Right-Hand style shown

Figure-3

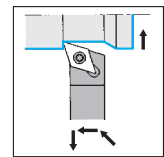
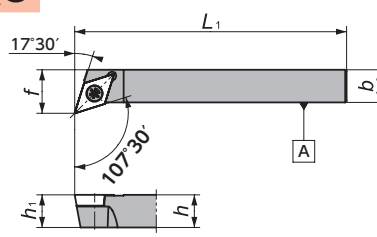
SDXC-N



Right-Hand style shown

Figure-4

SDQC



Right-Hand style shown

Figure-5

SDNC

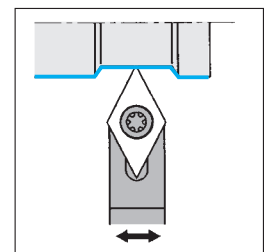
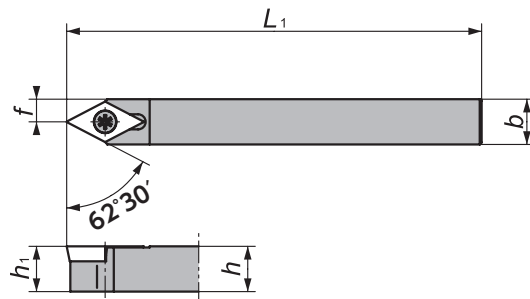
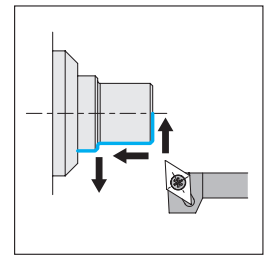
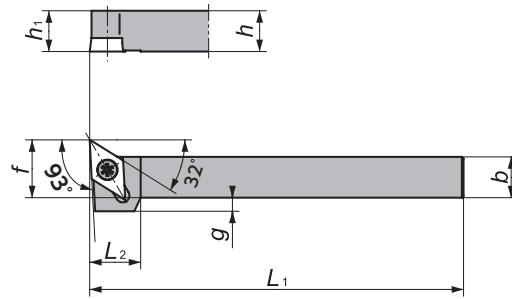


Figure-6

CH-SDUC



Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-7

DC.. Series - Toolholders I



Gage Insert	Item Number	Figure	Stock		h	b	h ₁	L ₁	f	L ₂	g	Th	Clamp Screw	Wrench
			R	L										
			N		(Inch) (mm)	(Inch) (mm)	(Inch) (mm)	(Inch) (mm)	(Inch) (mm)	(Inch) (mm)	(Inch) (mm)			
DC..21.5.. DC..21.5..WP	SDJC%062C	1	●	●	3/8	3/8	3/8	4.724 120	0 0	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDJC%082C	1	●	●	1/2	1/2	1/2	4.724 120	0 0	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDJC%0808X07N	1	○	○	.315 8	.315 8	.315 8	4.724 120	0 0	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDJC%1010GX07N	1	○	○	.394 10	.394 10	.394 10	3.346 85	0 0	- -	- -	-	LRIS-2.5 × 7	CLR-155
DC..32.5.. DC..32.5..WP	SDJC%1010X07N	1	○	○	.394 10	.394 10	.394 10	4.724 120	0 0	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDJC%-083C	1	●	●	1/2	1/2	1/2	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%-103C	1	●	●	5/8	5/8	5/8	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%1010H11N	1	○	○	.394 10	.394 10	.394 10	3.937 100	0 0	.748 19	.079 2	-	LRIS-4 × 10	LLR-255
	SDJC%1010X11N	1	○	○	.394 10	.394 10	.394 10	4.724 120	0 0	.748 19	.079 2	-	LRIS-4 × 10	LLR-255
	SDJC%1210X11N	1	○	○	.394 10	.472 12	.394 10	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%1212GX11N	1	○	○	.472 12	.472 12	.472 12	3.346 85	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%1216GX11N	1	○	○	.472 12	.630 16	.472 12	3.346 85	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%1212X11N	1	●	●	.472 12	.472 12	.472 12	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%1616X11N	1	○	○	.630 16	.630 16	.630 16	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
DC..21.5../DC..21.5..WP	SDJC%082H-F079-OH	2	●	●	1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.630 16	NPT1/8	LRIS-2.5 × 7	CLR-155
DC..32.5.. DC..32.5..WP	SDJC%083H-F079-OH	2	●	●	1/2	.551 14	1/2	3.937 100	.079 2	2.953 75	.630 16	NPT1/8	LRIS-4 × 10	LLR-255
	SDJC%103H-F079-OH	2	■	■	5/8	5/8	5/8	3.937 100	.079 2	2.953 75	.630 16	NPT1/8	LRIS-4 × 10	LLR-255
	SDJC%103HL-F079-OH	2	●	●	5/8	5/8	5/8	3.937 100	.079 2	2.953 75	.724 18.4	NPT1/8	LRIS-4 × 10	LLR-255
	SDJC%1014F11N-F02OH	2	○	○	.392 10	.551 14	.394 10	3.150 80	.079 2	2.165 55	.630 16	M6 × 1	LRIS-4 × 10	LLR-255
	SDJC%1214H11N-F02OH	2	●	●	.472 12	.551 14	.472 12	3.937 100	.079 2	2.953 75	.630 16	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255
	SDJC%1616H11N-F02OH	2	○	○	.630 16	.630 16	.630 16	3.937 100	.079 2	2.953 75	.724 18.4	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-255
DC..21.5.. DC..21.5..WP	SDJC%1015X07N-F05	3	○	○	.394 10	.591 15	.394 10	4.724 120	.197 5	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDJC%1020X07N-F10	3	○	○	.394 10	.787 20	.394 10	4.724 120	.394 10	- -	- -	-	LRIS-2.5 × 7	CLR-155
DC..32.5.. DC..32.5..WP	SDJC%083C-F250	3	●	●	1/2	.728 18.5	1/2	4.724 120	1/4	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%083C-F500	3	●	●	1/2	1	1/2	4.724 120	1/2	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%1015X11N-F05	3	○	○	.394 10	.591 15	.394 10	4.724 120	.197 5	.748 19	.079 2	-	LRIS-4 × 10	LLR-255
	SDJC%1020X11N-F10	3	○	○	.394 10	.787 20	.394 10	4.724 120	.394 10	.748 19	.079 2	-	LRIS-4 × 10	LLR-255
	SDJC%1218X11N-F06	3	●	●	.472 12	.709 18	.472 12	4.724 120	.236 6	- -	- -	-	LRIS-4 × 10	LLR-255
	SDJC%1224X11N-F12	3	●	●	.472 12	.945 24	.472 12	4.724 120	.472 12	- -	- -	-	LRIS-4 × 10	LLR-255
DC..32.5..	SDXC%1010X11N	4	○	○	.394 10	.394 10	.394 10	4.724 120	0 0	.787 20	.118 3	-	LRIS-4 × 10	LLR-255
	SDXC%1016X11N	4	○	○	.394 10	.630 16	.394 10	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDXC%1212X11N	4	○	○	.472 12	.472 12	.472 12	4.724 120	0 0	.787 20	.039 1	-	LRIS-4 × 10	LLR-255
	SDXC%1216X11N	4	○	○	.472 12	.630 16	.472 12	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
	SDXC%1616X11N	4	○	○	.630 16	.630 16	.630 16	4.724 120	0 0	- -	- -	-	LRIS-4 × 10	LLR-255
DC..21.5..	SDQC%10-X07	5	○	○	.394 10	.394 10	.394 10	4.724 120	.472 12	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDQC%12-X11	5	○	○	.472 12	.472 12	.472 12	4.724 120	.630 16	- -	- -	-	LRIS-4 × 10	LLR-255
	SDQC%16-X11	5	○	○	.630 16	.630 16	.630 16	4.724 120	.787 20	- -	- -	-	LRIS-4 × 10	LLR-255
DC..21.5..	SDQC%120-X11	5	○	○	.787 20	.787 20	.787 20	4.724 120	.984 25	- -	- -	-	LRIS-4 × 10	LLR-255
	SDNCN-062	6	●	●	3/8	3/8	3/8	2.5 63.5	3/16	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDNCN-082	6	●	●	1/2	1/2	1/2	3.5 88.9	1/4	- -	- -	-	LRIS-2.5 × 7	CLR-155
DC..21.5..	SDNCN08-X07	6	○	○	.315 8	.315 8	.315 8	4.724 120	.157 4	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDNCN10-X07	6	○	○	.394 10	.394 10	.394 10	4.724 120	.197 5	- -	- -	-	LRIS-2.5 × 7	CLR-155
	SDNCN-083	6	●	●	1/2	1/2	1/2	3.937 100	1/4	- -	- -	-	LRIS-4 × 10	LLR-255
DC..32.5..	SDNCN-103	6	●	●	5/8	5/8	5/8	3.937 100	5/16	- -	- -	-	LRIS-4 × 10	LLR-255
	SDNCN12-X11	6	○	○	.472 12	.472 12	.472 12	4.724 120	.236 6	- -	- -	-	LRIS-4 × 10	LLR-255
	SDNCN16-X11	6	○	○	.630 16	.630 16	.630 16	4.724 120	.315 8	- -	- -	-	LRIS-4 × 10	LLR-255
	SDNCN20-X11	6	○	○	.787 20	.787 20	.787 20	4.724 120	.394 10	- -	- -	-	LRIS-4 × 10	LLR-255
DC..32.5.. DC..32.5..WP	CH-SDUC%1010H11	7	○	○	.394 10	.394 10	.394 10	3.937 100	.591 15	.591 15	.236 6	-	LRIS-4 × 10PW	CLR-155
	CH-SDUC%1212H11	7	○	○	.472 12	.472 12	.472 12	3.937 100	.669 17	.591 15	.157 4	-	LRIS-4 × 10PW	CLR-155

● : Stock

○ : 1-2 week delivery

💧 : Coolant through

Inserts → Q20

Cutting condition → Q4

Y-Axis Holders for DC.. Inserts

Y-SDJC

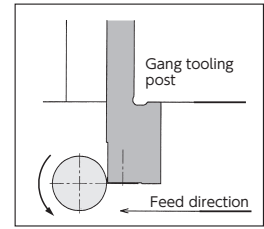
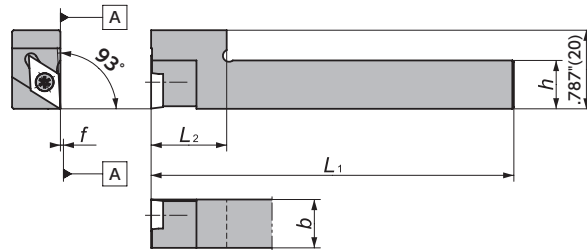
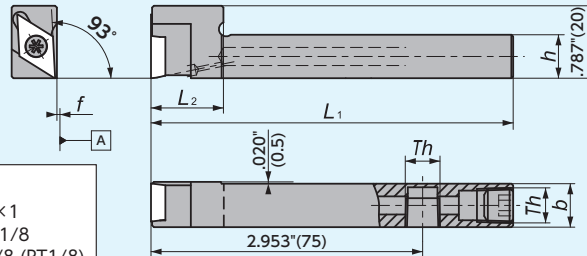


Figure-1

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SDJC-OH (Coolant through)

NEW



Th (Thread type)
3/8" holder : M6 × 1
1/2", 5/8" holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

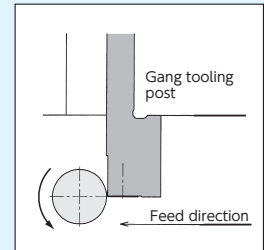


Figure-2

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SDNC

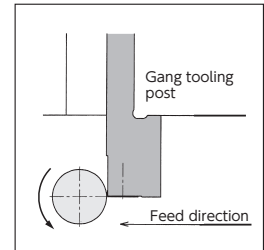
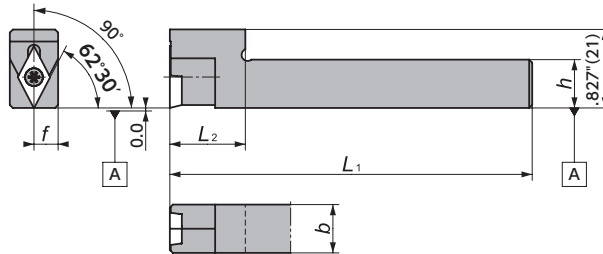
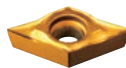


Figure-3

Takes Right-hand or Neutral insert

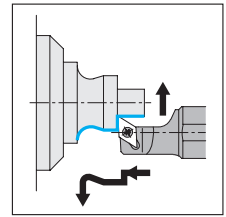
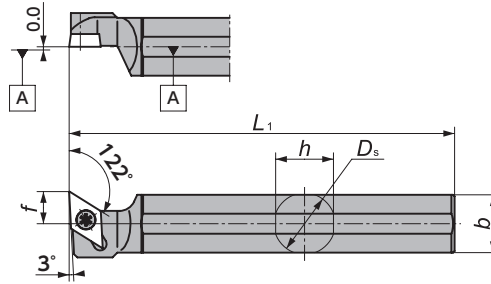
DC.. Series - Toolholders II



Gage Insert	Item Number	Figure	Stock		h	b	L ₁	f	L ₂	Th	Clamp Screw	Wrench
			R	L								
			N		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
DC..21.5.. DC..21.5..WP	Y-SDJCR062-IN	1	●		3/8	3/8	4.724 120	0 0	.984 25	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR082-IN	1	●		1/2	1/2	4.724 120	0 0	.984 25	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR10-07S	1	○		.394 10.0	.394 10	4.724 120	0 0	.787 20	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR12-07S	1	○		.472 12.0	.472 12	4.724 120	0 0	.787 20	—	LRIS-2.5 × 7	CLR-15S
DC..32.5.. DC..32.5..WP	Y-SDJCR083-IN	1	●		1/2	1/2	4.724 120	0 0	.984 25	—	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR103-IN	1	●		5/8	5/8	4.724 120	0 0	.984 25	—	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR10-11MS	2	○		.394 10.0	.394 10	4.724 120	0 0	.866 22	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR10-11S	2	○		.394 10.0	.394 10	4.724 120	0 0	.787 20	—	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR12-11MS	2	○		.472 12.0	.630 16	4.724 120	0 0	.866 22	—	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR12-11S	1	○		.472 12.0	.630 16	4.724 120	0 0	.787 20	—	LRIS-4 × 10	LLR-25S-20 × 65
DC..21.5.. DC..21.5..WP	Y-SDJCR062H-IN-OH	2	●		3/8	3/8	3.937 100	0 0	.984 25	M6 × 1	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR082H-IN-OH	2	●		1/2	1/2	3.937 100	0 0	.984 25	NPT1/8	LRIS-2.5 × 7	CLR-15S
	Y-SDJCR083H-IN-OH	2	●		1/2	1/2	3.937 100	0 0	.984 25	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR103H-IN-OH	2	●		5/8	5/8	3.937 100	0 0	.984 25	NPT1/8	LRIS-4 × 10	LLR-25S-20 × 65
DC..32.5.. DC..32.5..WP	Y-SDJCR1212H11S-OH	2	●		.472 12.0	.472 12.0	3.937 100	0 0	.787 20	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDJCR1616H11-OH	2	○		.630 16.0	.630 16.0	3.937 100	0 0	.984 25	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDNCN083-IN	3	●		1/2	1/2	4.724 120	1/4 6.35	.984 25	—	LRIS-4 × 10	LLR-25S-20 × 65
DC..32.5..	Y-SDNCN12-11S	3	○		.472 12.0	.472 12	4.724 120	.236 6.0	.787 20	—	LRIS-4 × 10	LLR-25S-20 × 65
	Y-SDNCN16-11S	3	○		.630 16.0	.630 16	4.724 120	.315 8.0	.787 20	—	LRIS-4 × 10	LLR-25S-20 × 65

DS Toolholders for DC.. Inserts

DS-SDU



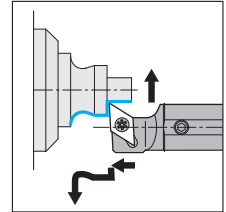
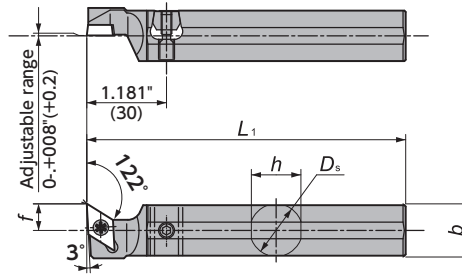
Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-4

DS-SDU-ACH (Adjustable centerline height)

(Parts)

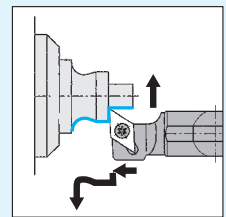
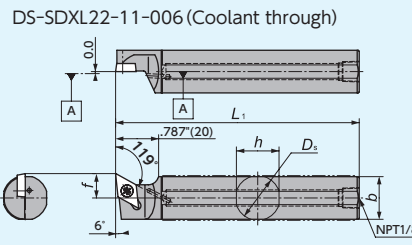
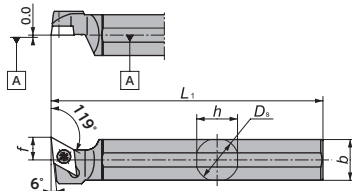
Shank	Wedge	Screw for Wedge
φ.630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ3/4" (19.05)		
φ.787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ.866" (22)		
φ1" (25.4)		



Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-5

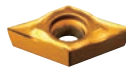
DS-SDX / DS-SDX (Coolant through)



Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-6

DC.. Series - Toolholders III



Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
DC..21.5.. DC..21.5..WP	DS-SDU%{14F-07	4	○	○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%{15H-07	4	○	○	.578	15.875	.591	15.0	.591	15.0	3.937	100	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%{16F-07	4	○	○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%{16X-07	4	○	○	.630	16.000	.591	15.0	.591	15.0	3.740	95	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%{19-07	4	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%{20X-07	4	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.236	6.0	LR15-2.5 × 7	CLR-155
	DS-SDU%{20-07	4	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.236	6.0	LR15-2.5 × 7	CLR-155
DS-SDU%{22-07	4	○	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.236	6.0	LR15-2.5 × 7	CLR-155	
DC..32.5.. DC..32.5..WP	DS-SDU%{14F-11	4	○	○	.551	14.000	.512	13.0	.512	13.0	3.150	80	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{16F-11	4	○	○	.630	16.000	.591	15.0	.591	15.0	3.150	80	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{19-11	4	○	●	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{19-11SPL	4	○	○	3/4	19.050	.709	18.0	.709	18.0	6.300	160	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{20X-11	4	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{20-11	4	○	●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{22-11	4	○	○	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{23-11-007	4	○	○	.906	23.000	.866	22.0	.866	22.0	2.756	70	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11MET	4	○	●	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11	4	○	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11SPL	4	○	○	1	25.400	.945	24.0	.945	24.0	5.906	150	.492	12.5	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{16F-11-ACH	5	○	●	.630	16.000	.610	15.5	.610	15.5	3.150	80	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{19-11-ACH	5	○	●	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{20-11-ACH	5	○	●	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{22-11-ACH	5	○	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11MET-ACH	1	○	●	.984	25.000	.945	24.0	.945	24.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
	DS-SDU%{25-11-ACH	5	○	●	1	25.400	.945	24.0	.945	24.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65
DS-SDX%{22-11-006	6	○	●	.866	22.000	.827	21.0	.827	21.0	4.724	120	.472	12.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%{19-11	6	○	○	3/4	19.050	.709	18.0	.709	18.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%{20X-11	6	○	○	.787	20.000	.748	19.0	.748	19.0	3.740	95	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%{20-11	6	○	○	.787	20.000	.748	19.0	.748	19.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%{25-11MET	6	○	○	.984	25.000	.945	24.0	.945	24.0	4.724	120	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	
DS-SDX%{32-11	6	○	○	1.260	32.000	1.181	30.0	1.181	30.0	5.906	150	.394	10.0	LR15-4 × 10	LLR-255-20 × 65	

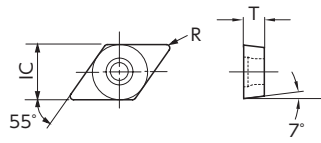
● : Stock ○ : 1-2 week delivery ☉ : Coolant through

Front Turning

DC.. inserts - Carbide / Cermet

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

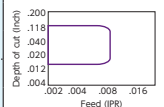
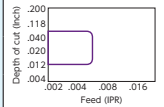
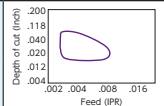
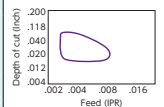
[Molded Chipbreakers]



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

● : 1st Choice
● : Alternate choice

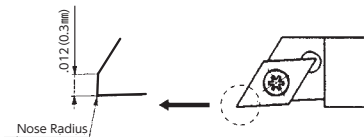
Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet							
					PVD Coated							PVD Coated							
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z			
	DCGT 21.501 FNAM3	DCGT 070200 FNAM3	1/4	.001	●	●													
	DCGT 21.504M FNAM3	DCGT 070201 MFNAM3	1/4	.003	●	●													
	DCGT 21.504 FNAM3	DCGT 070201 FNAM3	1/4	.004					○	○									
	DCGT 21.504 FNAM3	DCGT 070201 FNXAM3	1/4	.004									●						
	DCGT 21.508M FNAM3	DCGT 070202 MFNAM3	1/4	.007	●	●													
	DCGT 21.508 AM3	DCGT 070202 ENBAM3	1/4	.008									●						
	DCGT 21.508 FNAM3	DCGT 070202 FNAM3	1/4	.008						○	○								
	DCGT 21.508 FNAM3	DCGT 070202 FNXAM3	1/4	.008										●					
	DCGT 21.51M FNAM3	DCGT 070204 MFNAM3	1/4	.015	●	●													
	DCGT 21.51 AM3	DCGT 070204 ENBAM3	1/4	.016										●					
	DCGT 21.51 FNAM3	DCGT 070204 FNAM3	1/4	.016						○	○								
	DCGT 21.51 FNAM3	DCGT 070204 FNXAM3	1/4	.016										●					
	DCGT 32.501 FNAM3	DCGT 11T300 FNAM3	3/8	.001	●	●			○	○	●								
	DCGT 32.504M FNAM3	DCGT 11T301 MFNAM3	3/8	.003	●	●			○	○	○								
	DCGT 32.504 FNAM3	DCGT 11T301 FNXAM3	3/8	.004										●					
	DCGT 32.508M FNAM3	DCGT 11T302 MFNAM3	3/8	.007	●	●			○	○	○								
	DCGT 32.508 AM3	DCGT 11T302 ENBAM3	3/8	.008										●					
	DCGT 32.508 FNAM3	DCGT 11T302 FNAM3	3/8	.008	●	●				○	●								
	DCGT 32.508 FNAM3	DCGT 11T302 FNXAM3	3/8	.008										●					
	DCGT 32.51M FNAM3	DCGT 11T304 MFNAM3	3/8	.015	●	●			○	○	○								
DCGT 32.51 FNAM3	DCGT 11T304 FNAM3	3/8	.016	●	●					○	●								
DCGT 32.51 FNAM3	DCGT 11T304 FNXAM3	3/8	.016										●						
DCGT 32.52 FNAM3	DCGT 11T308 FNAM3	3/8	.031	●															
DCGT 32.52 AM3	DCGT 11T308 ENBAM3	3/8	.031										●						
DCGT 32.52 FNAM3	DCGT 11T308 FNXAM3	3/8	.031										●						
DCMT 21.508 AM3	DCMT 070202 ENBAM3	1/4	.008										○					○	
DCMT 21.508 FNAM3	DCMT 070202 FNAM3	1/4	.008				○											○	
DCMT 21.51 AM3	DCMT 070204 ENBAM3	1/4	.016										●		○			○	
DCMT 21.51 FNAM3	DCMT 070204 FNAM3	1/4	.016				○											○	
DCMT 21.52 AM3	DCMT 070208 ENBAM3	1/4	.031											○				○	
DCMT 32.508 AM3	DCMT 11T302 ENBAM3	3/8	.008										○					○	
DCMT 32.508 FNAM3	DCMT 11T302 FNAM3	3/8	.008				○											○	
DCMT 32.51 AM3	DCMT 11T304 ENBAM3	3/8	.016										●	●				○	
DCMT 32.51 FNAM3	DCMT 11T304 FNAM3	3/8	.016				○											○	
DCMT 32.52 AM3	DCMT 11T308 ENBAM3	3/8	.031										●	●				○	
DCMT 32.52 FNAM3	DCMT 11T308 FNAM3	3/8	.031				○											○	
DCMT 32.53 AM3	DCMT 11T312 ENBAM3	3/8	.047										○					○	
NEW 	DCGT 32.502 AM3-WP*	TFD 11FR05AM3	3/8	.002		●													
wiper insert	DCGT 32.506 AM3-WP*	TFD 11FR15AM3	3/8	.006		●													
NEW 	DCGT 32.504M YL	DCGT 11T301M YL	3/8	.005			●	○											
	DCGT 32.508M YL	DCGT 11T302M YL	3/8	.007			●	○											
	DCGT 32.51M YL	DCGT 11T304M YL	3/8	.015			●	○											
	DCGT 21.504M CL	DCGT 070201M CL	1/4	.003		●	○	○											
	DCGT 21.508M CL	DCGT 070202M CL	1/4	.007		●	○	○											
	DCGT 21.51M CL	DCGT 070204M CL	1/4	.015	●	●	○	○											
	DCGT 32.504M CL	DCGT 11T301M CL	3/8	.003	●	●	○	○											
	DCGT 32.508M CL	DCGT 11T302M CL	3/8	.007	●	●	○	○											
DCGT 32.51M CL	DCGT 11T304M CL	3/8	.015	●	●	○	○												



*** To be released in November 2015.

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet					Depth of cut (inch) Feed (IPR)	
					PVD Coated							KM1	XT3	C7X	XN4	Q15		C7Z
					QM3	DT4	DM4	TM4	VM1	ZM3								
	DCGT 21.504M AMX	DCGT 070201M AMX	1/4	.003				●										
	DCGT 21.508M AMX	DCGT 070202M AMX	1/4	.007				●										
	DCGT 32.504M AMX	DCGT 11T301M AMX	3/8	.003			●	●										
	DCGT 32.508M AMX	DCGT 11T302M AMX	3/8	.007			●	●										
	DCGT 32.51M AMX	DCGT 11T304M AMX	3/8	.015			●	●										
	DCGT 21.501 AZ7**	DCGT 070200 AZ7	1/4	.001	○													
	DCGT 21.504M AZ7**	DCGT 070201M AZ7	1/4	.003	○													
	DCGT 21.508M AZ7**	DCGT 070202M AZ7	1/4	.007	○													
	DCGT 32.501 AZ7**	DCGT 11T300 AZ7	3/8	.001	●	○		○		○								
	DCGT 32.504M AZ7**	DCGT 11T301M AZ7	3/8	.003	●	○		○		○								
	DCGT 32.508M AZ7**	DCGT 11T302M AZ7	3/8	.007	●	○		○		○								
	DCGT 32.51M AZ7**	DCGT 11T304M AZ7	3/8	.015	●	○		○		○								
DCGT 32.52 AZ7**	DCGT 11T308 AZ7	3/8	.031	●	○		○		○									
	DCGT 32.508 AF3	DCGT 11T302 ENBAF3	3/8	.008								●						
	DCGT 32.51 AF3	DCGT 11T304 ENBAF3	3/8	.016								●						
	DCGT 32.508 FM	DCGT 11T302 ENBFM	3/8	.008								○						
	DCGT 32.51 FM	DCGT 11T304 ENBFM	3/8	.016								○						
	DCGT 32.52 FM	DCGT 11T308 ENBFM	3/8	.031								●						
	DCMT 21.508 ENBZR	DCMT 070202 ENBZR	1/4	.008									○				○	
	DCMT 21.51 ENBZR	DCMT 070204 ENBZR	1/4	.016									○				○	
	DCMT 32.508 ENBZR	DCMT 11T302 ENBZR	3/8	.008									○				○	
	DCMT 32.51 ENBZR	DCMT 11T304 ENBZR	3/8	.016									○				○	
DCMT 32.52 ENBZR	DCMT 11T308 ENBZR	3/8	.031									○					○	

** To be replaced by version which has 0.2mm higher edge.



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

● : Stock ○ : 1-2 week delivery

Holders → **Q16-19**
 Cutting condition → **Q4**
 Chipbreaker → **P21**

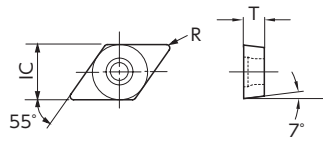
Front Turning

Front Turning

DC.. inserts - Carbide / Cermet

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

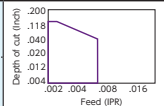
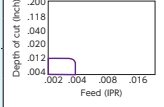
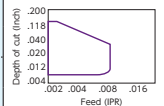
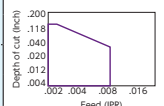
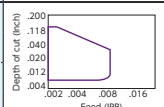
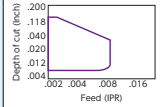
[Ground Chipbreakers]





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

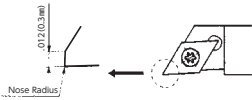
● : 1st Choice
● : Alternate choice

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet					
					PVD Coated							PVD Coated					
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z	
	DCGT 21.501 R _L S	DCGT 070200 R _L S	1/4	.001	R					RL	RL						
	DCGT 21.504M R _L S	DCGT 070201M R _L S	1/4	.003	R	R											
	DCGT 21.504 R _L S	DCGT 070201 R _L S	1/4	.004						RL	RL		R				
	DCGT 21.508M R _L S	DCGT 070202M R _L S	1/4	.007	R	R											
	DCGT 21.508 R _L S	DCGT 070202 R _L S	1/4	.008						RL	RL		RL				
	DCGT 21.51 R _L S	DCGT 070204 R _L S	1/4	.016	R					R							
	DCGT 32.501 R _L S	DCGT 11T300 R _L S	3/8	.001	R	R		R	RL	R							
	DCGT 32.504M R _L S	DCGT 11T301M R _L S	3/8	.003	R	R		R									
	DCGT 32.504 R _L S	DCGT 11T301 R _L S	3/8	.004	R				RL	R							
	DCGT 32.508M R _L S	DCGT 11T302M R _L S	3/8	.007	R	R		R									
	DCGT 32.508 R _L S	DCGT 11T302 R _L S	3/8	.008	R				RL	R							
	DCGT 32.51M R _L S	DCGT 11T304M R _L S	3/8	.015	R			R									
	DCGT 32.51 R _L S	DCGT 11T304 R _L S	3/8	.016	R												
	DCMT 21.504 T _R LAS	DCMT 070201 T _R LAS	1/4	.004									RL			RL	
	DCMT 21.508 T _R LAS	DCMT 070202 T _R LAS	1/4	.008									RL			RL	
	DCMT 21.51 T _R LAS	DCMT 070204 T _R LAS	1/4	.016									RL			RL	
	DCMT 32.504 T _R LAS	DCMT 11T301 T _R LAS	3/8	.004									RL			RL	
	DCMT 32.508 T _R LAS	DCMT 11T302 T _R LAS	3/8	.008									RL			RL	
DCMT 32.51 T _R LAS	DCMT 11T304 T _R LAS	3/8	.016									RL			RL		
	DCGT 21.502 R _L S-WP*	TFD 07F _L 05	1/4	.002	R					R	RL						
	DCGT 21.506 R _L S-WP*	TFD 07F _L 15	1/4	.006	R						RL						
	DCGT 32.502 R _L S-WP*	TFD 11F _L 05	3/8	.002	R					R	R						
	DCGT 32.506 R _L S-WP*	TFD 11F _L 15	3/8	.006	R						R						
	DCGT 21.501 R _L U	DCGT 070200 R _L U	1/4	.001						R	R						
	DCGT 21.504 R _L U	DCGT 070201 R _L U	1/4	.004						R	R						
	DCGT 21.508 R _L U	DCGT 070202 R _L U	1/4	.008						R	RL						
	DCGT 32.501 R _L U1	DCGT 11T300 R _L U1	3/8	.001						R	R	RL					
	DCGT 32.504 R _L U1	DCGT 11T301 R _L U1	3/8	.004		R			R	R	RL						
	DCGT 32.508 R _L U1	DCGT 11T302 R _L U1	3/8	.008		R			R	R	RL						
DCGT 32.51 R _L U1	DCGT 11T304 R _L U1	3/8	.016					R	R	RL							
	DCGT 21.502 R _L U-WP*	TFD 07F _L 05U	1/4	.002	R					R	R						
	DCGT 21.506 R _L U-WP*	TFD 07F _L 15U	1/4	.006	R						R						
	DCGT 32.502 R _L U1-WP*	TFD 11F _L 05U1	3/8	.002	R					R	R						
	DCGT 32.506 R _L U1-WP*	TFD 11F _L 15U1	3/8	.006	R						R						
	DCET 21.502 R _L KHG	DCET 0702005 R _L KHG	1/4	.002						RL							
	DCET 21.503 R _L KHG	DCET 0702008 R _L KHG	1/4	.003						RL							
	DCET 21.507 R _L KHG	DCET 0702018 R _L KHG	1/4	.007						RL							
	DCET 21.508 R _L KHG	DCET 070202 R _L KHG	1/4	.008						RL							
	DCET 32.502 R _L KHG	DCET 11T3005 R _L KHG	3/8	.002						R	RL						
	DCET 32.503 R _L KHG	DCET 11T3008 R _L KHG	3/8	.003						R	RL						
	DCET 32.507 R _L KHG	DCET 11T3018 R _L KHG	3/8	.007						R	RL						
DCET 32.508 R _L KHG	DCET 11T302 R _L KHG	3/8	.008						R	RL							
	DCET 21.503 UHG	DCET 0702008 R _L UHG	1/4	.003						R							
	DCET 32.503 UHG	DCET 11T3008 R _L UHG	3/8	.003						R							



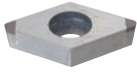
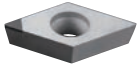
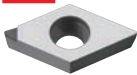
Front Turning

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermets					
					PVD Coated							KM1	XT3	C7X	XN4	Q15	C7Z
					QM3	DT4	DM4	TM4	VM1	ZM3							
	DCGW 21.500 V	DCGW 07020 V	1/4	0						○							
	DCGW 21.501 FN	DCGW 070200 FN	1/4	.001						○							
	DCGW 21.501 H	DCGW 070200 H	1/4	.001						○	●						
	DCGW 21.504 FN	DCGW 070201 FN	1/4	.004						○							
	DCGW 21.504 H	DCGW 070201 H	1/4	.004						○	●						
	DCGW 21.508 H	DCGW 070202 H	1/4	.008						○	●						
	DCGW 32.500 V	DCGW 11T30 V	3/8	0						○							
	DCGW 32.501 FN	DCGW 11T300 FN	3/8	.001						○							
	DCGW 32.501 H	DCGW 11T300 H	3/8	.001						○	●						
	DCGW 32.504 FN	DCGW 11T301 FN	3/8	.004						○							
DCGW 32.504 H	DCGW 11T301 H	3/8	.004						○	●							
DCGW 32.508 H	DCGW 11T302 H	3/8	.008						○	●							
	DCGW 21.502RH-WP*	TFD 07FR05H	1/4	.002						○							
	DCGW 32.502RH-WP*	TFD 11FR05H	3/8	.006						○							



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

DC.. Inserts - CBN / PCD

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)							PCD		
								Coated		Coated					PD1	PD2	
								B5K	B52	B6K	B36	B40	B23	B30			
	DCGW 21.508 PD	DCGW 070202 PD	S0415	1/4	.008	2	.094		●								
	DCGW 21.51 PD	DCGW 070204 PD	S0415	1/4	.016	2	.087		●								
	DCGW 21.51 PD	DCGW 070204 PD	S0635	1/4	.016	2	.087					●					
	DCGW 21.52 PD	DCGW 070208 PD	S0415	1/4	.031	2	.075		●								
	DCGW 32.508 PD	DCGW 11T302 PD	S0415	3/8	.008	2	.094	●	●								
	DCGW 32.508 PD	DCGW 11T302 PD	S0635	3/8	.008	2	.094					●					
	DCGW 32.51 PD	DCGW 11T304 PD	S0415	3/8	.016	2	.087	●	●								
	DCGW 32.51 PD	DCGW 11T304 PD	S0635	3/8	.016	2	.087					●					
	DCGW 32.52 PD	DCGW 11T308 PD	S0415	3/8	.031	2	.075		●								
DCGW 32.52 PD	DCGW 11T308 PD	S0635	3/8	.031	2	.075					●						
	DCMW 32.504	DCMW 11T301	None	3/8	.004	1	-									○	
	DCMW 32.508	DCMW 11T302	None	3/8	.008	1	-									○	
	DCMW 32.51	DCMW 11T304	None	3/8	.016	1	-									○	
	DCMW 32.52	DCMW 11T308	None	3/8	.031	1	-									○	
	DCMT 32.508 PF	DCMT 11T302 PF	None	3/8	.008	1	-										●
	DCMT 32.51 PF	DCMT 11T304 PF	None	3/8	.016	1	-										●

● : Stock ○ : 1-2 week delivery

R : Stock (Right-hand only)

L : Stock (Left-hand only)

Ⓜ : 1-2 week delivery (Right-hand only)

Ⓛ : 1-2 week delivery (Left-hand only)

Ⓜ : Mirror finish

Holders → Q16-19

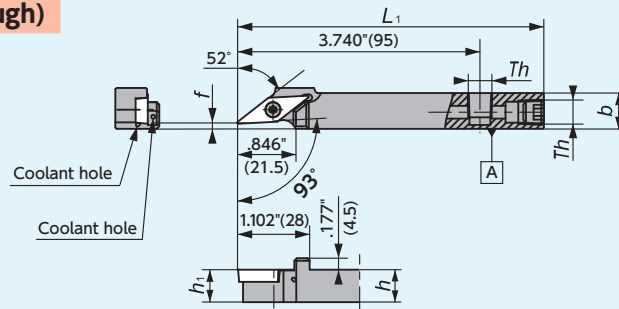
Cutting condition → Q4

Chipbreaker → P21

Toolholders for VB.. Inserts

SVJB-OH (Coolant through)

NEW



Th (Thread type)

Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-1

● Left-Hand coolant through holders are designed for Right-Hand machines

Right-Hand style shown

VBGT33

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	g (Inch) (mm)	Th	Clamp Screw	Wrench
			R	L									
	SVJB%1083C-F079-OH	1	●	●	1/2	.551 14	1/2	4.724 120	.079 2	.079 2	NPT1/8	LRIS-4 × 10	LLR-25S
	SVJB%1103C-F079-OH	1	●	●	5/8	5/8	5/8	4.724 120	.079 2	0 0	NPT1/8	LRIS-4 × 10	LLR-25S
	SVJB%11214-X16N-F02OH	1	●	●	.472 12	.551 14	.472 12	4.724 120	.079 2	.079 2	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S
	SVJB%11616-X16N-F02OH	1	●	●	.630 16	.630 16	.630 16	4.724 120	.079 2	0 0	Rc1/8(PT1/8)	LRIS-4 × 10	LLR-25S

● Left-Hand coolant through holders are designed for Right-Hand machines

VB.. inserts - Carbide / Cermet

[Molded Chipbreaker]

(inch)	IC	T
VB33	3/8	3/16

Shape	Item Number	ISO Item Number	IC	R	Carbide								Cermet						
					PVD Coated								PVD Coated						
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z			
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●
NEW	VBGT 3308 FNYL*	VBGT 160402 YL	3/8	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	VBGT 331 FNYL	VBGT 160404 YL	3/8	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	VBGT 332 FNYL*	VBGT 160408 YL	3/8	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

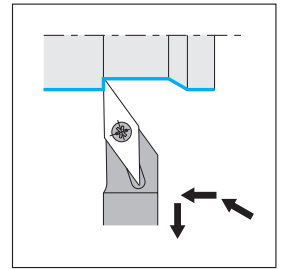
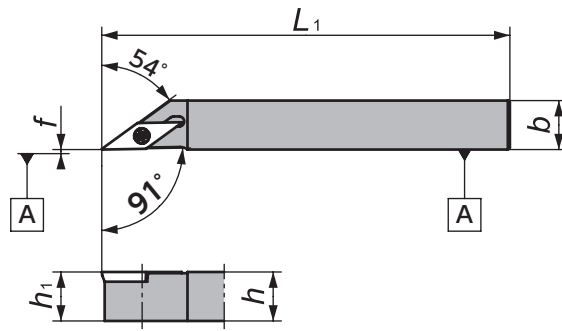
* To be released in August 2015.

VB.. inserts - CBN / PCD

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)							PCD			
								Coated		Coated					PD1	PD2		
								B5K	B52	B6K	B36	B40	B23	B30				
	VBGW 332 PD	VBGW 160408 PD	S0415	3/8	.031	2	.063											

Toolholders for VC.. Inserts


SVAC-N-1L



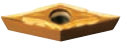
Right-Hand style shown

Figure-1

SVAC-N

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	SVAC%{1010X11N-1L	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	VCGT21.508	SVAC%{1212X11N-1L	1	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	RLR-20S

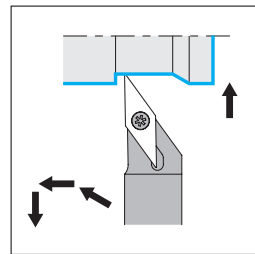
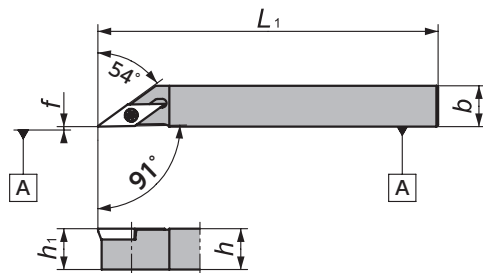
SVAC-N

Shape	Item Number	ISO Item Number	IC		T		R		Coated Carbide			
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3	DT4	DM4	TM4
	VCGT21.508MCL	VCGT1 10202MCL	1/4	6.35	3/32	2.38	.007	0.18	○*	○	○	○

* To be released in November 2015.

Toolholders for VC.. Inserts

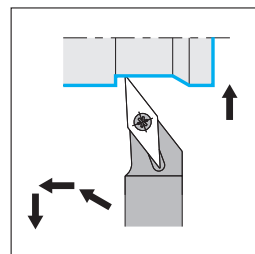
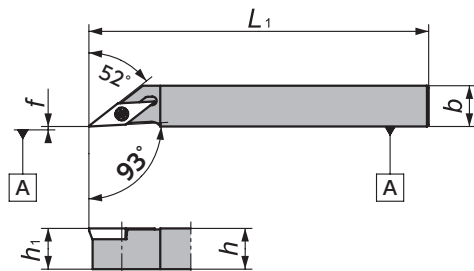
SVAC-N



Right-Hand style shown

Figure-1

SVJC

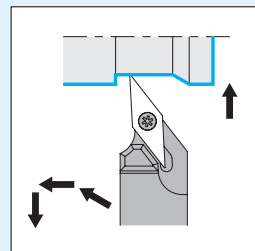
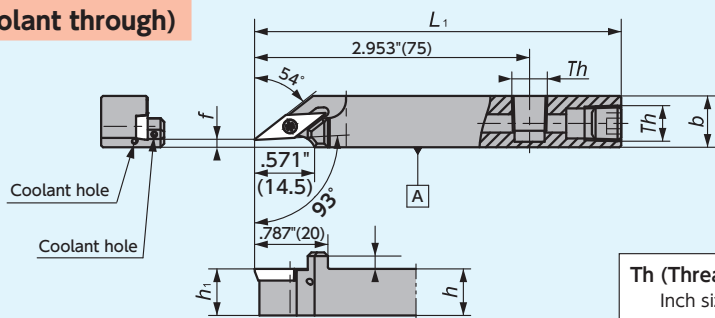


Right-Hand style shown

Figure-2

SVJC-OH (Coolant through)

NEW

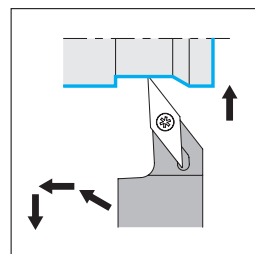
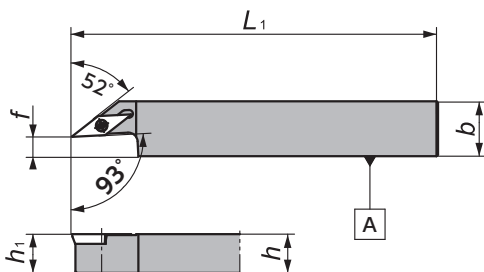


Right-Hand style shown

Figure-3

Th (Thread type)
Inch size holder: NPT1/8

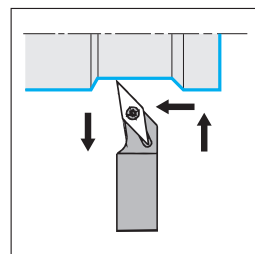
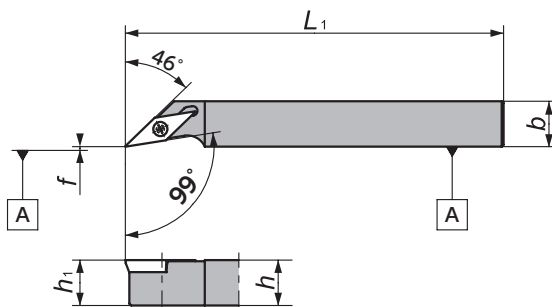
SVJC-F (Shifted)



Right-Hand style shown

Figure-4

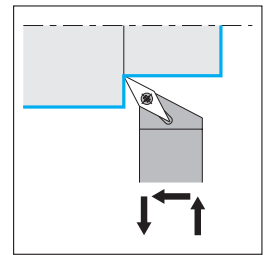
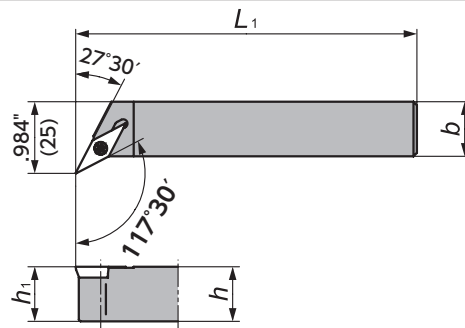
SVXC-N



Right-Hand style shown

Figure-5

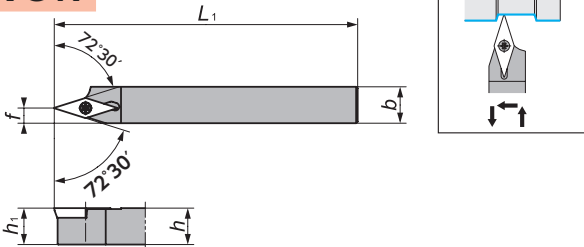
SVQC



Right-Hand style shown

Figure-6

SVVC-N



Right-Hand style shown

Figure-7

SVVC-N

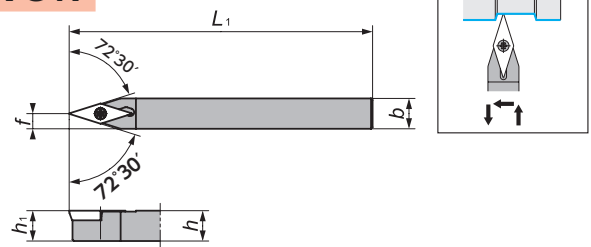


Figure-8

VC.. Series - Toolholders I



Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
VC..22 VC..22-WP	SVAC%10808X11N	1	●	●	.315	8	.315	8	.315	8	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVAC%11010X11N	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVAC%11212X11N	1	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVAC%11616X11N	1	○	○	.630	16	.630	16	.630	16	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
VC..22	SVJC%1-062C	4	●	●	3/8		3/8		3/8		4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVJC%1-082C	4	●	●	1/2		1/2		1/2		4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVJC%1-102C	4	●	●	5/8		5/8		5/8		4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVJC%10808H11N	2	○	○	.315	8	.315	8	.315	8	3.937	100	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVJC%11010X11N	2	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVJC%11212X11N	2	●	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVJC%11616X11N	2	○	○	.630	16	.630	16	.630	16	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
VC..22	SVJC%1-082H-F079-OH	3	●	●	1/2		.551	14	1/2		3.937	100	.079	2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S
	SVJC%1-102H-F079-OH	3	●	●	5/8		5/8		5/8		3.937	100	.079	2.0	NPT1/8	LRIS-2.5 × 7	CLR-15S
VC..22	SVJC%1-082C-F250	4	●	●	1/2		1/2		.709	18	4.724	120	1/4		—	LRIS-2.5 × 7	CLR-15S
	SVJC%1-082C-F500	4	●	●	1/2		1/2		.984	25	4.724	120	1/2		—	LRIS-2.5 × 7	CLR-15S
VC..22	SVXC%11210X11N	5	○	○	.394	10	.472	12	.394	10	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
	SVXC%11212X11N	5	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	—	LRIS-2.5 × 7	CLR-15S
VC..22	SVQC%120-X11	6	○	○	.787	20	.787	20	.787	20	4.724	120	—	—	—	LRIS-2.5 × 7	CLR-15S
VC..22	SVVC%11212X11N	7	●	●	.472	12	.472	12	.472	12	4.724	120	.197	5	—	LRIS-2.5 × 7	CLR-15S
	SVVC%11616X11N	7	○	○	.630	16	.630	16	.630	16	4.724	120	.197	5	—	LRIS-2.5 × 7	CLR-15S
	SVVCN0808H11N	8	○	○	.315	8	.315	8	.315	8	3.937	100	.157	4	—	LRIS-2.5 × 7	CLR-15S
	SVVCN1010X11N	8	○	○	.394	10	.394	10	.394	10	4.724	120	.197	5	—	LRIS-2.5 × 7	CLR-15S
	SVVCN20-X11	8	○	○	.787	20	.787	20	.787	20	4.724	120	.394	10	—	LRIS-2.5 × 7	CLR-15S

● : Stock

○ : 1-2 week delivery

💧 : Coolant through

Inserts → Q29

Cutting condition → Q4

Y-axis Toolholders for VC.. Inserts

Y-SVJCR

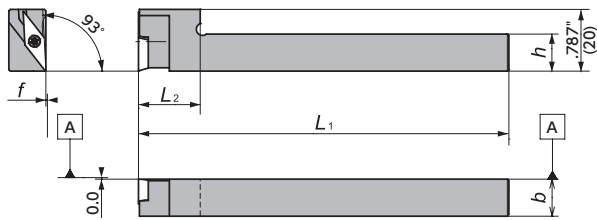


Figure-1

Right-Hand style shown
Takes Right-hand or Neutral insert

Y-SVJCR-OH (Coolant through)

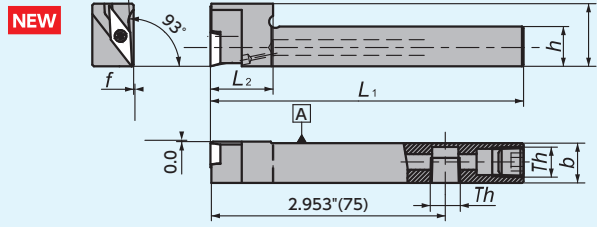


Figure-2

Th (Thread type)
Inch size holder: NPT1/8
Right-Hand style shown
Takes Right-hand or Neutral insert

VC.. Series - Toolholders II



Gage Insert	Item Number	Figure	Stock		h		b		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
VC..22..	Y-SVJCR062-IN	1	●		3/8	3/8	4.724	120	0.0	0.0	.787	20	—	LRIS-2.5 × 7	CLR-15S		
	Y-SVJCR082-IN	1	●		1/2	1/2	4.724	120	0.0	0.0	.787	20	—	LRIS-2.5 × 7	CLR-15S		
	Y-SVJCR102-IN	1	●		5/8	5/8	4.724	120	0.0	0.0	.984	25	—	LRIS-2.5 × 7	CLR-15S		
VC..22..	Y-SVJCR082HS-IN-OH	2	●		1/2	1/2	3.937	100	0.0	0.0	.787	20	NPT1/8	LRIS-2.5 × 7	CLR-15S		
	Y-SVJCR102H-IN-OH	2	●		5/8	5/8	3.937	100	0.0	0.0	.984	25	NPT1/8	LRIS-2.5 × 7	CLR-15S		

DS Toolholders for VC.. Inserts

DS-SVX

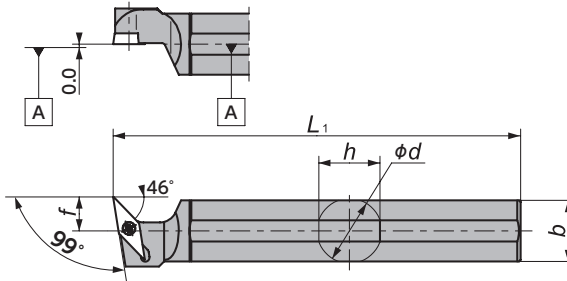


Figure-3

Left-Hand style shown
Takes Right-hand or Neutral insert

VC.. Series - Toolholders III



Gage Insert	Item Number	Figure	Stock		φ d		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VC..22..	DS-SVX $\frac{1}{4}$ 14F-11	3		○	.551	14.000	.512	13	.512	13	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 15H-11	3		○	5/8	15.875	.591	15	.591	15	3.937	100	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 16F-11	3		●	.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 19-11	3		●	3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 19-11SPL	3		○	3/4	19.050	.709	18	.709	18	6.299	160	.433	11.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 20X-11	3		○	.787	20.000	.748	19	.748	19	3.740	95	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 20-11	3		●	.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 22-11	3		●	.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 25-11MET	3		○	.984	25.000	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S
	DS-SVX $\frac{1}{4}$ 25-11	3		●	1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-2.5 × 7	CLR-15S

● : Stock ○ : 1-2 week delivery ■ : While stock lasts R : Stock (Right-hand only) L : Stock (Left-hand only)

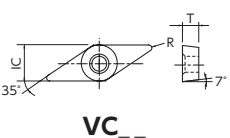

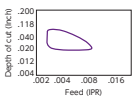

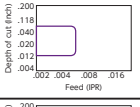

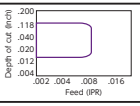

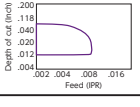

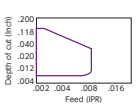

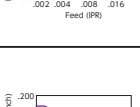



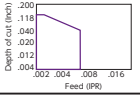

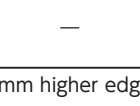

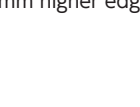

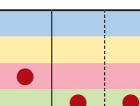

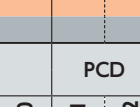
Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only) Ⓜ : Mirror finish ☉ : Coolant through

Cutting condition →Q4

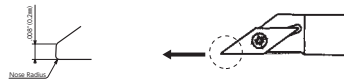
Chipbreaker →P21

VC.. Inserts - Carbide / Cermet

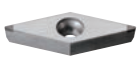
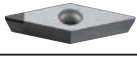

(inch)	IC	T
VC..22	1/4	1/8

Shape	Item Number	ISO Item Number	IC	R	Carbide						Cermet					● : 1st Choice ● : Alternate choice		
					PVD Coated						PVD Coated							
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15		C7Z	
 <p>Steel Stainless Steel Cast Iron Non-Ferrous Material Heat Resistant Alloy Hardened Material</p> <p>P M K N S H</p>																		
	VCGT 2201 FNAM3	VCGT 110300 FNAM3	1/4	.001														
	VCGT 2204M FNAM3	VCGT 110301M FNAM3	1/4	.003	●	●		○	○									
	VCGT 2208M FNAM3	VCGT 110302M FNAM3	1/4	.007														
	VCGT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008														
	VCGT 2204M CL	VCGT 110301M CL	1/4	.003		●												
	VCGT 2208M CL	VCGT 110302M CL	1/4	.007		●												
	VCGT 2201 AZ7**	VCGT 110300 AZ7	1/4	.001	●													
	VCGT 2204M AZ7**	VCGT 110301M AZ7	1/4	.003	●													
	VCGT 2208M AZ7**	VCGT 110302M AZ7	1/4	.007	●													
	VCGT 2208 FNAM3	VCGT 110302 FNAM3	1/4	.008														
	VCMT 2204 T $\frac{R}{L}$ AS	VCMT 110301 T $\frac{R}{L}$ AS	1/4	.004									RL			RL		
	VCMT 2208 T $\frac{R}{L}$ AS	VCMT 110302 T $\frac{R}{L}$ AS	1/4	.008									RL			RL		
	VCGT 2202 $\frac{R}{L}$ S-WP*	TFV 11F $\frac{R}{L}$ 05SX	1/4	.002					R	®								
	VCGT 2204 $\frac{R}{L}$ S-WP*	TFV 11F $\frac{R}{L}$ 10SX	1/4	.004					R	®								
	VCGT 2201 $\frac{R}{L}$ U	VCGT 110300 $\frac{R}{L}$ U	1/4	.001					®	®								
	VCGT 2204M $\frac{R}{L}$ U	VCGT 110301M $\frac{R}{L}$ U	1/4	.003					®	®								
	VCGT 2208M $\frac{R}{L}$ U	VCGT 110302M $\frac{R}{L}$ U	1/4	.007					®	®								
	VCGT 2208 $\frac{R}{L}$ U	VCGT 110302 $\frac{R}{L}$ U	1/4	.008					®	®								
	VCGT 2202 $\frac{R}{L}$ U-WP*	TFV 11F $\frac{R}{L}$ 05U	1/4	.002					®	®								
	VCGT 2204 $\frac{R}{L}$ U-WP*	TFV 11F $\frac{R}{L}$ 10U	1/4	.004					®	®								
	VCET 2203 $\frac{R}{L}$ UHG	VCET 1103008 $\frac{R}{L}$ UHG	1/4	.003					®									
	VCGW 2201 H	VCGW 110300 H	1/4	.001														
	VCGW 2204 H	VCGW 110301 H	1/4	.004														
	VCGW 2208 H	VCGW 110302 H	1/4	.008														

**To be replaced by version which has 0.2mm higher edge.



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

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)						PCD		
								Coated		Coated				PD1	PD2	
								B5K	B52	B6K	B36	B40	B23			B30
	VCGW 221 PD	VCGW 110304 PD	S0415	1/4	.016	2	.098		○							
	VCGW 221 PD	VCGW 110304 PD	S0635	1/4	.016	2	.098									
	VCGW 222 PD	VCGW 110308 PD	S0415	1/4	.031	2	.063		○							
	VCGW 222 PD	VCGW 110308 PD	S0635	1/4	.031	2	.063									
	VCMW 2204	VCMW 110301	None	1/4	.004	1	—									
	VCMW 2208	VCMW 110302	None	1/4	.008	1	—									
	VCMW 221	VCMW 110304	None	1/4	.016	1	—									

Front Turning

Toolholders VP..08 Inserts

SVQP-N

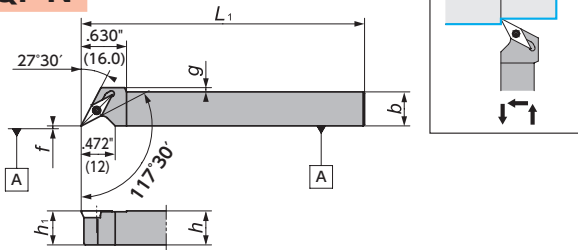


Figure-1

Right-Hand style shown

CH-SVUP

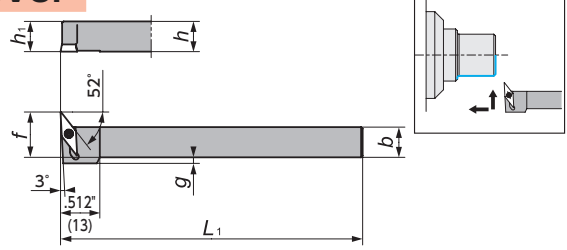


Figure-2

Left-Hand style shown
Takes Right-hand or Neutral insert

DS-SVXP

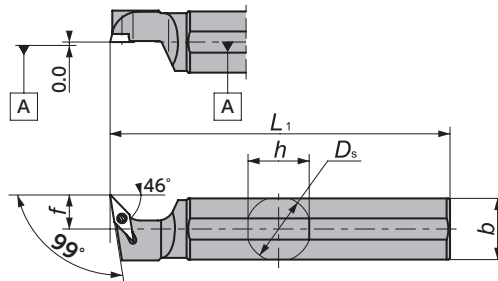


Figure-3

Left-Hand style shown
Takes Right-hand or Neutral insert

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..0802	SVQP ^{1/2} 1010X08N	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	.138	3.5	LRIS-2 × 6	CLR-13S
	SVQP ^{1/2} 1212X08N	1	○	○	.472	12	.472	12	.394	10	4.724	120	0.0	0.0	.059	1.5	LRIS-2 × 6	CLR-13S
	SVQP ^{1/2} 1616X08N	1	○	○	.630	16	.630	16	.394	10	4.724	120	0.0	0.0	0	0	LRIS-2 × 6	CLR-13S
	CH-SVUP ^{1/2} 1010H08	2	○	○	.394	10	.394	10	.394	10	3.937	100	.591	15	.079	2	LRIS-2 × 6	CLR-13S
	CH-SVUP ^{1/2} 1212H08	2	○	○	.472	12	.472	12	.472	12	3.937	100	.669	17	0	0	LRIS-2 × 6	CLR-13S

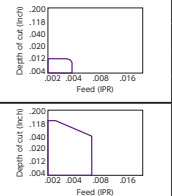
Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..0802	DS-SVXP ^{1/2} 19-08	3	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP ^{1/2} 20-08	3	○	○	.787	20.000	.748	19	.748	19	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP ^{1/2} 22-08	3	○	○	.866	22.000	.827	21	.827	21	4.724	120	.394	10	LRIS-2 × 6	CLR-13S
	DS-SVXP ^{1/2} 25-08	3	○	○	1	25.400	.945	24	.945	24	5.906	150	.394	10	LRIS-2 × 6	CLR-13S

VP.. Inserts - Carbide / Cermet

(inch)	IC	T
VP..08	3/16	3/32

Shape	Item Number	ISO Item Number	IC	R	Carbide								Cermet					
					PVD Coated								PVD Coated					
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z		
	VPET 0802005 ^{1/2} KHG	VPET 0802005 ^{1/2} KHG	.187	.002	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	VPET 0802008 ^{1/2} KHG	VPET 0802008 ^{1/2} KHG	.187	.003	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	VPET 0802018 ^{1/2} KHG	VPET 0802018 ^{1/2} KHG	.187	.007	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	VPET 080202 ^{1/2} KHG	VPET 080202 ^{1/2} KHG	.187	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	VPET 0802008 ^{1/2} UHG	VPET 0802008 ^{1/2} UHG	.187	.003	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● : 1st Choice
● : Alternate choice



Front Turning

Toolholders for VP..22 Inserts

SVXP-N

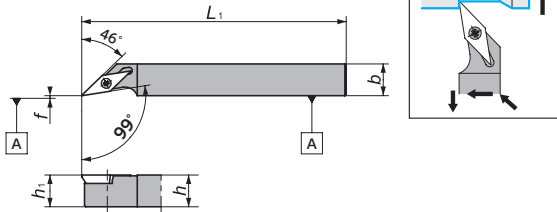


Figure-1

Right-Hand style shown

DS-SVVP

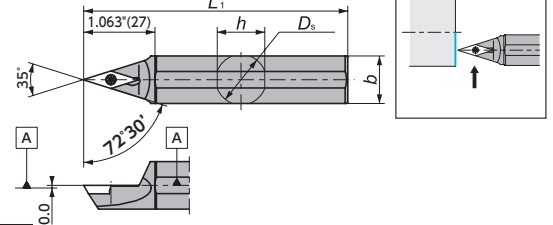


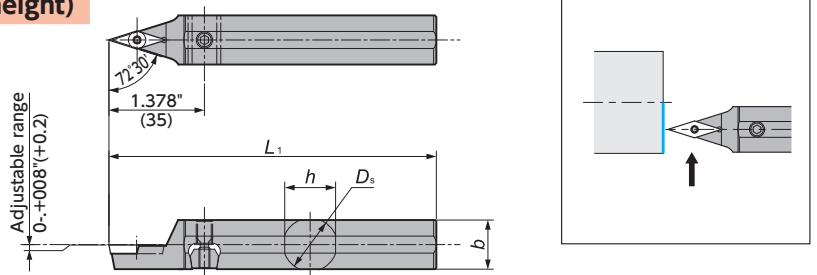
Figure-2

DS-SVVP-ACH (Adjustable centerline height)

<Parts>

Shank	Wedge	Screw for Wedge
φ .630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 3/4" (19.05)		
φ .787" (20)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ .866" (22)		
φ 1" (25.4)		

Figure-3

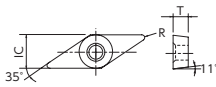


Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..22	SVXP $\frac{1}{4}$ 1012X11N	1	○	○	.394	10	.472	12	.394	10	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	SVXP $\frac{1}{2}$ 1212X11N	1	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S

Gage Insert	Item Number	Figure	Stock Neutral	D _s		h		b		L ₁		Clamp Screw	Wrench
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
VP..22	DS-SVVPN19-11	2	○	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN22-11	2	○	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN16-11-ACH	3	●	.630	16.000	.610	15.5	.610	15	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN19-11-ACH	3	●	3/4	19.050	.709	18.0	.709	18	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN20-11-ACH	3	●	.787	20.000	.748	19.0	.748	19	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN22-11-ACH	3	●	.866	22.000	.827	21.0	.827	21	4.724	120	LRIS-2.5 × 7	CLR-15S
	DS-SVVPN25-11-ACH	3	●	1	25.400	.945	24.0	.945	24	5.906	150	LRIS-2.5 × 7	CLR-15S

VP.. Inserts - Carbide / Cermet

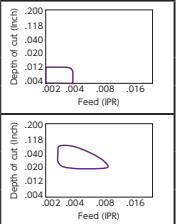
(inch)	IC	T
VP..22	1/4	1/8



VP__

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet					Depth of cut (inch) Feed (IPR)
					PVD Coated							PVD Coated					
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z	
	VPET 2202 $\frac{1}{4}$ KHG	VPET 1103005 $\frac{1}{4}$ KHG	1/4	.002													
	VPET 2203 $\frac{1}{4}$ KHG	VPET 1103008 $\frac{1}{4}$ KHG	1/4	.003													
	VPET 2207 $\frac{1}{4}$ KHG	VPET 1103018 $\frac{1}{4}$ KHG	1/4	.007													
	VPET 2208 $\frac{1}{4}$ KHG	VPET 110302 $\frac{1}{4}$ KHG	1/4	.008													
	VPGT 2201 FNAM3	VPGT 110300 FNAM3	1/4	.001		●		○									
	VPGT 2204M FNAM3	VPGT 110301M FNAM3	1/4	.003	●	●		○									
	VPGT 2208M FNAM3	VPGT 110302M FNAM3	1/4	.007	●	●		○									

● : 1st Choice
○ : Alternate choice



● : Stock ○ : 1-2 week delivery ® : 1-2 week delivery (Right-hand only) ⊖ : 1-2 week delivery (Left-hand only)

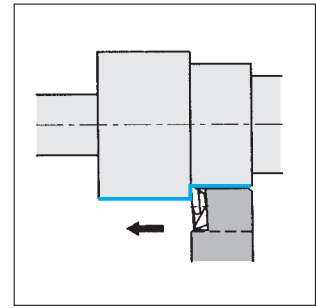
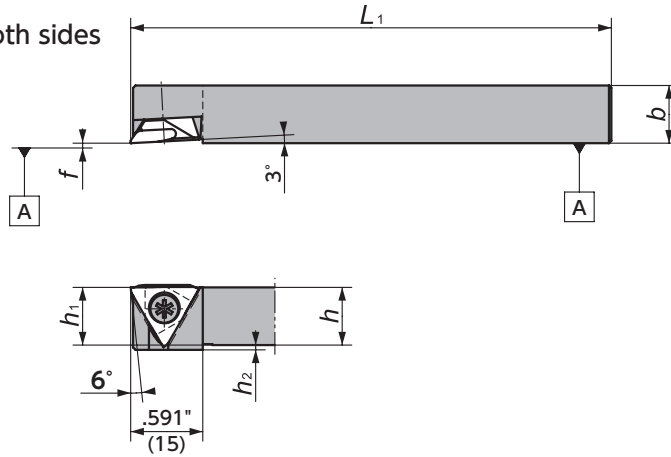
Cutting condition → Q4

Chipbreaker → P21

Toolholders for TFT series


TFT

Screw accessible from both sides

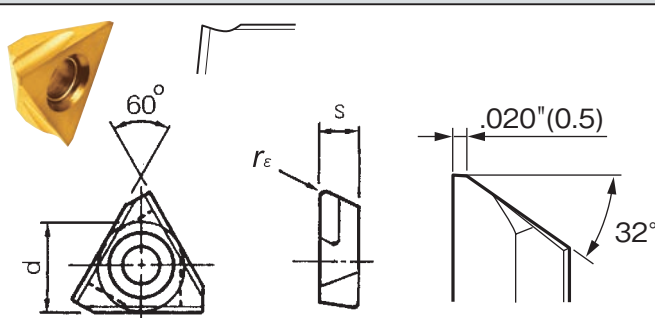


Right-Hand style shown

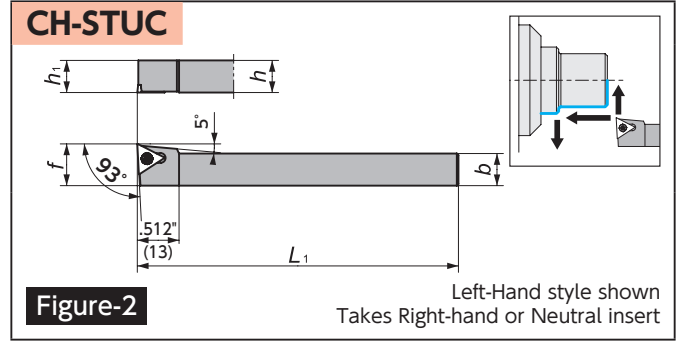
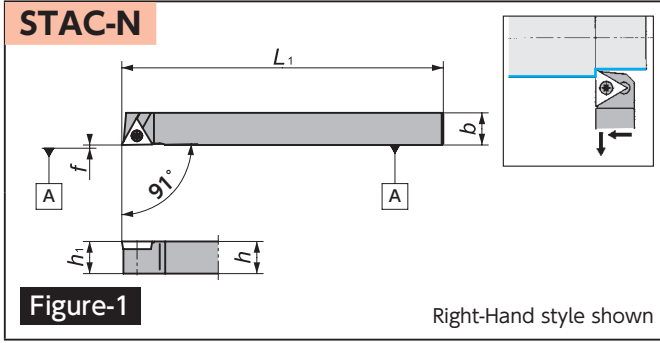
Figure-1

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		h ₂		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TF33	TFT%06-IN	1	●		3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	0.0	0.0	.118	3	LR-S-4 × 10PW	CLR-15S
	TFT%08-IN	1	●		1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	0.0	0.0	.039	1	LR-S-4 × 10PW	CLR-15S
	TFT%10	1	○		.394	10	.394	10	.394	10	4.724	120	0.0	0.0	.118	3	LR-S-4 × 10PW	CLR-15S
	TFT%12	1	○		.472	12	.472	12	.472	12	4.724	120	0.0	0.0	.039	1	LR-S-4 × 10PW	CLR-15S
	TFT%16	1	○		.630	16	.630	16	.630	16	4.724	120	0.0	0.0	0.0	0	LR-S-4 × 10PW	CLR-15S
	TFT%20	1	○		.787	20	.787	20	.787	20	4.724	120	0.0	0.0	0.0	0	LR-S-4 × 10PW	CLR-15S

TFT Series - Inserts

Shape	Item Number	d		s		r _ε		ZM3	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L
 <p>Right-Hand style shown</p> <p>Note: Up to .157(4.0mm) D.O.C. All angles shown are obtained when insert is set in the holder.</p>	TF3300%	3/8	9.525	3/16	4.76	0	0	●	
	TF3305%	3/8	9.525	3/16	4.76	.002	0.05	●	
	TF3315%	3/8	9.525	3/16	4.76	.006	0.15	●	
	TF3320%	3/8	9.525	3/16	4.76	.008	0.2	○	

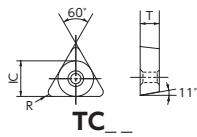
Toolholders for TC.. Inserts



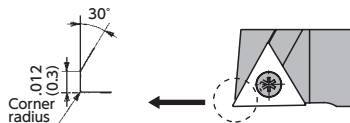
Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TC..73..	STAC%0808X09N	1	○		.315	8	.315	8	.315	8	4.724	120	0.0	0.0	LRIS-2.2 × 6	CLR-13S
	STAC%1010X09N	1	○	○	.394	10	.394	10	.394	10	4.724	120	0.0	0.0	LRIS-2.2 × 6	CLR-13S
TC..21.5..	STAC%1212X11N	1	○	○	.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
TC..73..	CH-STUC%1010H09	2	○	○	.394	10	.394	10	.394	10	3.937	100	.512	13	LRIS-2.2 × 6	CLR-13S
	CH-STUC%1212H09	2	○	○	.472	12	.472	12	.472	12	3.937	100	.591	15	LRIS-2.2 × 6	CLR-13S

TC.. Inserts - Carbide / Cermet

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet					Graph	
					PVD Coated							PVD Coated						
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z		
	TCGT 21.508 FNAM3	TCGT 110202 FNXAM3	1/4	.008														
	TCGT 7304 R/4 S	TCGT 090201 R/4 S	7/32	.004														
	TCGT 7308 R/4 S	TCGT 090202 R/4 S	7/32	.008														
	TCGT 21.504 R/4 S	TCGT 110201 R/4 S	1/4	.004														
	TCGT 7302 R/4 S-WP*	TFT 09F R/4.05	7/32	.002														
	TCGT 7306 R/4 S-WP*	TFT 09F R/4.15	7/32	.006														
	TCGT 21.502 R/4 S-WP*	TFT 11F R/4.05	1/4	.002														
	TCGT 21.506 R/4 S-WP*	TFT 11F R/4.15	1/4	.006														
	TCGT 7304 R/4 U	TCGT 090201 R/4 U	7/32	.004														
	TCGT 7308 R/4 U	TCGT 090202 R/4 U	7/32	.008														
	TCGT 7302 R/4 U-WP*	TFT 09F R/4.05U	7/32	.002														
	TCGT 7306 R/4 U-WP*	TFT 09F R/4.15U	7/32	.006														
	TCGT 21.502 R/4 U1-WP*	TFT 11F R/4.05U1	1/4	.002														
	TCGT 21.506 R/4 U1-WP*	TFT 11F R/4.15U1	1/4	.006														
	TCGW 7301 FN	TCGW 090200 FN	7/32	.001														
	TCGW 7304 FN	TCGW 090201 FN	7/32	.004														
	TCGW 21.501 FN	TCGW 110200 FN	1/4	.001														
	TCGW 21.504 FN	TCGW 110201 FN	1/4	.004														



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

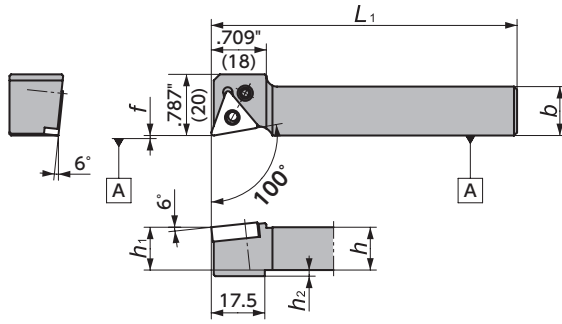


● : Stock ○ : 1-2 week delivery ® : 1-2 week delivery (Right-hand only) ℓ : 1-2 week delivery (Left-hand only)

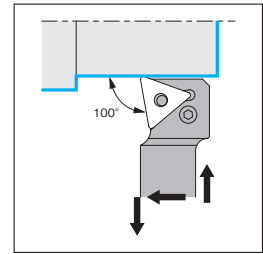
Cutting condition → **Q4**
Chipbreaker → **P21**

Toolholders for TN.. Inserts

PTXN-N



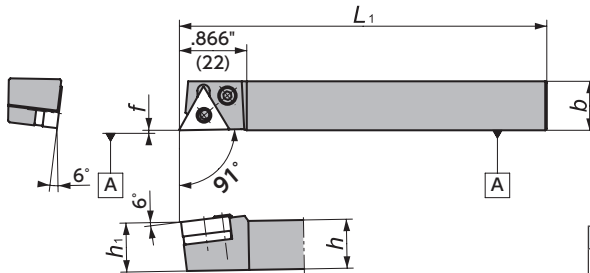
Shim	Clamp Pin	Spring
—	LCL33N	—



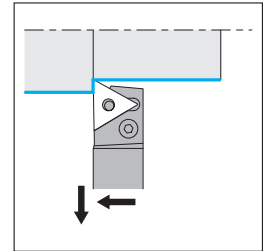
Right-Hand style shown

Figure-1

PTAN-N



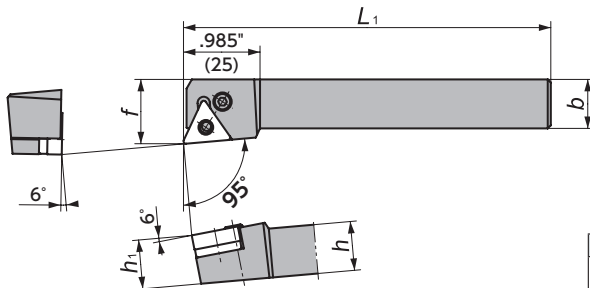
Shim	Clamp Pin	Spring
LST317	LCL3	LSP3



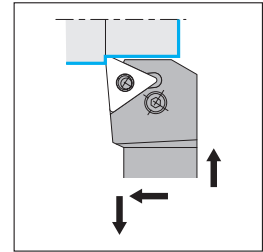
Right-Hand style shown

Figure-2

PTLN



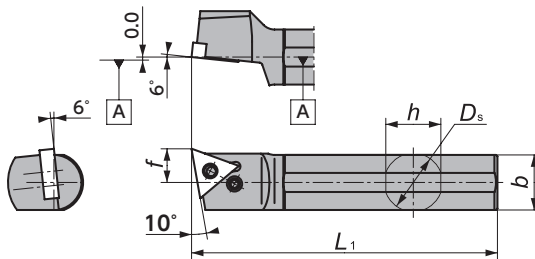
Shim	Clamp Pin	Spring
LST317	LCL3	LSP3



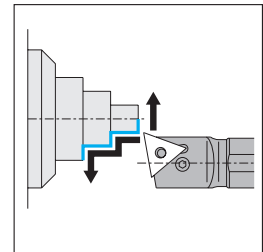
Right-Hand style shown

Figure-3

DS-PTX



Shim	Clamp Pin	Spring
—	LCL33N	—



Left-Hand style shown
Takes Right-hand or Neutral insert

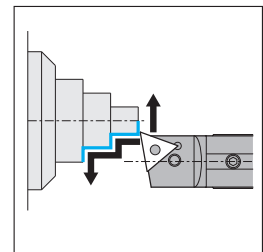
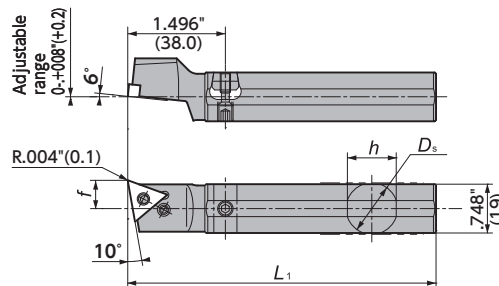
Figure-4

DS-PTX-ACH (Adjustable centerline height)

<Parts>

Shank	Wedge	Screw for Wedge
φ.630" (16)	ACH-W18 (5805601)	WS060415-003 (5795539)
φ3/4" (19.05)		
φ.787" (20)		
φ.866" (22)	ACH-W24 (5805619)	WS060419-004 (5799226)
φ1" (25.4)		

Shim	Clamp Pin	Spring
—	LCL33N	—



Left-Hand style shown
Takes Right-hand or Neutral insert

Figure-5

TN.. Series - Toolholders



PTXN-N / PTAN-N / PTLN

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		h_2		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TN..33..	PTXN%063C	1	●		3/8	5/8	3/8	5/8	3/8	5/8	4.724	120	.097	2.475	0.0	0.0	LCS33	LW-2
	PTXN%083C	1	●		1/2	5/8	1/2	5/8	1/2	5/8	4.724	120	—	—	0.0	0.0	LCS33	LW-2
	PTXN%103C	1	●		5/8	5/8	5/8	5/8	5/8	5/8	4.724	120	—	—	0.0	0.0	LCS33	LW-2
TN..33..	PTXN%1016X33N	1	○		.394	10.0	.630	16	.394	10	4.724	120	.079	2	0.0	0.0	LCS33	LW-2
	PTXN%1216X33N	1	●		.472	12.0	.630	16	.472	12	4.724	120	—	—	0.0	0.0	LCS33	LW-2
	PTXN%1616X33N	1	○		.630	16.0	.630	16	.630	16	4.724	120	—	—	0.0	0.0	LCS33	LW-2
	PTXN%2020X33N	1	○		.787	20.0	.787	20	.787	20	4.724	120	—	—	0.0	0.0	LCS33	LW-2
TN..33..	PTAN%1616X33N	2	○		.630	16.0	.630	16	.630	16	4.724	120	—	—	0.0	0.0	LCS3	LW-2.5
TN..33..	PTLN%2020L33	3	○	○	.787	20.0	.787	20	.787	20	5.512	140	—	—	.984	25	LCS3	LW-2.5



DS-PTX / DS-PTX-ACH

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TN..33..	DS-PTX%19-33	4		○	3/4	19.050	.709	18.0	.709	18	4.724	120	.433	11.0	LCS33	LW-2
	DS-PTX%20-33	4		○	.787	20.000	.748	19.0	.748	19	4.724	120	.433	11.0	LCS33	LW-2
	DS-PTX%22-33	4		○	.866	22.000	.827	21.0	.827	21	4.724	120	.472	12.0	LCS33	LW-2
	DS-PTX%25M-33	4		○	1	25.400	.945	24.0	.945	24	5.906	150	.512	13.0	LCS33	LW-2
TN..33..	DS-PTX%16-33-ACH	5		●	.630	16.000	.610	15.5	.591	15	4.724	120	.433	11.0	LCS33	LW-2
	DS-PTX%19-33-ACH	5		●	3/4	19.050	.709	18.0	.709	18	4.724	120	.433	11.0	LCS33	LW-2
	DS-PTX%20-33-ACH	5		●	.787	20.000	.748	19.0	.748	19	4.724	120	.433	11.0	LCS33	LW-2
	DS-PTX%22-33-ACH	5		●	.866	22.000	.827	21.0	.827	21	4.724	120	.472	12.0	LCS33	LW-2
	DS-PTX%25-33MET-ACH	1		●	1	25.000	.945	24.0	.945	24	5.906	150	.512	13.0	LCS33	LW-2
	DS-PTX%25-33-ACH	5		●	1	25.400	.945	24.0	.945	24	5.906	150	.512	13.0	LCS33	LW-2

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

● : Stock ○ : 1-2 week delivery

Inserts → Q36
Cutting condition → Q4

Front Turning

Front Turning

TN..33 inserts - Carbide / Cermet

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

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet							
					PVD Coated							PVD Coated							
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XM4	Q15	C7Z			
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●
	TNGG 3304M FNUL	TNGG 160401M FNUL	3/8	.003				●	●										
	TNGG 3308M FNUL	TNGG 160402M FNUL	3/8	.007				●	●										
	TNGG 331M FNUL	TNGG 160404M FNUL	3/8	.015				●	●										
	TNGG 3308 FNZP	TNGG 160402 FNZP	3/8	.008	●		○			○	○								
	TNGG 331 FNZP	TNGG 160404 FNZP	3/8	.016	●		○			○	○								
	TNGG 332 FNZP	TNGG 160408 FNZP	3/8	.031	●		○			○	○								
	TNGG 3304 F 3/4 U2	TNGG 160401 F 3/4 U2	3/8	.004						Ⓜ									
	TNGG 3308 F 3/4 U2	TNGG 160402 F 3/4 U2	3/8	.008						Ⓜ									
	TNGG 331 F 3/4 U2	TNGG 160404 F 3/4 U2	3/8	.016						Ⓜ									
	TNGG 332 F 3/4 U2	TNGG 160408 F 3/4 U2	3/8	.031						Ⓜ									
	TNEG 3304M F 3/4 D1	TNEG 160401M F 3/4 D1	3/8	.003															
	TNEG 3308 F 3/4 D1	TNEG 160402 F 3/4 D1	3/8	.008															
	TNEG 331 F 3/4 D1	TNEG 160404 F 3/4 D1	3/8	.016															
	TNEG 332 F 3/4 D1	TNEG 160408 F 3/4 D1	3/8	.031															
	TNGG 3304 F 3/4 DA	TNGG 160401 F 3/4 DA	3/8	.004						Ⓜ	Ⓜ								
	TNGG 331 FNZF1	TNGG 160404 FNZF1	3/8	.016															
	TNGG 332 FNZF1	TNGG 160408 FNZF1	3/8	.031															

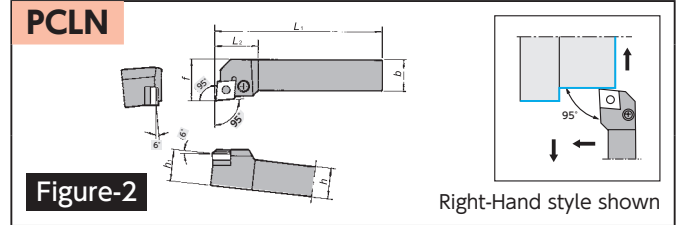
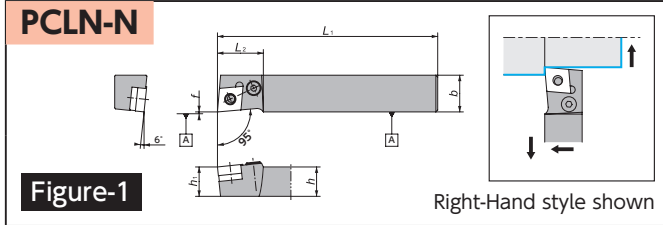
TN..33 Inserts - CBN / PCD

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)							PCD				
								Coated											
								B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2			
	TNGA 331C PH	TNGA 160401 PH	S0415	3/8	.004	6	.083												
	TNGA 3308 PH	TNGA 160402 PH	S0415	3/8	.008	6	.087	●	●										
	TNGA 3308 PH	TNGA 160402 PH	S0635	3/8	.008	6	.087												
	TNGA 331 PH	TNGA 160404 PH	S0415	3/8	.016	6	.079	●	●										
	TNGA 331 PH	TNGA 160404 PH	T0420	3/8	.016	6	.079												
	TNGA 331 PH	TNGA 160404 PH	S0525	3/8	.016	6	.079			●	○								
	TNGA 331 PH	TNGA 160404 PH	S0635	3/8	.016	6	.079												
	TNGA 332 PH	TNGA 160408 PH	S0415	3/8	.031	6	.067	●	●										
	TNGA 332 PH	TNGA 160408 PH	S0420	3/8	.031	6	.067												
	TNGA 332 PH	TNGA 160408 PH	T0420	3/8	.031	6	.067												
	TNGA 332 PH	TNGA 160408 PH	S0525	3/8	.031	6	.067			●	○								
	TNGA 332 PH	TNGA 160408 PH	S0635	3/8	.031	6	.067												
	TNGA 333 PH	TNGA 160412 PH	S0415	3/8	.047	6	.091			●									
	TNGA 333 PH	TNGA 160412 PH	S0420	3/8	.047	6	.091												
	TNGA 333 PH	TNGA 160412 PH	T0420	3/8	.047	6	.091												
	TNMA 333 PH	TNMA 160412 PH	S0525	3/8	.047	6	.091												
	TNGA 333 PH	TNGA 160412 PH	S0635	3/8	.047	6	.091												
	TNMX 331 PF	TNMX 160404 PF	none	3/8	.016	1	—												●
	TNMX 332 PF	TNMX 160408 PF	none	3/8	.031	1	—												●

● : Stock ○ : 1-2 week delivery Ⓜ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only) Holders → **Q34** Cutting condition → **Q4** Chipbreaker → **P25**

Front Turning

Toolholders for CN.. Inserts



Gage Insert	Item Number	Figure	Stock		h	b	h ₁	L ₁	f	L ₂	Shim	Clamp Pin	Clamp Screw	Spring	Wrench
			R	L											
	PCLN%1620X43N	1	○		.630 16	.787 20	.630 16	4.724 120	0.0 0.0	.984 25	LSC42	LCL4	LCS4CA	LSP4	LW-3
	PCLN%2020K43	2	○	○	.787 20	.787 20	.787 20	4.921 125	.984 25	1.102 28	LSD42	LCL4	LCS4	LSP4	LW-3
	PCLN%2525M43	2	○	○	.984 25	.984 25	.984 25	5.906 150	1.260 32	1.102 28	LSD42	LCL4	LCS4	LSP4	LW-3

CN..43 Inserts

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

Shape	Item Number	ISO Item Number	IC	R	Material												Graphs	
					Steel	Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material	P	M	K	N	S	H		
					Carbide	PVD Coated					Cermet							
						QM3	DT4	DM4	TM4	VM1	ZN3	KM1	XT3	CTX	XM4	Q15	CZ7	
	CNGG 431 FNUL	CNGG 120404 FNUL	1/2	.016														
	CNGG 432 FNUL	CNGG 120408 FNUL	1/2	.031														
	CNGG 431 FNZP	CNGG 120404 FNZP	1/2	.016														
	CNMP 432 ZP	CNMG 120408 ENBZP	1/2	.031														
	CNGG 432 FNZP	CNGG 120408 FNZP	1/2	.031														
	CNGG 4304 FNZF1	CNGG 120401 FNZF1	1/2	.004														
	CNGG 4308 FNZF1	CNGG 120402 FNZF1	1/2	.008														
	CNGG 431 FNZF1	CNGG 120404 FNZF1	1/2	.016														
	CNGG 432 FNZF1	CNGG 120408 FNZF1	1/2	.031														

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)								PCD				
								Coated		Coated										
								B5K	B52	B6K	B66	B40	B23	B30	PD1	PD2				
	CNGA 4308 PQ	CNGA 120402 PQ	S0415	1/2	.008	4	.091													
	CNGA 4308 PQ	CNGA 120402 PQ	S0635	1/2	.008	4	.091													
	CNGA 431 PQ	CNGA 120404 PQ	S0415	1/2	.016	4	.091													
	CNGA 431 PQ	CNGA 120404 PQ	S0420	1/2	.016	4	.091													
	CNGA 431 PQ	CNGA 120404 PQ	T0420	1/2	.016	4	.091													
	CNGA 431 PQ	CNGA 120404 PQ	S0525	1/2	.016	4	.091													
	CNGA 431 PQ	CNGA 120404 PQ	S0635	1/2	.016	4	.091													
	CNGA 432 PQ	CNGA 120408 PQ	S0415	1/2	.031	4	.087													
	CNGA 432 PQ	CNGA 120408 PQ	S0420	1/2	.031	4	.087													
	CNGA 432 PQ	CNGA 120408 PQ	T0420	1/2	.031	4	.087													
	CNGA 432 PQ	CNGA 120408 PQ	S0525	1/2	.031	4	.087													
	CNGA 432 PQ	CNGA 120408 PQ	S0635	1/2	.031	4	.087													
	CNGA 433 PQ	CNGA 120412 PQ	S0415	1/2	.047	4	.106													
	CNGA 433 PQ	CNGA 120412 PQ	S0420	1/2	.047	4	.106													
	CNGA 433 PQ	CNGA 120412 PQ	T0420	1/2	.047	4	.106													
	CNMA 433 PQ	CNMA 120412 PQ	S0525	1/2	.047	4	.094													
	CNGA 433 PQ	CNGA 120412 PQ	S0635	1/2	.047	4	.106													
		CNGA 431 PQW	CNGA 120404 PQW	S0415	1/2	.016	4	.091												
		CNGA 431 PQW	CNGA 120404 PQW	S0635	1/2	.016	4	.091												
		CNGA 432 PQW	CNGA 120408 PQW	S0415	1/2	.031	4	.087												
CNGA 432 PQW		CNGA 120408 PQW	S0635	1/2	.031	4	.087													
CNGA 433 PQW		CNGA 120412 PQW	S0415	1/2	.047	4	.106													
CNGA 433 PQW	CNGA 120412 PQW	S0635	1/2	.047	4	.106														
NEW 	CNMX 431 PF	CNMX 120404 PF	none	1/2	.016	1	-													
with chipbreaker 	CNMX 432 PF	CNMX 120408 PF	none	1/2	.031	1	-													

Front Turning

Toolholders for DN.. Inserts

PDJN-N

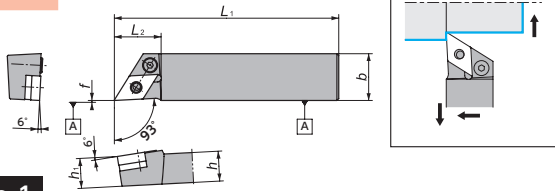


Figure-1

Right-Hand style shown

PDJN

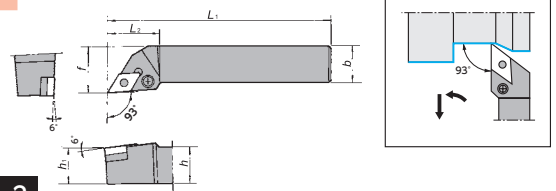
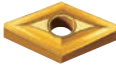


Figure-2

Right-Hand style shown

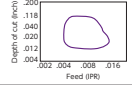


Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	Shim	Clamp Pin	Clamp Screw	Spring	Wrench
			R	L											
 DN..43..	PDJN%{1625X43N	1	○		.630 16	.984 25	.630 16	4.724 120	0.0 0.0	.984 25	LSD42	LCL4	LCS4CA	LSP4	LW-3
	PDJN%{2020K43	2	○	○	.787 20	.787 20	.787 20	4.921 125	.984 25	1.260 32	LSD42	LCL4	LCS4	LSP4	LW-3
	PDJN%{2525M43	2	○		.984 25	.984 25	.984 25	5.906 150	1.260 32	1.260 32	LSD42	LCL4	LCS4	LSP4	LW-3

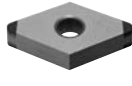
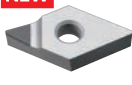
Note: All angles shown are obtained when insert is set in the holder

DN.. Inserts

[Molded Chipbreakers]

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

Shape	Item Number	ISO Item Number	IC	R	Material										 Depth of cut (inch) Feed (IPR)							
					Steel	Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material	Carbide					Cermert						
					P	M	K	N	S	H	PVD Coated					PVD Coated						
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z						
	DNGG 431 FNZP	DNGG 150404 FNZP	1/2	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGG 432 FNZP	DNGG 150408 FNZP	1/2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGG 4304 FNZF1	DNGG 150401 FNZF1	1/2	.004	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGG 4308 FNZF1	DNGG 150402 FNZF1	1/2	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGG 431 FNZF1	DNGG 150404 FNZF1	1/2	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGG 432 FNZF1	DNGG 150408 FNZF1	1/2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	Material										PCD				
								Steel	Stainless Steel	Cast Iron	Non-Ferrous Material	Heat Resistant Alloy	Hardened Material	CBN (Brazed)								
								P	M	K	N	S	H	Coated					PD1	PD2		
								B5K	B52	B6K	B36	B40	B23	B30								
	DNGA 4308 PQ	DNGA 150402 PQ	S0415	1/2	.008	4	.094	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 4308 PQ	DNGA 150402 PQ	S0635	1/2	.008	4	.094	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 431 PQ	DNGA 150404 PQ	S0415	1/2	.016	4	.087	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 431 PQ	DNGA 150404 PQ	S0525	1/2	.016	4	.087	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 431 PQ	DNGA 150404 PQ	S0635	1/2	.016	4	.087	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 432 PQ	DNGA 150408 PQ	S0415	1/2	.031	4	.075	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 432 PQ	DNGA 150408 PQ	S0420	1/2	.031	4	.075	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 432 PQ	DNGA 150408 PQ	T0420	1/2	.031	4	.075	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 432 PQ	DNGA 150408 PQ	S0525	1/2	.031	4	.075	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 432 PQ	DNGA 150408 PQ	S0635	1/2	.031	4	.075	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 433 PQ	DNGA 150412 PQ	S0415	1/2	.047	4	.102	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 433 PQ	DNGA 150412 PQ	S0420	1/2	.047	4	.102	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 433 PQ	DNGA 150412 PQ	T0420	1/2	.047	4	.102	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNGA 433 PQ	DNGA 150412 PQ	S0525	1/2	.047	4	.087	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
DNGA 433 PQ	DNGA 150412 PQ	S0635	1/2	.047	4	.102	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
 with chipbreaker	DNMX 431 PF	DNMX 150404 PF	none	1/2	.016	1	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	DNMX 432 PF	DNMX 150408 PF	none	1/2	.031	1	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Cutting condition →Q4 Chipbreaker →P24

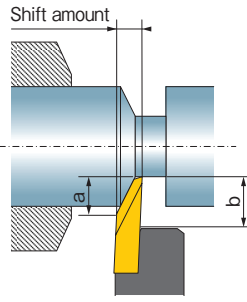
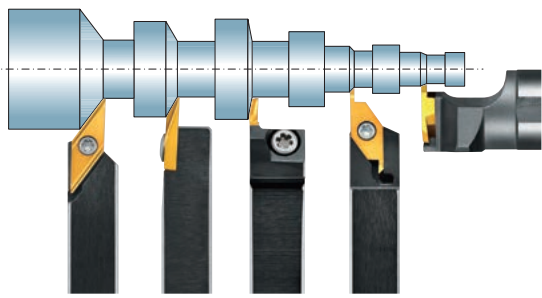
R





Back Turning


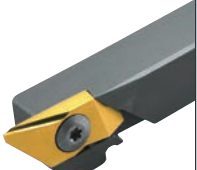




- **Back Turning Tools** R2
- **Recommended Cutting conditions**..... R3
- **General Information** R4
- **Tool list** R6
 - CSV Series R6
 - CTPS Series R7
 - TBP Series R8
 - TBPA Series R10
 - TBDP Series R12
 - SVAC Series R13
 - TBVC Series R14
 - TB Series R16
 - TBMH Series R18





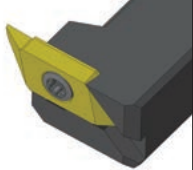
NTK Back Turning Tools - Product Lines



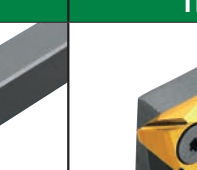




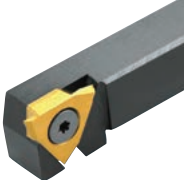





a: Length of Blade
b: Max Depth of Cut

Insert	CSVB →R6	
	CSV-NC	DS-CSV
Holder	 →R6	 →R6
a	~.039" (~1.0mm)	
b	~.079" (~2.0mm)	
Shift amount	.043"-.055" (1.1-1.5mm)	

Insert	TBPS →R7		TBP →R9			
	CTPS	TBP	TBP-OH	Y-TBP	Y-TBP-OH	DS-TBP
Holder	 →R7	 →R8	 NEW →R8 Coolant through	 →R8 Y-axis	 NEW →R8 Y-axis w/ Coolant through	 →R9
a	~.189" (~4.8mm)			~.189" (~4.8mm)		
b	~.189" (~4.8mm)			~.209" (~5.3mm)		
Shift amount	.094" (2.4mm)			.138" (3.5mm)		

Insert	TBPA →R11				
	CTPA	CTPA-OH	TBPA-OH	Y-CTPA	CH-TBPA
Holder	 →R10	 NEW →R10 Coolant through	 NEW →R10 Coolant through	 →R10 Y-axis	 →R10
a			~.248" (~6.3mm)		
b			~.268" (~6.8mm)		
Shift amount			.134" (3.4mm)		

Insert	TBDP →R12		TB →R17	VC..22 →R15	
	TBDP	Y-TBDP	TB	TBVC	CH-SVXCL
Holder	 →R12	 NEW →R12 Y-axis	 →R16	 →R14	 →R14
a	.138" (3.5mm)		~.157" (~4.0mm)	.315" (8.0mm)	—
b	~.204" (~5.0mm)		~.335" (~8.8mm)	.315" (8.0mm)	—
Shift amount	.081" (2.05mm)		.157" (4.0mm)	.295"/.394" (7.5/10mm)	.394" (10mm)

Insert	TBMH →R19					
Holder	GTT	GTT-OH	Y-GTT	Y-GTT-OH	DS-GTT	CH-GTT
						
	→R18	NEW →R18 Coolant through	→R18	NEW →R18 Y-axis w/ Coolant through	→R18	→R18
a	~.051" (~1.3mm)					
b	~.106" (~2.7mm)					
Shift amount	.039"/.059" (1.0/1.5mm)					

Recommended Cutting conditions

■ Back Turning

CSVB

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut 304 316 17-4PH	Free cutting 303 430F	5120 4137	1045 1046
Grade	1st choice	DT4				VM1	
	2nd choice	VM1				DT4	
Cutting Speed (SFM)	75 125 225	100 200 275			100 200 300		
Feed Rate (IPR)	X Direction	.0004 .0008 .0012					
	Z Direction	.0004 .0012 .0016					

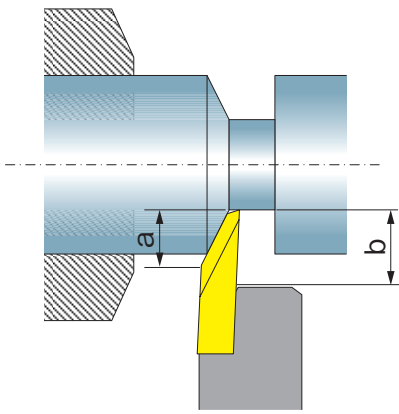
TBDP / TBMH / TBP / TBPA / TBVC

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut 304 316 17-4PH	Free cutting 303 430F	5120 4137	1045 1046
Grade	1st choice	DT4		DT4 / QM3	TM4	QM3	
	2nd choice	TM4 / QM3		VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (SFM)	75 125 225	100 200 275			150 300 500		
Feed Rate (IPR)	X Direction	.0004 .0008 .0012				.0004 .0008 .0016	
	Z Direction	.0008 .0016 .0024				.0008 .0016 .0031	

TB32 / TB43

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut 304 316 17-4PH	Free cutting 303 430F	5120 4137	1045 1046	
Grade	1st choice	ZM3					ZM3	
	2nd choice	ZM3					Z15	
Cutting Speed (SFM)	50 100 150			ZM3 150 300 425 Z15 400 600 800				
Feed Rate (IPR)	X Direction	.0004 .0012 .0020				.0004 .0012 .0020		
	Z Direction	.0016 .0020 .0031				.0016 .0031 .0059		

Back Turning



Recommended max. depth of cut for each pass

(Multiply this ratio by the length of blade (a) to obtain the max. depth of cut for each pass)

Grade	PVD Coated Carbide QM3·DT4·DM4·TM4·VM1·ZM3	Cermet XT3 · XN4
Steel	.028" (0.7mm)	.020" (0.5mm)
Stainless Steel	.024" (0.6mm)	.016" (0.4mm)
Non-ferrous material	.035" (0.9mm)	.031" (0.8mm)
Plastic	.035" (0.9mm)	.035" (0.9mm)

a : Length of Blade b : Max. Depth of Cut

Back Turning

When the length of blade (a) is not long enough

Back turning can be performed multiple times until the total depth of cut reaches (b).

End face	
NTK BM-chipbreaker	Competitor
Excellent surface	Rough surface

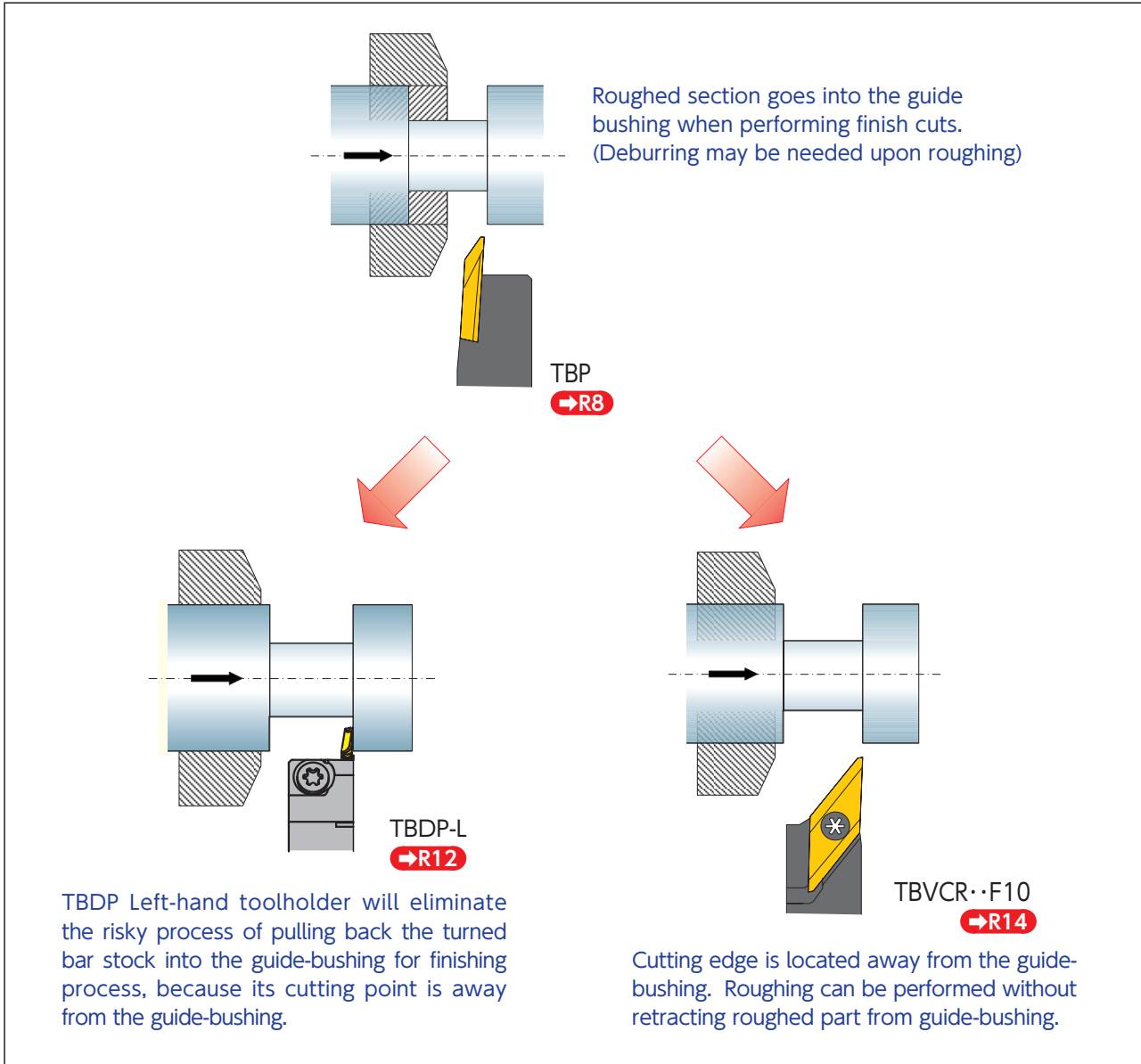
When experiencing rough finish on shoulder

Turning the shoulder twice can improve the finish.
This problem can be solved by using TBP-BM, TBPA-BM, TBDP inserts without increasing the number of passes

TBP-BM, TBPA-BM, TBDP come with NTK's uniquely designed molded chipbreaker providing single pass machining. These inserts can provide excellent surface finish.

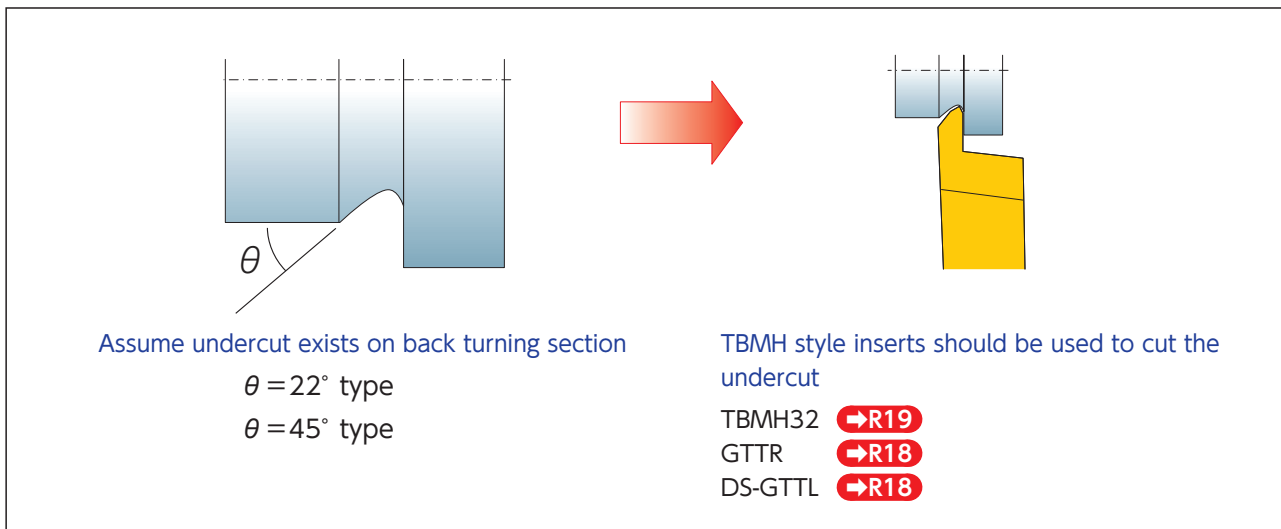
TBP-BM ➡R9
TBPA-BM ➡R11
TBDP ➡R12

Finishing cut



Back Turning

Undercut



CSV Series

Best for up to .200" diameter material

CSV-NC For Gang-style machine

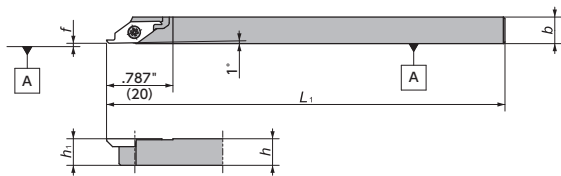


Figure-1

Right-Hand style shown

CSV For Cam-style machine

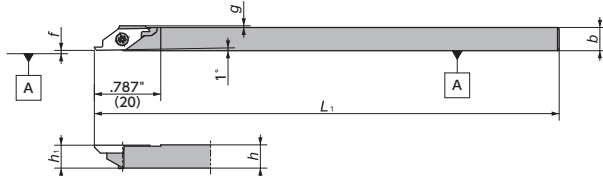


Figure-2

Right-Hand style shown

DS-CSVL

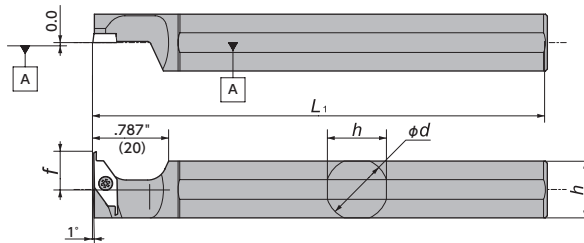




Figure-3

Left-Hand style shown
Takes Right-hand insert

CSV^R/_L / CSV^R/_L-NC

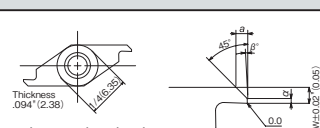
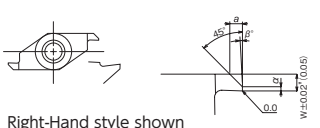
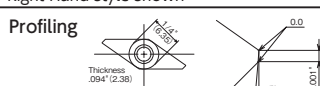
Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	g (Inch) (mm)	Clamp Screw	Wrench
			R	L								
	CSV ^R / _L 06-IN-NC	1	●	●	3/8	3/8	3/8	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08-IN-NC	1	●	●	1/2	1/2	1/2	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC	1	○	○	.315 8	.315 8	.315 8	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC-F	1	○	○	.315 8	.315 8	.315 8	4.724 120	0-.004 0.0-0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10GXNC	1	○	○	.394 10	.394 10	.394 10	3.346 85	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10NC	1	○	○	.394 10	.394 10	.394 10	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12NC	1	○	○	.472 12	.472 12	.472 12	4.724 120	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07GX	2	○	○	.275 7	.275 7	.275 7	3.346 85	.004 0.1	.020 0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07	2	○	●	.275 7	.275 7	.275 7	5.512 140	.004 0.1	.020 0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08GX	2	○	○	.315 8	.315 8	.315 8	3.346 85	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08	2	○	●	.315 8	.315 8	.315 8	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 095	2	○	○	.374 9.5	.374 9.5	.374 9.5	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10	2	○	○	.394 10	.394 10	.394 10	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12GX	2	○	○	.472 12	.472 12	.472 12	3.346 85	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S
CSV ^R / _L 12	2	○	●	.472 12	.472 12	.472 12	5.512 140	.004 0.1	0.0 0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D _s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
			R	L							
	DS-CSVL15	3	○	●	5/8 15.875	.591 15	.591 15	4.724 120	.394 10	LRIS-2.5 × 7	CLR-15S

CSVB - Back Turning

Mirror finish

Shape	Item Number	Chip-breaker	Length of Blade		Max Depth of Cut		W		Edge Geometry (α × β°)		Coated Carbide					
			(Inch) (mm)		(Inch) (mm)		(Inch) (mm)		(Inch) (mm)		DT4		VM1		ZM3	
			R	L	R	L	R	L	R	L	R	L	R	L		
 <p>Right-Hand style shown</p>	CSVB11F ^R / _L V	No	.028 0.7	.079 2.0	.039 1.00	.012 × 5°	0.3 × 5°									
	CSVB11F ^R / _L V-A	No	.028 0.7	.079 2.0	.039 1.00	.012 × 2°	0.3 × 2°									
	CSVB11F ^R / _L V-M	No	.028 0.7	.079 2.0	.039 1.00	.006 × 2°	0.15 × 2°	●	●	○	○					
	CSVB11F ^R / _L V-C	No	.028 0.7	.079 2.0	.039 1.00	.006 × 5°	0.15 × 5°									
	CSVB11F ^R / _L V12	No	.031 0.8	.079 2.0	.047 1.20	.012 × 5°	0.3 × 5°									
	CSVB11F ^R / _L V14	No	.039 1.0	.079 2.0	.055 1.40	.012 × 5°	0.3 × 5°									
 <p>Right-Hand style shown</p>	CSVB11F ^R / _L VB	Yes	.028 0.7	.079 2.0	.039 1.00	.012 × 5°	0.3 × 5°									
	CSVB11F ^R / _L VB-A	Yes	.028 0.7	.079 2.0	.039 1.00	.012 × 2°	0.3 × 2°									
	CSVB11F ^R / _L VB-M	Yes	.028 0.7	.079 2.0	.039 1.00	.006 × 2°	0.15 × 2°	●	●	○	○					
	CSVB11F ^R / _L VB-C	Yes	.028 0.7	.079 2.0	.039 1.00	.006 × 5°	0.15 × 5°									
	CSVB11F ^R / _L VB12	Yes	.031 0.8	.079 2.0	.047 1.20	.012 × 2°	0.3 × 5°									
	CSVB11F ^R / _L VB14	Yes	.039 1.0	.079 2.0	.055 1.40	.012 × 2°	0.3 × 5°									
<p>Profiling</p>  <p>Left-Hand style shown</p>	CSVB11F ^R / _L VX	No	-	-	-	-	-	-	-	-						

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

CTPS Series

CTPS

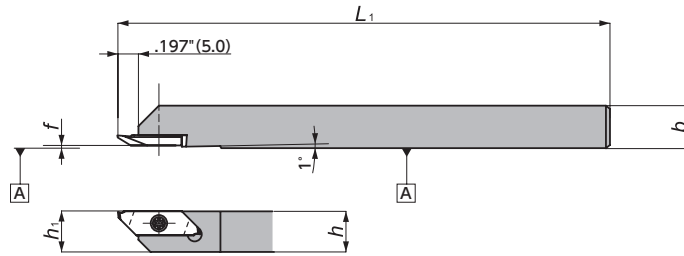



Figure-1

Right-Hand style shown

CTPS Series - Toolholders

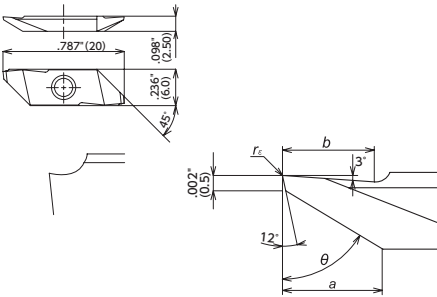
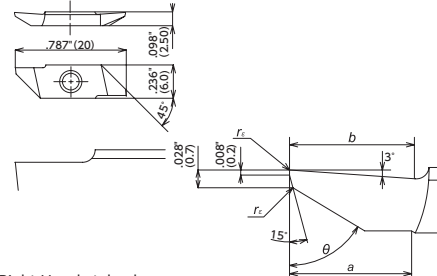

CTPS

Gage Insert	Item Number	Figure	Stock	h (Inch) (mm)	b (Inch) (mm)	h_1 (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
 TBPS..	CTPSR06-IN	1	●	3/8	3/8	3/8	4.724 120	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR08-IN	1	●	1/2	1/2	1/2	4.724 120	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR10	1	○	.394 10	.394 10	.394 10	4.724 120	0.0 0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR12	1	○	.472 12	.472 12	.472 12	4.724 120	0.0 0.0	LRIS-2.5 × 7	CLR-15S

Back Turning

TBPS Series - Inserts

TBPS - Back Turning

Shape	Item Number	Chip-breaker	Length of Blade a		Max Depth of Cut b		θ	r_c		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	VM1	ZM3
with Chipbreaker  Right-Hand style shown	TBPS60FR00	Yes	.122	3.1	.138	3.5	60°	0.0 0.0	○	○	
	TBPS60FR10	Yes	.122	3.1	.138	3.5	60°	.004 0.1	○	○	
without Chipbreaker Mirror finish  Right-Hand style shown	TBPS60FRV 	No	.189	4.8	.189	4.8	60°	0.0 0.0	○	○	

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

● : Stock

○ : 1-2 week delivery

 : Mirror finish

CTPS series 

Cutting condition 

TBP Series

TBP

Screw accessible from both sides

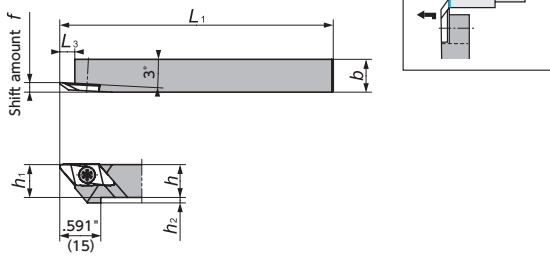


Figure-1

Right-Hand style shown

TBP-OH (Coolant through)

Screw accessible from both sides

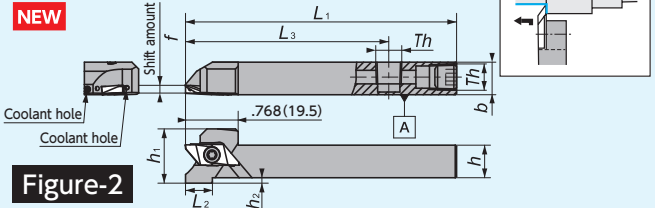


Figure-2

Th (Thread type)
 3/8" holder : M6×1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)

Right-Hand style shown

Y-TBP

Screw accessible from both sides

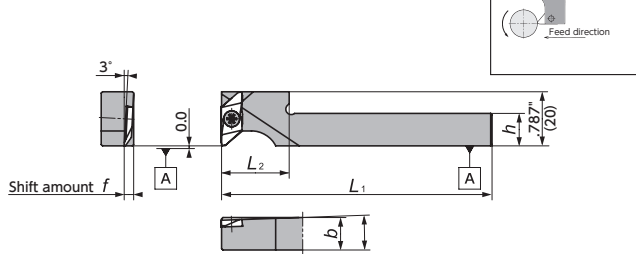


Figure-3

Right-Hand style shown
 Takes Right-hand Insert

Y-TBP-OH (Coolant through)

Screw accessible from both sides

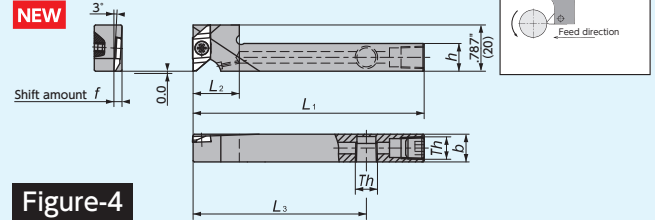



Figure-4

Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)

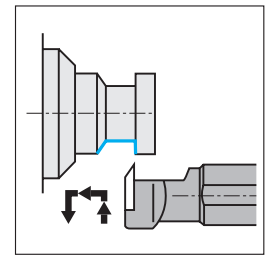
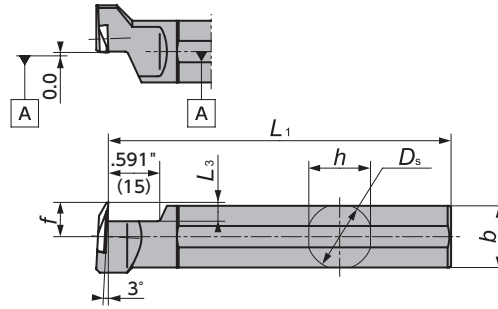
Right-Hand style shown
 Takes Right-hand Insert

TBP Series - Toolholders

TBP

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	h ₂ (Inch) (mm)	L ₃ (Inch) (mm)	Th	Clamp Screw	Wrench	
			R	L												
	TBP $\frac{1}{4}$ 06-IN	1	●		3/8	3/8	3/8	4.724 120	.138 3.5	—	—	.079 2	.217 5.5	—	LRIS-4 × 10PW	CLR-15S
	TBP $\frac{1}{4}$ 08-IN	1	●		1/2	1/2	1/2	4.724 120	.138 3.5	—	—	0 0	.217 5.5	—	LRIS-4 × 12PW	CLR-15S
	TBP $\frac{1}{4}$ 10-IN	1	●		5/8	5/8	5/8	4.724 120	.138 3.5	—	—	0 0	.217 5.5	—	LRIS-4 × 12PW	CLR-15S
	TBP $\frac{1}{2}$ 08	1	○	○	.315 8	.394 10	.315 8	4.724 120	.138 3.5	—	—	.157 4	.217 5.5	—	LRIS-4 × 10PW	CLR-15S
	TBP $\frac{1}{2}$ 10H	1	○	○	.394 10	.394 10	.394 10	3.937 100	.138 3.5	—	—	.394 2	.217 5.5	—	LRIS-4 × 10PW	CLR-15S
	TBP $\frac{1}{2}$ 10	1	○	○	.394 10	.394 10	.394 10	4.724 120	.138 3.5	—	—	.394 2	.217 5.5	—	LRIS-4 × 10PW	CLR-15S
	TBP $\frac{1}{2}$ 12GX	1	○	○	.472 12	.472 12	.472 12	3.346 85	.138 3.5	—	—	0 0	.217 5.5	—	LRIS-4 × 12PW	CLR-15S
	TBP $\frac{1}{2}$ 12	1	●	○	.472 12	.472 12	.472 12	4.724 120	.138 3.5	—	—	0 0	.217 5.5	—	LRIS-4 × 12PW	CLR-15S
	TBP $\frac{1}{2}$ 13	1	○	○	.512 13	.512 13	.512 13	4.724 120	.138 3.5	—	—	0 0	.217 5.5	—	LRIS-4 × 12PW	CLR-15S
	TBP $\frac{1}{2}$ 16H	1	○	○	.630 16	.630 16	.630 16	3.937 100	.138 3.5	—	—	0 0	.217 5.5	—	LRIS-4 × 12PW	CLR-15S
	TBP $\frac{1}{2}$ 16	1	○	○	.630 16	.630 16	.630 16	4.724 120	.138 3.5	—	—	0 0	.217 5.5	—	LRIS-4 × 12PW	CLR-15S
	TBP $\frac{1}{4}$ 06-IN-OH	2	●		3/8	.472 12	3/8	3.937 100	.138 3.5	.748 19	.176 4.475	2.953 75	M6 × 1	LRIS-4 × 10PW	CLR-15S	
	TBP $\frac{1}{4}$ 08-IN-OH	2	●		1/2	1/2	1/2	3.937 100	.138 3.5	.394 10	.051 1.3	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-15S	
	TBP $\frac{1}{4}$ 10-IN-OH	2	●		5/8	5/8	5/8	3.937 100	.138 3.5	0 0	0 0	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-15S	
	TBP $\frac{1}{2}$ 1012H-OH	2	○	○	.394 10	.472 12	.394 10	3.937 100	.138 3.5	.748 19	.176 4.475	2.953 75	M6 × 1	LRIS-4 × 10PW	CLR-15S	
	TBP $\frac{1}{2}$ 12H-OH	2	●		.472 12	.472 12	.472 12	3.937 100	.138 3.5	.394 10	.051 1.3	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-15S	
	TBP $\frac{1}{2}$ 16H-OH	2	○	○	.630 16	.630 16	.630 16	3.937 100	.138 3.5	0 0	0 0	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-15S	
	Y-TBP $\frac{1}{4}$ 06-IN	3	●		3/8	3/8	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LRIS-4 × 10PW	CLR-15S
	Y-TBP $\frac{1}{4}$ 08-IN	3	●		1/2	1/2	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LRIS-4 × 12PW	CLR-15S
	Y-TBP $\frac{1}{4}$ 10-IN	3	●		5/8	5/8	—	2.756 70	.138 3.5	.984 25	—	—	—	—	LRIS-4 × 12PW	CLR-15S
Y-TBP $\frac{1}{2}$ 10MS	3	○	○	.394 10	.394 10	—	4.724 120	.138 3.5	.866 22	—	—	—	—	LRIS-4 × 10PW	CLR-15S	
Y-TBP $\frac{1}{2}$ 10S	3	○	○	.394 10	.394 10	—	4.724 120	.138 3.5	.787 20	—	—	—	—	LRIS-4 × 10PW	CLR-15S	
Y-TBP $\frac{1}{2}$ 12MS	3	○	○	.472 12	.472 12	—	4.724 120	.138 3.5	.866 22	—	—	—	—	LRIS-4 × 12PW	CLR-15S	
Y-TBP $\frac{1}{2}$ 12S	3	○	○	.472 12	.472 12	—	4.724 120	.138 3.5	.787 20	—	—	—	—	LRIS-4 × 12PW	CLR-15S	
Y-TBP $\frac{1}{4}$ 08H-IN-OH	4	●		1/2	1/2	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	NPT1/8	LRIS-4 × 12PW	CLR-15S	
Y-TBP $\frac{1}{4}$ 12HS-OH	4	●		.472 12	.472 12	—	3.937 100	.138 3.5	.787 20	—	—	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-15S	
Y-TBP $\frac{1}{4}$ 16H-OH	4	○	○	.630 16	.630 16	—	3.937 100	.138 3.5	.984 25	—	—	2.953 75	Rc1/8 (PT1/8)	LRIS-4 × 12PW	CLR-15S	


DS-TBP



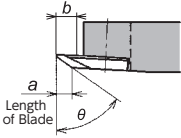
Left-Hand style shown
Takes Right-hand Insert

Figure-5

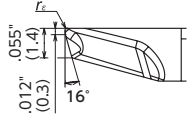
DS-TBP (Takes right-hand inserts)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		L_3		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TBP..FR..	DS-TBP $\frac{R}{L}$ 19	5	○	○	3/4	19.050	.709	18	.709	18	4.724	120	.433	11.0	.217	5.5	LRIS-4 × 10	LLR-25S-20×65
	DS-TBP $\frac{R}{L}$ 20	5	○	○	.787	20.000	.748	19	.748	19	4.724	120	.433	11.0	.217	5.5	LRIS-4 × 10	LLR-25S-20×65
	DS-TBP $\frac{R}{L}$ 25	5	○	○	1.00	25.400	.945	24	.945	24	5.906	150	.512	13.0	.217	5.5	LRIS-4 × 10	LLR-25S-20×65

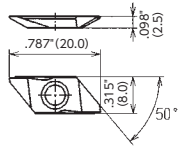
TBP Series - Inserts



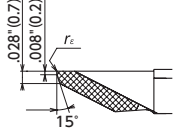
with BM-Chipbreaker **NEW**



with Chipbreaker



without Chipbreaker
Mirror finish



<PD1> PCD tipped

Right-Hand style shown

TBP - Back Turning

Item Number	Chip-breaker	Length of Blade a		Max Depth of Cut b		θ	r_e		Coated Carbide												Carbide		Coated Cermet		PCD	
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3		DT4		DM4		TM4		VM1		ZM3		KM1		C7Z		PD1	
									R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
TBP72F $\frac{R}{L}$ 05-BM	Yes-BM	.138	3.5	.209	5.3	72°	.002	0.05																		
TBP72F $\frac{R}{L}$ 10M-BM	Yes-BM	.138	3.5	.209	5.3	72°	.003	0.08																		
TBP72F $\frac{R}{L}$ 20M-BM	Yes-BM	.138	3.5	.209	5.3	72°	.007	0.18																		
TBP55F $\frac{R}{L}$ 00	Yes	.118	3.0	.209	5.3	55°	0.00	0.00																		
TBP55F $\frac{R}{L}$ 10	Yes	.118	3.0	.209	5.3	55°	.004	0.10																		
TBP60F $\frac{R}{L}$ 00	Yes	.146	3.7	.209	5.3	60°	0.00	0.00	●		●															
TBP60F $\frac{R}{L}$ 05	Yes	.146	3.7	.209	5.3	60°	.002	0.05																		
TBP60F $\frac{R}{L}$ 10	Yes	.146	3.7	.209	5.3	60°	.004	0.10	●																	
TBP60F $\frac{R}{L}$ 10M	Yes	.146	3.7	.209	5.3	60°	.003	0.08	●		●															
TBP60F $\frac{R}{L}$ 20	Yes	.146	3.7	.209	5.3	60°	.008	0.20																		
TBP60F $\frac{R}{L}$ V	M No	.189	4.8	.209	5.3	60°	0.00	0.00																		
TBP60F $\frac{R}{L}$ V00-P	No	.157	4.0	.209	5.3	60°	0.00	0.00																		
TBP60F $\frac{R}{L}$ V05	M No	.189	4.8	.209	5.3	60°	.002	0.05																		
TBP60F $\frac{R}{L}$ V10	M No	.189	4.8	.209	5.3	60°	.004	0.10																		
TBP60F $\frac{R}{L}$ V10-P	No	.157	4.0	.209	5.3	60°	.004	0.10																		

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

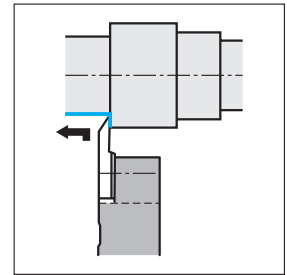
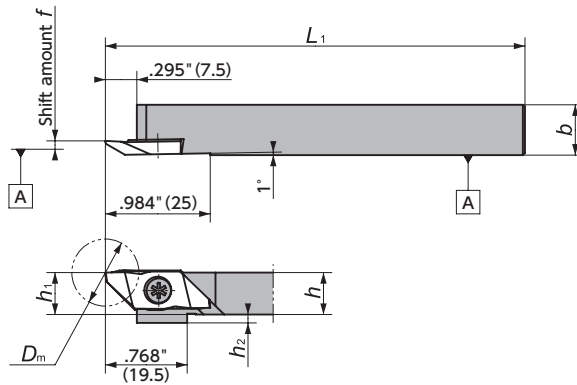
● : Stock ○ : 1-2 week delivery 🔵 : Coolant through **M** : Mirror finish

Cutting condition **→R3**

TBPA (CTPA Series) *Can use same holder with CTPA inserts.

CTPA

Screw accessible from both sides



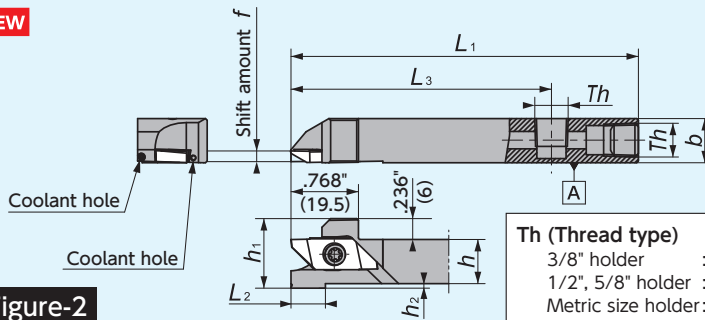
Right-Hand style shown

Figure-1

CTPA-OH / TBPA-OH

Screw accessible from both sides

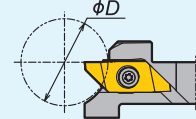
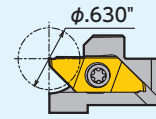
NEW



Max Bar Dia at Max DOC

CTPA-OH

TBPA-OH



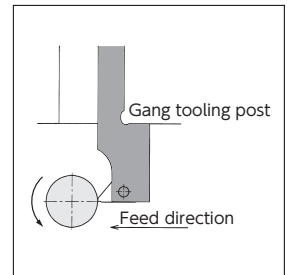
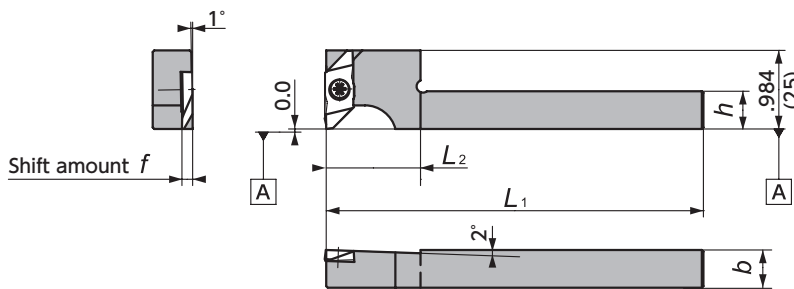
Th (Thread type)	
3/8" holder	: M6 x 1
1/2", 5/8" holder	: NPT1/8
Metric size holder	: Rc1/8 (PT1/8)

Right-Hand style shown

Figure-2

Y-CTPA

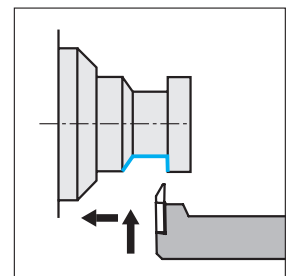
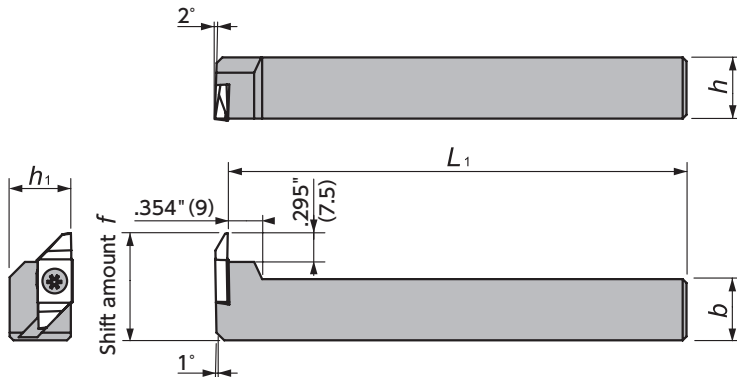
Screw accessible from both sides



Right-Hand style shown
Takes Right-hand Insert

Figure-3

CH-TBPA




Left-Hand style shown
Takes Right-hand Insert


Figure-4

TBPA (CTPA) Series - Toolholders

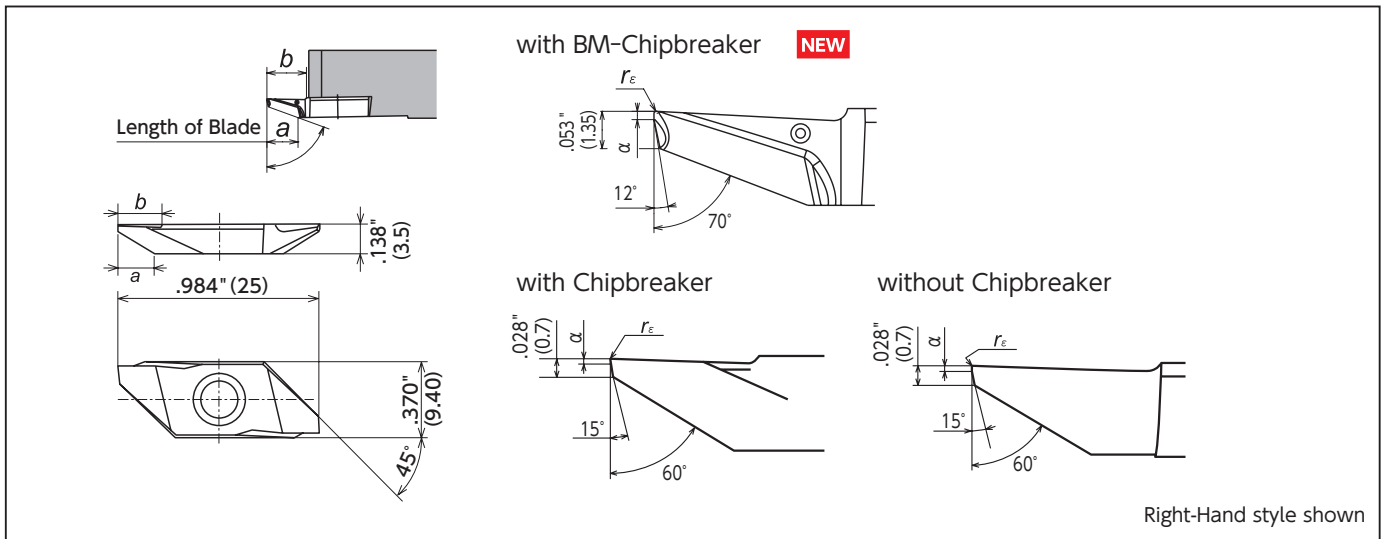
CTPA (Compatible with TBPA & CTPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. ϕD		h		h_1		b		L_1		h_2		L_2		L_3		Th	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)		
	CTPA%06-IN	1	●	●	—	—	3/8	3/8	3/8	3/8	4.724	120	0	0	—	—	—	—	—	—	—	.134	3.4	LRIS-4×10PW	CLR-15S
	CTPA%08-IN	1	●	●	—	—	1/2	1/2	1/2	1/2	4.724	120	0	0	—	—	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA%10-IN	1	●	●	—	—	5/8	5/8	5/8	5/8	4.724	120	0	0	—	—	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA%10	1	○	○	—	—	.394	10	.394	10	.394	10	4.724	120	.790	2	—	—	—	—	—	.134	3.4	LRIS-4×10PW	CLR-15S
	CTPA%12	1	●	●	—	—	.472	12	.472	12	.472	12	4.724	120	0	0	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA%16	1	○	○	—	—	.630	16	.630	16	.630	16	4.724	120	0	0	—	—	—	—	—	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA%20F	1	○	○	—	—	.787	20	.787	20	.787	20	3.150	80	0	0	—	—	—	—	—	.134	3.4	LRIS-4×10	LLR-15S
	CTPA%06H-IN-OH	2	●	●	.630	16	3/8	3/8	3/8	3/8	3.937	100	.176	4.475	.787	20	2.165	55	M6×1	.134	3.4	LRIS-4×10PW	CLR-15S		
	CTPA%08H-IN-OH	2	●	●	.630	16	1/2	1/2	1/2	1/2	3.937	100	.051	1.3	.394	10	2.953	75	NPT1/8	.134	3.4	LRIS-4×12PW	CLR-15S		
	CTPA%10H-IN-OH	2	●	●	.630	16	5/8	5/8	5/8	5/8	3.937	100	0	0	0	0	2.953	75	NPT1/8	.134	3.4	LRIS-4×12PW	CLR-15S		
	CTPA%12H-OH	2	●	●	.630	16	.472	12	.472	12	.472	12	3.937	100	.079	2	.768	19.5	.394	10	Rc1/8(PT1/8)	.134	3.4	LRIS-4×12PW	CLR-15S
	CTPA%16H-OH	2	○	○	.630	16	.630	16	.630	16	.630	16	3.937	100	0	0	.768	19.5	0	0	Rc1/8(PT1/8)	.134	3.4	LRIS-4×12PW	CLR-15S
	Y-CTPA%08L-IN	3	●	—	—	—	1/2	—	—	1/2	4.724	120	—	—	1.181	30	—	—	—	—	—	1.34	34	LRIS-4×12PW	CLR-15S
	CH-TBPAL16	4	○	—	—	—	.630	16	.630	16	.630	16	4.724	120	—	—	—	—	—	—	—	1.102	28	LRIS-4×10	LLR-15S
	CH-TBPAL20	4	○	—	—	—	.787	20	.787	20	.787	20	4.724	120	—	—	—	—	—	—	—	1.260	32	LRIS-4×10	LLR-15S

TBPA (Optimized for TBPA Inserts)

Gage Insert	Item Number	Figure	Stock		Max. Bar Dia. ϕD		h		h_1		b		L_1		h_2		L_2		L_3		Th	f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)					
	TBPA%12H-OH	2	○	○	.984	25	.472	12	.472	12	.472	12	3.937	100	.157	4	.768	19.5	.394	10	Rc1/8(PT1/8)	.134	3.4	LRIS-4X12PW	CLR-15S
	TBPA%16H-OH	2	○	○	1.378	35	.630	16	.630	16	.630	16	3.937	100	.079	2	.768	19.5	.394	10	Rc1/8(PT1/8)	.134	3.4	LRIS-4X12PW	CLR-15S
	TBPA%20H-OH	2	○	○	1.969	50	.787	20	.787	20	.787	20	3.937	100	0	0	.768	19.5	0	0	Rc1/8(PT1/8)	.134	3.4	LRIS-4X12PW	CLR-15S

TBPA Series - Inserts



TBPA - Back Turning

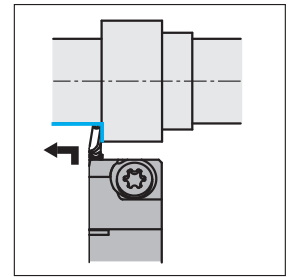
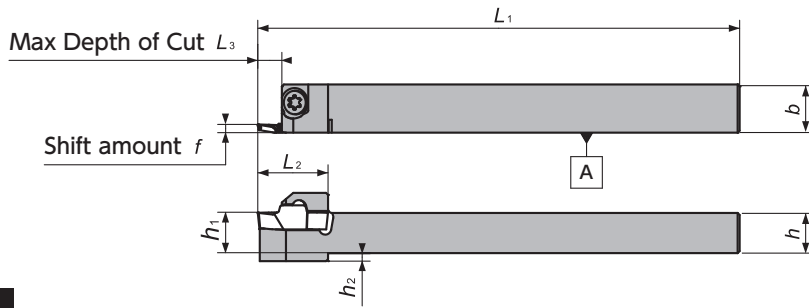
Item Number	Chip-breaker	Length of Blade a		Max Depth of Cut b		α		r_e		Coated Carbide														
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3		DT4		DM4		TM4		VM1		ZM3				
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L			
TBPA70F%05-BM	Yes-BM	.217	5.5	.256	6.5	.012	0.3	.002	0.05					●		○								
TBPA70F%10M-BM	Yes-BM	.217	5.5	.256	6.5	.012	0.3	.003	0.08					●		○								
TBPA70F%20M-BM	Yes-BM	.217	5.5	.256	6.5	.012	0.3	.007	0.18					●		○								
TBPA60F%10M	Yes	.177	4.5	.209	5.3	.008	0.2	.000	0.00	●		○							○			●	○	
TBPA60F%10M	Yes	.177	4.5	.209	5.3	.012	0.3	.003	0.08															
TBPA60F%PB10M	Yes	.177	4.5	.209	5.3	.012	0.3	.003	0.08			●												
TBPA60F%PB10	Yes	.177	4.5	.209	5.3	.012	0.3	.004	0.10													○	○	
TBPA60F%PB20M	Yes	.177	4.5	.209	5.3	.012	0.3	.007	0.18			●												
TBPA60F%V	No	.248	6.3	.268	6.8	.008	0.2	.000	0.00													○	○	○

● : Stock ○ : 1-2 week delivery 🔵 : Coolant through Ⓜ : Mirror finish

Cutting condition → **R3**

TBDP (Back Duo) Series

TBDP

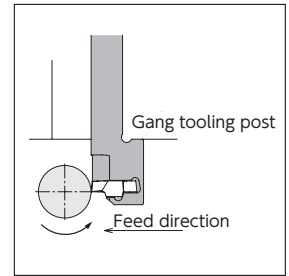
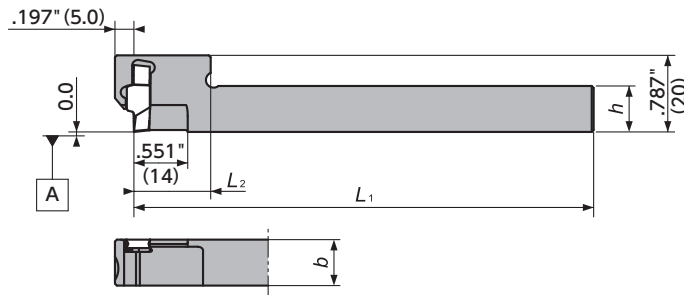


Right-Hand style shown

Figure-1

Y-TBDP

NEW




Right-Hand style shown

Figure-2

TBDP Series - Toolholders

TBDP

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	L ₃ (Inch) (mm)	h ₂ (Inch) (mm)	Clamp Screw	Wrench
			R	L										
 TBDP..	TBDP%{06-IN}	1	●		3/8	.472 12	3/8	4.724 120	.081 2.05	.571 14.5	.118 3	.079 2	LRIS-4 × 12	LLR-25S
	TBDP%{08-IN}	1	●		1/2	1/2	1/2	4.724 120	.081 2.05	.689 17.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{10-IN}	1	●		5/8	5/8	5/8	4.724 120	.081 2.05	.768 19.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{1012H}	1	○		.394 10	.472 12	.394 10	3.937 100	.081 2.05	.591 15	.118 3	.079 2	LRIS-4 × 12	LLR-25S
	TBDP%{1012}	1	○	○	.394 10	.472 12	.394 10	4.724 120	.081 2.05	.591 15	.118 3	.079 2	LRIS-4 × 12	LLR-25S
	TBDP%{12}	1	●	○	.472 12	.472 12	.472 12	4.724 120	.081 2.05	.709 18	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{16}	1	○	○	.630 16	.630 16	.630 16	4.724 120	.081 2.05	.768 19.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	TBDP%{20}	1	○		.787 20	.787 20	.787 20	4.724 120	.081 2.05	.768 19.5	.197 5	0 0	LRIS-4 × 12	LLR-25S
	Y-TBDP%{12S}	2	○		.472 12	.472 12	— —	4.724 120	.081 2.05	.787 20	— —	— —	— —	LRIS-4 × 12	LLR-25S

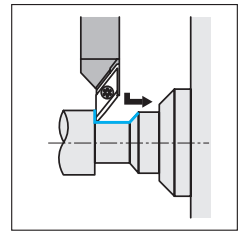
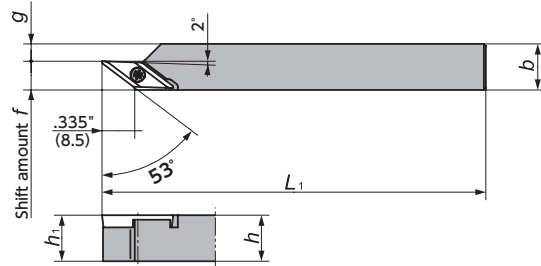
TBDP Series - Inserts

TBDP

Shape	Item Number	Length of Blade a		θ	r_ϵ		Coated Carbide		
		(Inch)	(mm)		(Inch)	(mm)	QM3	DM4	TM4
	TBDP22005R	.138	3.5	80	.002	0.05	●	○	●
	TBDP2201MR	.138	3.5	80	.003	0.08	●	○	●
	TBDP2202MR	.138	3.5	80	.007	0.18	●	○	●

TBVC Series

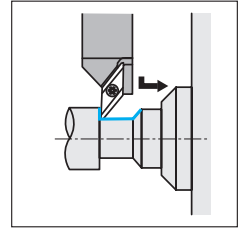
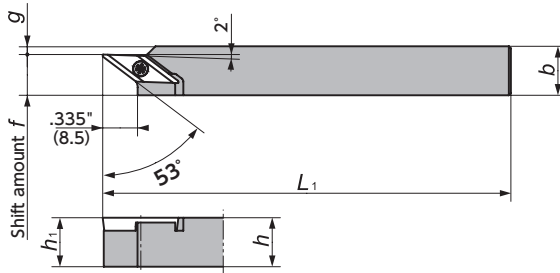
TBVC



Right-Hand style shown
For non - ferrous material

Figure-1

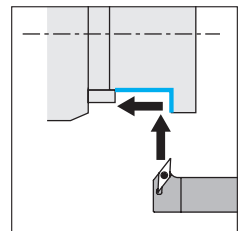
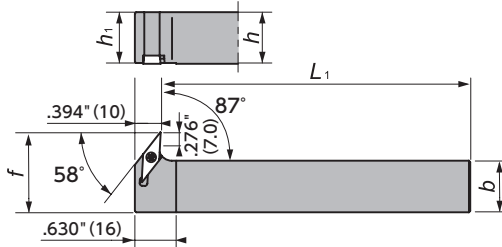
TBVC-F10



Right-Hand style shown

Figure-2


CH-SVXCL



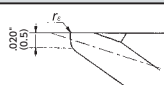
Left-Hand style shown
Takes Right-hand or Neutral chip breaker

Figure-3

TBVC Series - Toolholders

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	TBVC%110	1	○	○	.394	10	.394	10	.394	10	4.724	120	.295	7.5	.098	2.5	LRIS-2.5 × 7	CLR-15S
	TBVC%112	1	○	○	.472	12	.472	12	.472	12	4.724	120	.295	7.5	.098	4.5	LRIS-2.5 × 7	CLR-15S
	TBVC%116	1	○	○	.630	16	.630	16	.630	16	4.724	120	.295	7.5	.098	8.5	LRIS-2.5 × 7	CLR-15S
	TBVC%108-F10-IN	2	●	○	1/2		1/2		1/2		4.724	120	.394	10	0	0	LRIS-2.5 × 7	CLR-15S
	TBVC%110-F10	2	○	○	.394	10	.394	10	.394	10	4.724	120	.394	10	0	0	LRIS-2.5 × 7	CLR-15S
	TBVC%112GX-F10	2	○	○	.472	12	.472	12	.472	12	3.346	85	.394	10	.079	2	LRIS-2.5 × 7	CLR-15S
	TBVC%112-F10	2	●	○	.472	12	.472	12	.472	12	4.724	120	.394	10	.079	2	LRIS-2.5 × 7	CLR-15S
	TBVC%116H-F10	2	○	○	.630	16	.630	16	.630	16	3.150	100	.394	10	.234	6	LRIS-2.5 × 7	CLR-15S
	TBVC%116-F10	2	●	○	.630	16	.630	16	.630	16	4.724	120	.394	10	.234	6	LRIS-2.5 × 7	CLR-15S
	TBVC%120F-F10	2	○	○	.787	20	.787	20	.787	20	3.150	80	.394	10	.394	10	LRIS-2.5 × 7	CLR-15S
CH-SVXC%1616 × 11	3		○	○	.630	16	.630	16	.787	20	4.724	120	1.063	27	—	—	LRIS-2.5 × 7	CLR-15S
CH-SVXC%2020 × 11	3		○	○	.630	16	.630	16	.787	20	4.724	120	1.220	31	—	—	LRIS-2.5 × 7	CLR-15S

TBVC Series - Inserts

Shape	Item Number	d		s		r _e		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1		ZM3	
		R	L	R	L	R	L	R	L		
 Right-Hand style shown	TBVC11F%05U	1/4	6.35	1/8	3.18	.002	0.05			●	
	TBVC11F%10U	1/4	6.35	1/8	3.18	.004	0.10	●		●	
	TBVC11F%10S	1/4	6.35	1/8	3.18	.004	0.10			●	

● : Stock

○ : 1-2 week delivery

Cutting condition → R3

VC.. Inserts - Carbide / Cermet

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

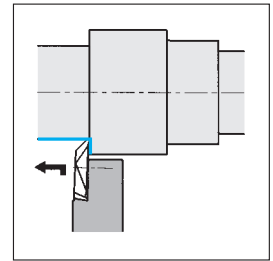
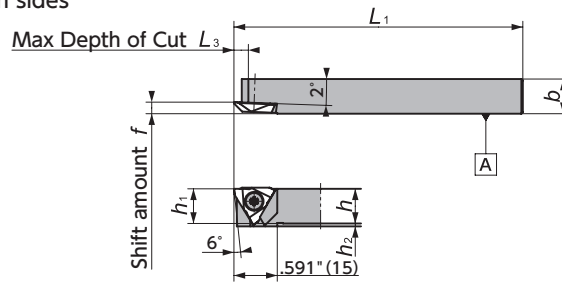
Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet							
					PVD Coated							PVD Coated							
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z			
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●		
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●		
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●		
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●		
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●		
					● : 1st Choice ● : Alternate choice														
	VCMT 2201 VCMT 2204M VCMT 2204 VCMT 2208M VCMT 2208 VCMT 2208 VCMT 221M VCMT 221	FNAM3 FNAM3 FNAM3 FNAM3 FNAM3 FNAM3 FNAM3 FNAM3	VCMT 110300 VCMT 110301M VCMT 110301 VCMT 110302M VCMT 110302 VCMT 110302 VCMT 110304M VCMT 110304	FNAM3 FNAM3 FNAM3 FNAM3 FNAM3 FNAM3 FNAM3 FNAM3	1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4	.001 .003 .004 .007 .008 .008 .015 .016	●	●	○	○	○	○	○	○	○	○	○	○	
NEW 	VCMT 2204M VCMT 2208M VCMT 221M	YL YL YL	VCMT 110301M VCMT 110302M VCMT 110304M	YL YL YL	1/4 1/4 1/4	.003 .007 .015	○	○	○	○	○	○	○	○	○	○	○	○	
	VCMT 2204M VCMT 2208M	CL CL	VCMT 110301M VCMT 110302M	CL CL	1/4 1/4	.003 .007	○	○	○	○	○	○	○	○	○	○	○	○	
	VCMT 2201 VCMT 2204M VCMT 2208M VCMT 221M	AZ7* AZ7* AZ7* AZ7*	VCMT 110300 VCMT 110301M VCMT 110302M VCMT 110304M	FNAZ7 FNAZ7 FNAZ7 FNAZ7	1/4 1/4 1/4 1/4	.001 .003 .007 .015	○	○	○	○	○	○	○	○	○	○	○	○	
	VCMT 2204 VCMT 2208 VCMT 221	T 3/4 AS T 3/4 AS T 3/4 AS	VCMT 110301 VCMT 110302 VCMT 110304	T 3/4 AS T 3/4 AS T 3/4 AS	1/4 1/4 1/4	.004 .008 .016	○	○	○	○	○	○	○	○	○	○	○	○	
	VCMT 2201 VCMT 2204M VCMT 2204 VCMT 2208M VCMT 2208	3/4 U 3/4 U 3/4 U 3/4 U 3/4 U	VCMT 110300 VCMT 110301M VCMT 110301 VCMT 110302M VCMT 110302	3/4 U 3/4 U 3/4 U 3/4 U 3/4 U	1/4 1/4 1/4 1/4 1/4	.001 .003 .004 .007 .008	○	○	○	○	○	○	○	○	○	○	○	○	
	VCET 2203	RUHG	VCET 1103008	3/4 UHG	1/4	.003	○	○	○	○	○	○	○	○	○	○	○	○	
	VCGW 2201 VCGW 2204 VCGW 2208	H H H	VCGW 110300 VCGW 110301 VCGW 110302	H H H	1/4 1/4 1/4	.001 .004 .008	○	○	○	○	○	○	○	○	○	○	○	○	—

* To be replaced by version which has 2.0mm higher edge.

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)						PCD		
								Coated		Coated				PD1	PD2	
								B5K	B52	B6K	B36	B40	B23			B30
	VCGW 221 PD VCGW 221 PD VCGW 222 PD VCGW 222 PD	VCGW 110304 PD VCGW 110304 PD VCGW 110308 PD VCGW 110308 PD	S0415 S0635 S0415 S0635	1/4 1/4 1/4 1/4	.016 .016 .031 .031	2 2 2 2	.098 .098 .063 .063	○	○	○	○	○	○	○	○	○ ○ ○ ○
	VCWM 2204 VCWM 2208 VCWM 221	VCWM 110301 VCWM 110302 VCWM 110304	None None None	1/4 1/4 1/4	.004 .008 .016	1 1 1	— — —	○	○	○	○	○	○	○	○	○ ○ ○

TB Series

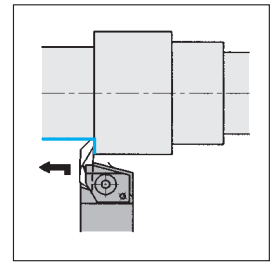
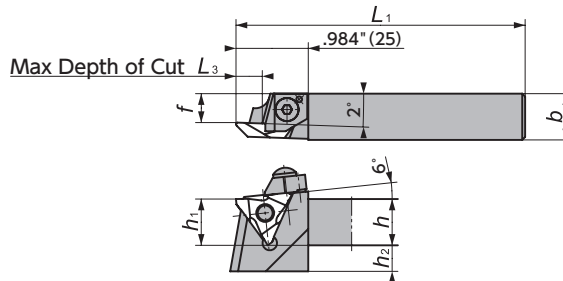
TBT Screw accessible from both sides



Right-Hand style shown

Figure-1

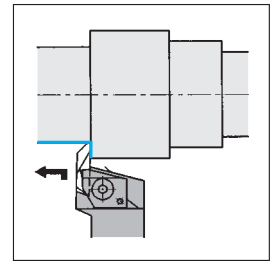
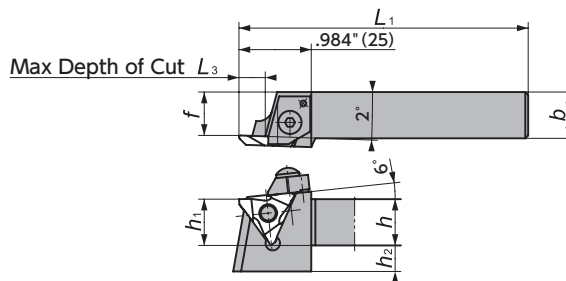
TB-N



Right-Hand style shown

Figure-2

TB-F





Right-Hand style shown

Figure-3

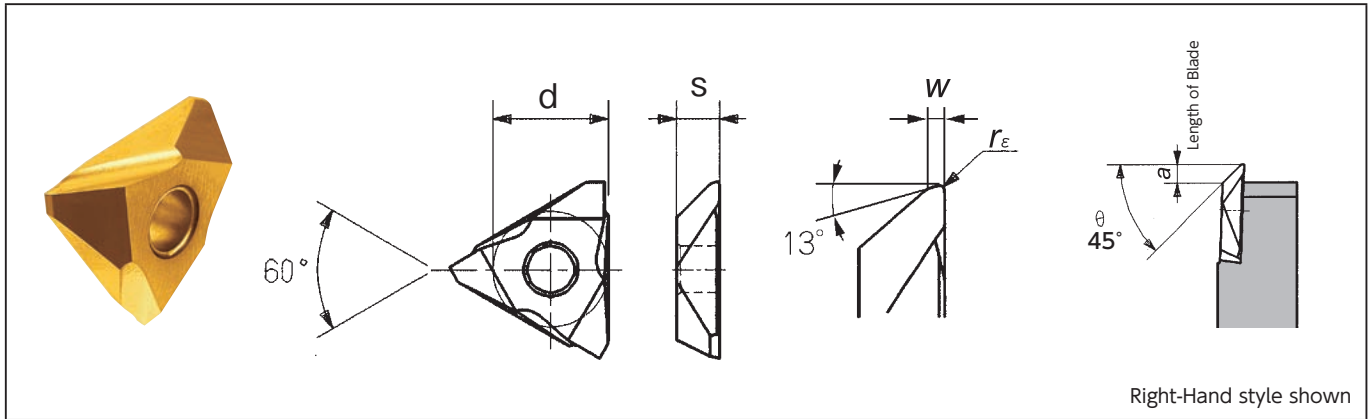
TB Series - Toolholders

TB

Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (mm)	h ₁ (mm)	L ₁ (mm)	h ₂ (mm)	f (mm)	L ₃ (mm)	Clamp Screw	Wrench
			R	L									
 TB32	TBT%06-IN	1	●		3/8	3/8	3/8	4.724 120	.118 3	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%08-IN	1	●		1/2	1/2	1/2	4.724 120	.039 1	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%08F	1	○	○	.315 8	.315 8	.315 8	3.150 80	.157 5	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%08K	1	○	○	.315 8	.315 8	.315 8	4.724 120	.157 5	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%10F	1	○	○	.394 10	.394 10	.394 10	3.150 80	.118 3	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%10K	1	○	○	.394 10	.394 10	.394 10	4.724 120	.118 3	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
	TBT%12F	1	○	○	.472 12	.472 12	.472 12	3.150 80	.039 1	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S
TBT%12K	1	○	○	.472 12	.472 12	.472 12	4.724 120	.039 1	.157 4	.197 5.0	LR-S-4 × 10PW	CLR-15S	
TB42	TB%16N-42	2	○		.630 16	.630 16	.630 16	3.071 78	.354 9	.453 11.5	.354 9.0	—	LW-2.5
 TB43	TB%16NS	2	○		.630 16	.630 16	.630 16	3.071 78	.354 9	.394 10	.197 5.0	—	LW-2.5
	TB%16N	2	○	○	.630 16	.630 16	.630 16	3.071 78	.354 9	.394 10	.354 9.0	—	LW-2.5
	TB%16N-H	2	○		.630 16	.630 16	.630 16	3.937 100	.354 9	.394 10	.354 9.0	—	LW-2.5
	TB%16N-K	2	○		.630 16	.630 16	.630 16	4.921 125	.354 9	.394 10	.354 9.0	—	LW-2.5
	TB%20N	2	○	○	.787 20	.787 20	.787 20	3.937 100	.157 5	.394 10	.354 9.0	—	LW-2.5
	TB%25N	2	○	○	.984 25	.984 25	.984 25	5.906 150	0 0	.394 10	.354 9.0	—	LW-2.5
	TB%16FS	3	○		.630 16	.630 16	.630 16	3.937 100	.354 9	.591 15	.197 5.0	—	LW-2.5
	TB%16F	3	○		.630 16	.630 16	.630 16	3.937 100	.354 9	.591 15	.354 9.0	—	LW-2.5
	TB%20FS	3	○		.787 20	.787 20	.787 20	3.937 100	.157 5	.787 20	.197 5.0	—	LW-2.5
TB%20F	3	○		.787 20	.787 20	.787 20	3.937 100	.157 5	.787 20	.354 9.0	—	LW-2.5	
TB%25F	3	○		.984 25	.984 25	.984 25	5.906 150	0 0	.984 25	.354 9.0	—	LW-2.5	

TB32 • 42 • 43 - Inserts

TB32 • 42 • 43



Item Number	Chip-breaker	a		θ	r_E		w		d		s		Coated Carbide		Cermet		Coated Cermet	
		(Inch)	(mm)		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3		XT3		Z15	
		R	L		R	L	R	L	R	L	R	L	R	L	R	L		
TB3200%	Yes	.106	2.7	45°	0	0.00	.020	0.5	3/8	9.525	1/8	3.18	●					
TB3205%	Yes	.106	2.7	45°	.002	0.05	.020	0.5	3/8	9.525	1/8	3.18	●	○	●			
TB3210%	Yes	.106	2.7	45°	.004	0.10	.020	0.5	3/8	9.525	1/8	3.18				○		
TB3215%	Yes	.106	2.7	45°	.006	0.15	.020	0.5	3/8	9.525	1/8	3.18	●	○	●	○	○	
TB3220%	Yes	.106	2.7	45°	.008	0.20	.020	0.5	3/8	9.525	1/8	3.18	○					
TB4215%	Yes	.091	2.3	45°	.006	0.15	.040	1.0	1/2	12.70	1/8	3.18	○					
TB4305%	Yes	.157	4.0	45°	.002	0.05	.040	1.0	1/2	12.70	3/16	4.76	●		○			
TB4315%	Yes	.157	4.0	45°	.006	0.15	.040	1.0	1/2	12.70	3/16	4.76	●		○	○	○	
TB4340%	Yes	.154	3.9	45°	.016	0.40	.040	1.0	1/2	12.70	3/16	4.76	●		○	○	○	

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

● : Stock

○ : 1-2 week delivery

Cutting condition **→R3**

GTT Series

GTT Screw accessible from both sides

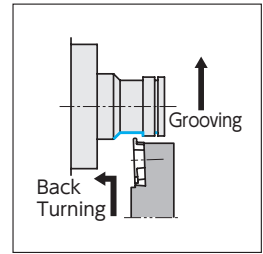
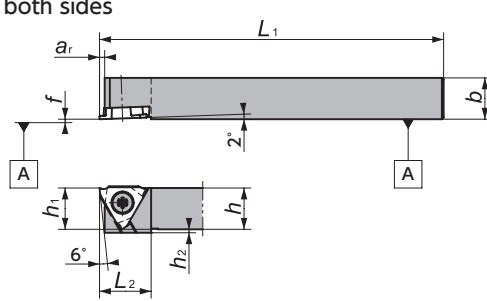


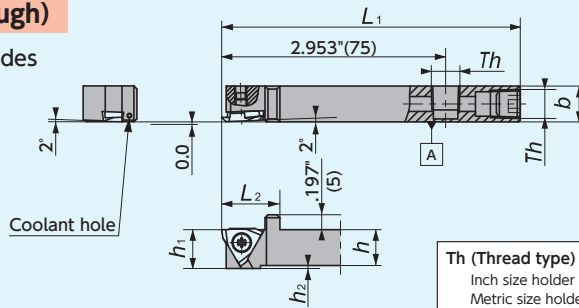
Figure-1

Right-Hand style shown

GTT-OH (Coolant through)

Screw accessible from both sides

NEW



Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: M6, Rc1/8 (PT1/8)

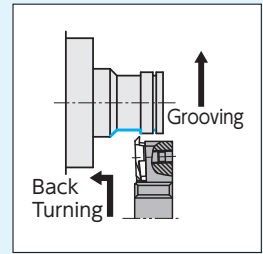


Figure-2

Right-Hand style shown

Y-GTT

Screw accessible from both sides

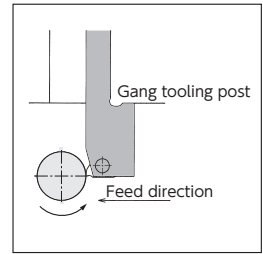
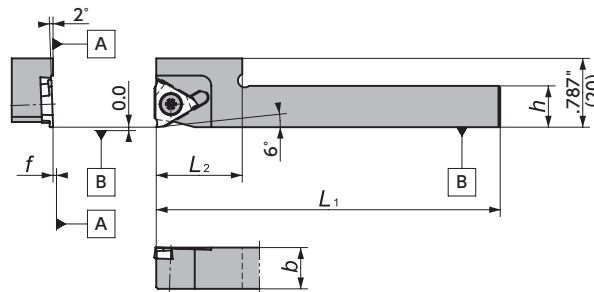


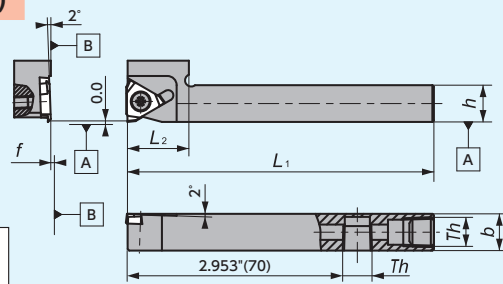
Figure-3

Right-Hand style shown
 Takes Right-hand Insert

Y-GTT-OH (Coolant through)

Screw accessible from both sides

NEW



Th (Thread type)
 Inch size holder : NPT1/8
 Metric size holder: Rc1/8 (PT1/8)

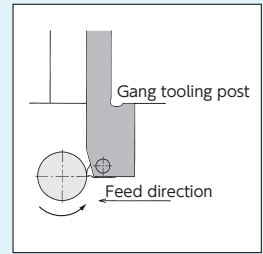


Figure-4

Right-Hand style shown
 Takes Right-hand Insert

CH-GTT

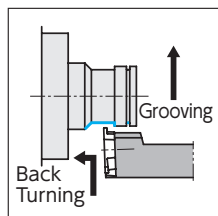
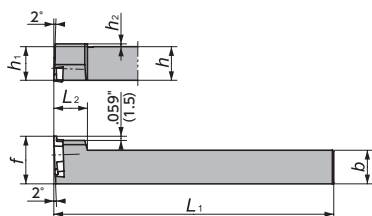


Figure-5

Left-Hand style shown
 Takes Right-hand Insert

DS-GTT

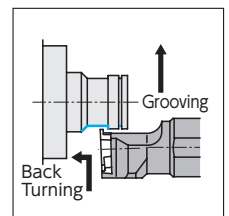
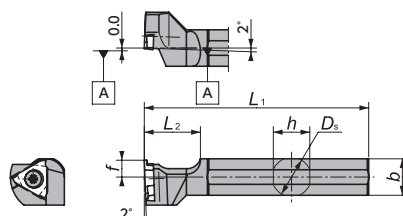


Figure-6

Left-Hand style shown
 Takes Right-hand Insert

MEMO

S

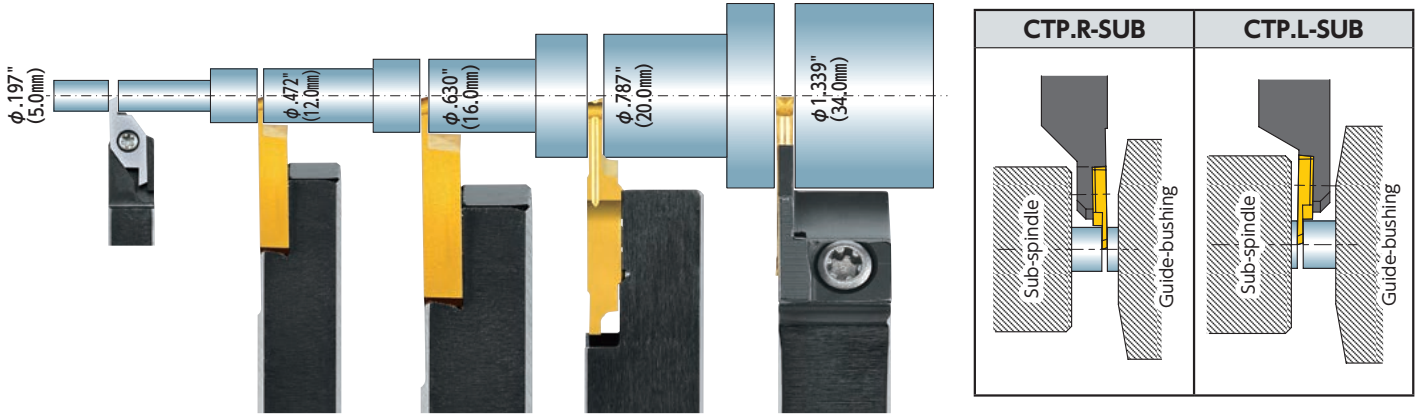


Cut-off / Parting


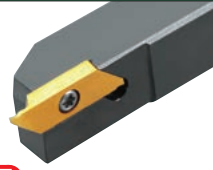

- **Cut-off Tooling** S2
- **Cut-off Tool Selection Guide** S4
- **Recommended Cutting Conditions** S5
- **Tool List** S6
 - CSV Series (Up to dia. .197") S6
 - CTPS Series (Up to dia. .394") S7
 - CTP Series (Up to dia. .472") S8
 - CTPA Series (Up to dia. .630") S8
 - CTPW Series (Up to dia. .787") S8
 - CTDP Series (Up to dia. 1.339") S14
 - CTV-S Series (Up to dia. .787") S15
 - CTV Series (Up to dia. 1.772") S16


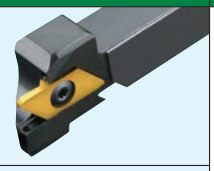


NTK Cut-off Tools - Product Lines

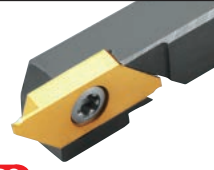
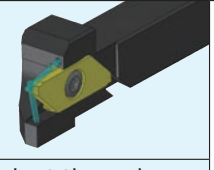


NTK offers a variety of cut-off tools with as narrow a width as .020" (0.5mm)
 NTK cut-off tools are specialized for small part applications










Cut-off

Insert	CSV →S6	CTPS →S7	CTPS-001 →S7
Holder	CSV-NC  →S6	CTPS  →S7	CTPSR-SUB  →S7
Max Cut-off Diameter	~φ.197" (~5.0mm)	~φ.394" (~10.0mm)	~φ.157" (~4.0mm)
Blade width	.024" - .059" (0.6 - 1.5mm)	.047" - .079" (1.2 - 2.0mm)	.028" (0.7mm)

Insert	CTP →S10 · S12			
Holder	CTP  →S8	CTP-OH NEW  →S8 Coolant through	CTPR-SUB  →S8	CTPL-SUB  →S8
Max Cut-off Diameter	~φ.472" (~12.0mm)			
Blade width	.020" - .079" (0.5 - 2.0mm)			

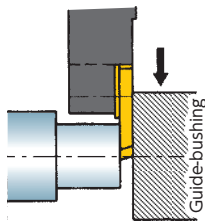
Insert	CTPA →S10 · S12			
Holder	CTPA  →S8	CTPA-OH NEW  →S8 Coolant through	CTPAR-SUB  →S8	CTPAL-SUB  →S8
Max Cut-off Diameter	~φ.630" (~16.0mm)			
Blade width	.028" - .118" (0.7 - 3.0mm)			

Insert	CTPW →S10·S12	CTDP →S14
	CTPW	CTDP
Holder	 →S8	 →S14
Max Cut-off Diameter	~φ .787" (~20.0mm)	~φ 1.339" (~34.0mm)
Blade width	.098" (2.5mm)	.079"·.098" (2.0·2.5mm)

Insert	CTV-S →S15		CTV →S17		
	CTV-K2	CTVN-K2	CTV-S	CTV-M (B)	CTV-X
Holder	 →S15	 →S15	 →S16	 →S16	 →S16
Max Cut-off Diameter	~φ .787" (~20.0mm)		~φ 1.378" (~35.0mm)	~φ 1.772" (~45.0mm)	~1.378" (~35.0mm)
Blade width	.087" - .098" (2.2 - 2.5mm)		.098"·.118" (2.5·3.0mm)	.098"·.118" (2.5·3.0mm)	.118" (3.0mm)

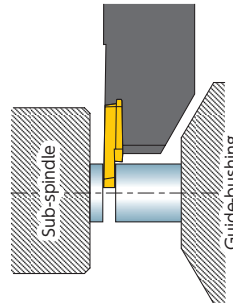
■ CTP/CTPA/CTPS/CTPW selection guide : Right hand? Or Left hand?

Right-hand recommended



R-hand Toolholder using a R-hand insert with lead angle

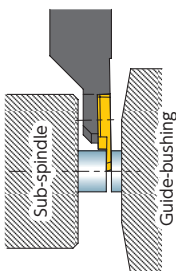
Left-hand recommended



L-hand Toolholder with a non-lead angle insert when the bar stock is held by sub-spindle

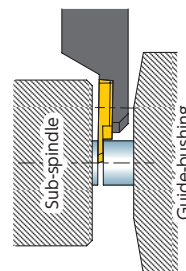
■ CTP/CTPA-SUB selection guide Right hand? Or Left hand?

Right-hand recommended



R-hand Toolholder with R-hand insert with lead angle for longer parts or small diameter part. When part length is too short for sub-spindle to hold, use L-hand with slower speed.

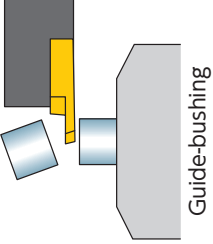
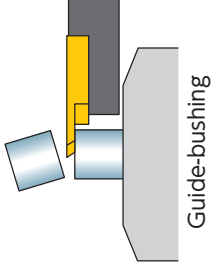
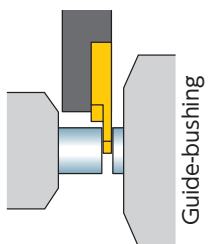
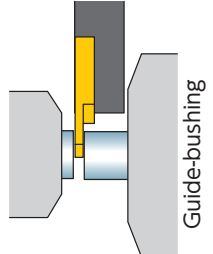
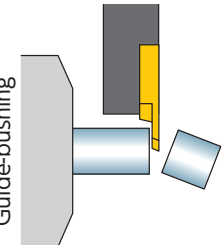
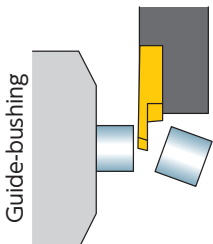
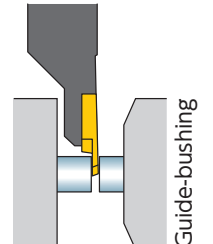
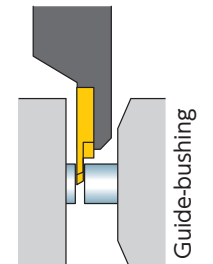
Left-hand recommended



L-hand with L-hand insert with lead angle for short part

More information →S4

Cut-off Tool Selection Guide

Right-hand combination		Left-hand combination	
FR, FRFT, FRV Style		FLK, FLKFT, FLKV Style	
 <p>FRFT: Flat top FRV : Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Common geometry in cut-off ● Lead angle minimizes center-boss ● End face is likely to get scratched from chip control because of lead angle and chip-breaker configuration ● Good for small diameter machining as it cuts near guide-bushing 	 <p>FLKFT: Flat top FLKV : Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Can cut-off closer to the sub-spindle ● Less burrs with hollow work ● Sub-spindle should hold the work
FRN, FRS,FRNV Style		FLN, FLS Style	
 <p>FRS : Flat top FRNV: Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Good for small diameter machining as it cuts near guide-bushing ● 1st recommendation when sub-spindle holds the part ● No lead angle helps to prevent scratches on both faces 	 <p>FLS: Flat top</p>	<ul style="list-style-type: none"> ● Recommended when required to cut-off close to the sub-spindle due to short part length ● Good for big diameter part ● No lead angle helps to prevent scratches on both faces ● Sub-spindle should hold the work
FRK Style		FL, FLV Style	
	<ul style="list-style-type: none"> ● Used with inverse spindle rotation ● Short part length and using sub-spindle ● Less burrs with hollow work 	 <p>FLV: Flat top with mirror finish</p>	<ul style="list-style-type: none"> ● Used with inverse spindle rotation ● Without sub-spindle ● Less burrs with hollow work
CTP. R-SUB		CTP. L-SUB	
	<ul style="list-style-type: none"> ● Recommended when cut-off point is close to guide-bushing for small and thin parts ● When the part length is short, extended sub-spindle guide-bushing is generally used 		<ul style="list-style-type: none"> ● Recommended when required to cut-off close to the sub-spindle especially with small diameters ● Can cut much closer to the sub-spindle than the other left-handed tool holders ● Sub-spindle should hold the work

Recommended Cutting Conditions

Cut-off

CSV T

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4					VM1	
	2nd choice	VM1					DT4	
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0004 .0008 .0012			.0004 .0012 .0020			






CTP / CTPA / CTPS / CTPW

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4				TM4	QM3	
	2nd choice	TM4			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0008 .0012 .0020			.0008 .0016 .0024			

CTDP / CTV

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DM4				TM4	QM3	
	2nd choice	TM4 / QM3				QM3	TM4 / DM4	
Cutting Speed (SFM)		100 160 230			100 200 300			
Feed Rate (IPR)		.0012 .0020 .0031			.0016 .0031 .0047			

1st Recommendation style for Cut-off Diameter

Cut-off diameter (φ)	Style	Code	Image
.197"	CSV style	→S6	
.197"-.472"	CTP style	→S8	
.472"-.630"	CTPA style	→S8	
	CTDP style	→S14	
.630"-	CTDP style	→S14	

CSV Series

Best for up to .200" diameter material

CSV-NC For Gang-style machine

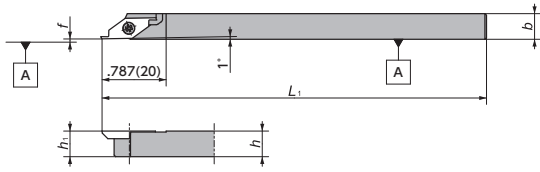


Figure-1

Right-Hand style shown

CSV For Cam-style machine

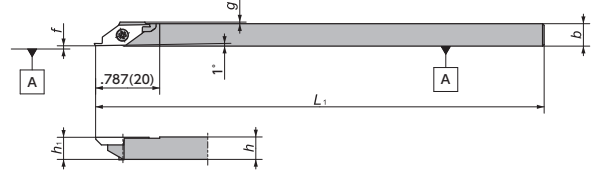



Figure-2

Right-Hand style shown

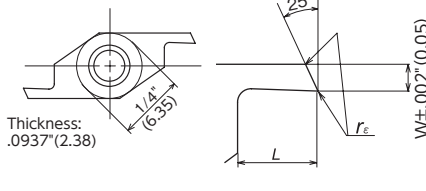






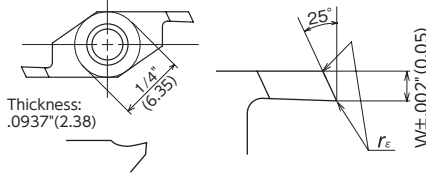






CSV Series - Toolholders

CSV^R/_L / CSV^R/_L-NC

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV ^R / _L 06-IN-NC	1	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08-IN-NC	1	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12NC	1	○	○	.472	12	.472	12	.472	12	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08	2	○	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10	2	○	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV ^R / _L 12	2	○	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

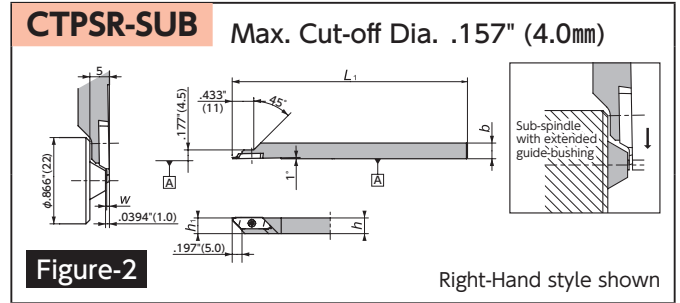
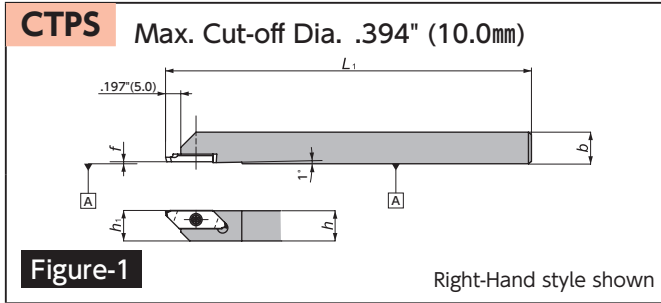
CSV Series - Inserts

CSV^R/_LC - Cut-off Mirror finish

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		r_e		VM1	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	R	L
 <p>Thickness: .0937(2.38)</p> <p>Right-Hand style shown</p>	CSV11F ^R / _L V06 	No	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	○
	CSV11F ^R / _L V07 	No	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	●
	CSV11F ^R / _L V08 	No	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L V09 	No	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L V10 	No	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	●
	CSV11F ^R / _L V13 	No	.197	5.0	.051	1.3	.118	3.0	0	0.0	●	○
 <p>Thickness: .0937(2.38)</p> <p>Right-Hand style shown</p>	CSV11F ^R / _L VB06 	Yes	.118	3.0	.024	0.6	.079	2.0	0	0.0	○	○
	CSV11F ^R / _L VB07 	Yes	.157	4.0	.028	0.7	.098	2.5	0	0.0	●	●
	CSV11F ^R / _L VB08 	Yes	.157	4.0	.031	0.8	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L VB09 	Yes	.157	4.0	.035	0.9	.098	2.5	0	0.0	○	○
	CSV11F ^R / _L VB10 	Yes	.197	5.0	.039	1.0	.118	3.0	0	0.0	●	○
	CSV11F ^R / _L VB13 	Yes	.197	5.0	.051	1.3	.118	3.0	0	0.0	○	○

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

CTPS Series



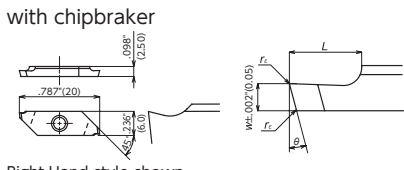
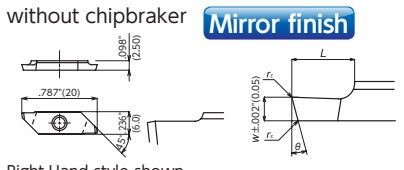
CTPS Series - Toolholders

CTPS / CTPSR

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕD		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	CTPSR06-IN	1	●		.394	10.0	3/8	3/8	3/8	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S			
	CTPSR08-IN	1	●		.394	10.0	1/2	1/2	1/2	4.724	120	0	0.0	LRIS-2.5 × 7	CLR-15S			
	CTPSR10	1	○		.394	10.0	.394	10	.394	10	.394	10	0	0.0	LRIS-2.5 × 7	CLR-15S		
	CTPSR12	1	○		.394	10.0	.472	12	.472	12	.472	12	0	0.0	LRIS-2.5 × 7	CLR-15S		
CTPS-001	CTPSR08-SUB04	2	○		.157	4.0	.315	8	.315	8	.315	8	4.724	120	—	LRIS-2.5 × 5	CLR-15S	

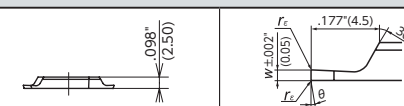
CTPS Series - Inserts

CTPS - Cut-off

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	r_ϵ		Coated Carbide			
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	VM1		ZM3	
			R	L	R	L	R	L		R	L				
 <p>with chipbraker</p> <p>Right-Hand style shown</p>	CTPS12FR	Yes	.157	4.0	.047	1.2	.138	3.5	16°	.002	0.05	○		●	
	CTPS15FR	Yes	.197	5.0	.059	1.5	.157	4.0	16°	.002	0.05	○		●	
	CTPS18FR	Yes	.335	8.5	.071	1.8	.217	5.5	16°	.002	0.05	○		●	
	CTPS20FR	Yes	.394	10.0	.079	2.0	.236	6.0	16°	.002	0.05	○		○	
 <p>without chipbraker</p> <p>Mirror finish</p> <p>Right-Hand style shown</p>	CTPS12FRV (M)	No	.157	4.0	.047	1.2	.138	3.5	20°	0	0.0	●		○	
	CTPS15FRV (M)	No	.197	5.0	.059	1.5	.157	4.0	20°	0	0.0	○		○	
	CTPS18FRV (M)	No	.335	8.5	.071	1.8	.217	5.5	20°	0	0.0	○		○	
	CTPS20FRV (M)	No	.394	10.0	.079	2.0	.236	6.0	20°	0	0.0	○		○	

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

CTPS-001 - Cut-off

Shape	Item Number	Chip-breaker	Max. Cut-off Dia. ϕD		w	θ	r_ϵ		Coated Carbide		
			(Inch)	(mm)			(Inch)	(mm)	ZM3		
			R	L			R	L			
 <p>Right-Hand style shown</p>	CTPS07FRN-001	Yes	.157	4.0	.028	0.7	0°	.002	0.05	○	
	CTPS07FR-001	Yes	.157	4.0	.028	0.7	16°	.002	0.05	○	
	CTPS07FRV-001 (M)	No	.157	4.0	.028	0.7	20°	0	0.0	○	

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

● : Stock

○ : 1-2 week delivery

(M) : Mirror finish

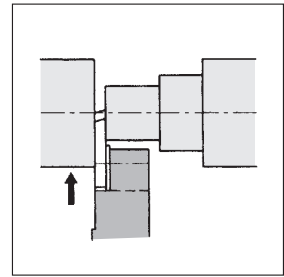
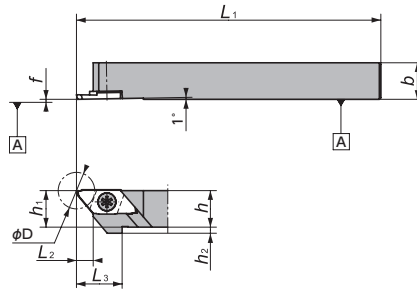
CTPS series → **O31**

Cutting condition → **S5**

CTP / CTPA / CTPW - Toolholders

CTP / CTPA

Screw Accessible from both sides



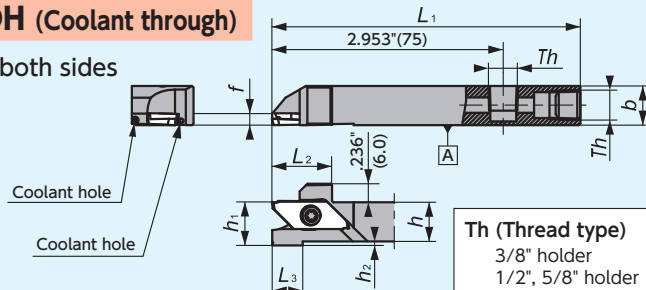
Right-Hand style shown

Figure-1

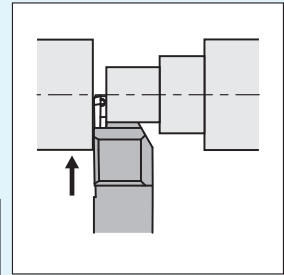
CTP-OH / CTPA-OH (Coolant through)

Screw Accessible from both sides

NEW



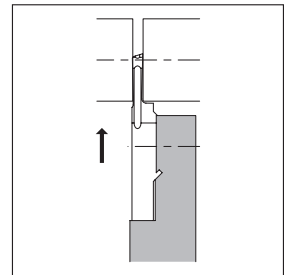
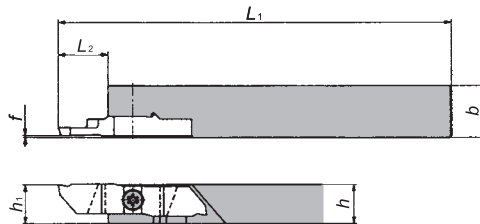
Th (Thread type)
 3/8" holder : M6 x 1
 1/2", 5/8" holder : NPT1/8
 Metric size holder : Rc1/8 (PT1/8)



Right-Hand style shown

Figure-2 • Left-Hand holders are designed for Right-Hand machines

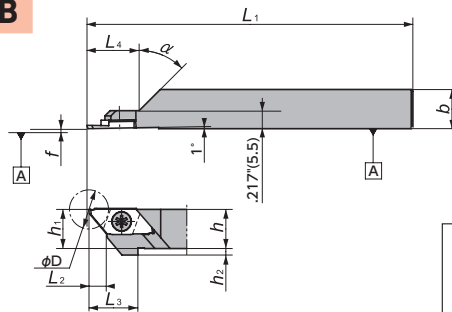
CTPW



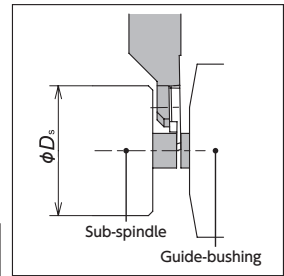
Right-Hand style shown

Figure-3

CTPR-SUB / CTPAR-SUB



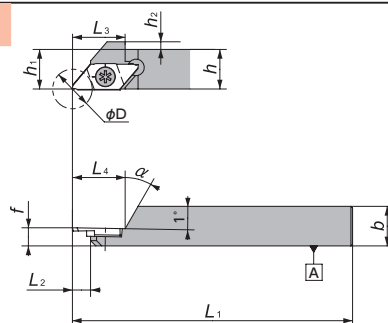
phi Ds
 CTPR-SUB: phi 1.18" (phi 30mm)
 CTPAR-SUB: phi 1.42" (phi 36mm)



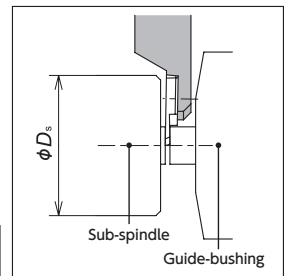
Sub-spindle
Guide-bushing

Figure-4

CTPL-SUB / CTPAL-SUB



phi Ds
 CTPR-SUB: phi 1.18" (phi 30mm)
 CTPAR-SUB: phi 1.42" (phi 36mm)



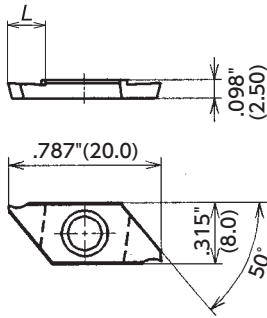
Sub-spindle
Guide-bushing

Figure-5

CTP / CTPA / CTPW Inserts (Right-Hand)

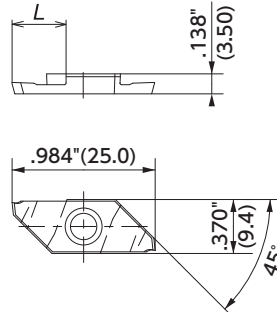
Two-sided insert

CTP / CTPX / CTP-X



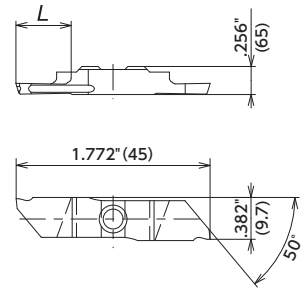
Right-Hand style shown

CTPA / CTPAX



Right-Hand style shown

CTPW



Right-Hand style shown

FR

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	r_{e1}		Coated Carbide				Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DT4	VM1	ZM3	KM1	PD1
Figure-1	CTP05FR-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	15°	.001	0.03				●		
	CTP07FR	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05				●		
	CTP10FR-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	15°	.002	0.05		○		○		
	CTP10FR	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05		●	●	●		
	CTP10FRFT	3	No	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05	●					
Figure-2	CTP10FRV ^M	2	No	.472	12.0	.039	1.0	.264	6.7	20°	0.0	0.0		○	●	●	●	
	CTP15FR	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05			●	●		
	CTPX15FR	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05	●	●		○		
	CTP15FRX	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05				○		
Figure-3	CTP15FRV ^M	2	No	.472	12.0	.059	1.5	.264	6.7	20°	0.0	0.0			●	●	●	
	CTP20FR	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05			●	●		
	CTPX20FR	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05	●	●		○		
	CTP20FRX	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05				○		
Figure-4	CTP20FRV ^M	2	No	.472	12.0	.079	2.0	.264	6.7	20°	0.0	0.0			●	●	●	
	CTPA07FR	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05				●		
	CTPA10FR	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05	●		●	●		
	CTPA10FRFT	3	No	.472	12.0	.039	1.0	.264	6.7	20°	.002	0.05	●					
	CTPA15FR	1	Yes	.630	16.0	.059	1.5	.362	9.2	16°	.002	0.05	●	●	●	●		
Figure-5	CTPA15FRFT	3	No	.630	16.0	.059	1.5	.362	9.2	20°	.002	0.05	●					
	CTPA20FR	1	Yes	.630	16.0	.079	2.0	.362	9.2	16°	.002	0.05	●	●	●	●		
	CTPA20FRV ^M	2	No	.630	16.0	.079	2.0	.362	9.2	20°	0.0	0.0			○		●	
	CTPW25FR	4	Yes	.787	20.0	.098	2.5	.472	12	17°	.002	0.05				●		
	CTPW25FRP ^M	5	No	.787	20.0	.098	2.5	.472	12	17°	.002	0.05				○		

FRN

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide				Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DT4	VM1	ZM3	KM1	PD1
Figure-1 	CTP05FRN-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	0°	.001	0.03				●		
	CTP10FRN-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	0°	.002	0.05		○		○		
	CTP10FRN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05		●		●		
	CTP15FRN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05			●	●		
	CTPX15FRN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05	●	●				
Figure-2 	CTP15FRNX	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05				○		
	CTP15FRNV M	2	No	.472	12.0	.059	1.5	.264	6.7	0°	0.0	0.0					●	
	CTP20FRN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05				●	●	
	CTPX20FRN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05	●	●				
Figure-3 	CTP20FRNX	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05				○		
	CTP20FRNV M	2	No	.472	12.0	.079	2.0	.264	6.7	0°	0.0	0.0					●	
	CTPA07FRN	1	Yes	.315	8.0	.028	0.7	.177	4.5	0°	.002	0.05					●	
	CTPA10FRN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05	●				●	
Figure-4 	CTPA10FRS	2	No	.472	16.0	.039	1.0	.362	9.2	0°	.002	0.05	●					
	CTPA15FRN	1	Yes	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●	●	●	●		
	CTPA15FRS	2	No	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●					
	CTPA20FRN	1	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05	●	●	●	●		
Figure-5 	CTPA20FRS	2	No	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05	●			○		
	CTPA20FRNV M	2	No	.630	16.0	.079	2.0	.362	9.2	0°	0.0	0.0					●	
	CTPA20FRN-P	3	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.004	0.1						○
	CTPA30FRN	1	Yes	.630	16.0	.118	3.0	.362	9.2	0°	.002	0.05	○					
	CTPW25FRN	4	Yes	.787	20.0	.098	2.5	.472	12	0°	.002	0.05					●	
CTPW25FRNV M	5	No	.787	20.0	.098	2.5	.472	12	0°	0.0	0.0					●		

Cut-off

FRK

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide				Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DT4	VM1	ZM3	KM1	PD1
Figure-1 	CTP10FRK	1	Yes	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05				○		
	CTP15FRK	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05				○		
	CTP20FRK	1	Yes	.433	11.0	.079	2.0	.264	6.7	16°	.002	0.05				○		

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

Holders **→S8**

Tool selection guide **→S4**

Cutting condition **→S5**

● : Stock

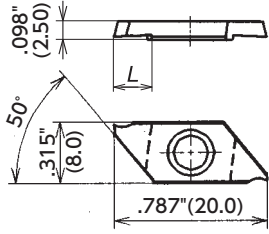
○ : 1-2 week delivery

M : Mirror finish

CTP / CTPA / CTPW Inserts (Left-Hand)

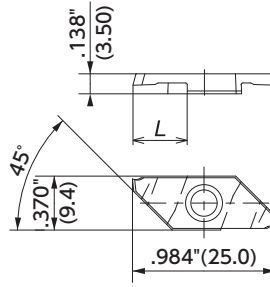
Two-sided insert

CTP / CTPX / CTP-X



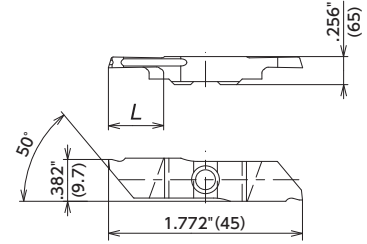
Left-Hand style shown

CTPA / CTPAX



Left-Hand style shown

CTPW



Left-Hand style shown

FLK

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia.		W		L		θ	r_{e1}		Coated Carbide				Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DT4	VM1	ZM3	KM1	PD1
Figure-1 	CTP05FLK-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	17°	.001	0.03				●		
	CTP10FLK-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	17°	.002	0.05		○		○		
	CTP10FLK	1	Yes	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05		●		●		
	CTP10FLK-211	1	Yes	.472	12.0	.039	1.0	.295	7.5	16°	.002	0.05			●			
	CTP15FLK	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05			○	●		
	CTP15FLKB	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05				○		
	CTPX15FLK	1	Yes	.433	11.0	.059	1.5	.264	6.7	16°	.002	0.05	●	●				
	CTP15FLKV ^M	2	No	.433	11.0	.059	1.5	.264	6.7	20°	0.0	0.0				●		●
Figure-2 Flat top 	CTP20FLK	1	Yes	.433	11.0	.079	2.0	.264	6.7	16°	.002	0.05			○	●		
	CTPX20FLK	1	Yes	.433	11.0	.079	2.0	.264	6.7	16°	.002	0.05	●	●				
	CTPA07FLK	1	Yes	.256	6.5	.028	0.7	.177	4.5	16°	.002	0.05				●		
	CTPA10FLK	1	Yes	.433	11.0	.039	1.0	.264	6.7	16°	.002	0.05	●			●	●	
Figure-3 	CTPA10FLKD	1	Yes	.630	16.0	.039	1.0	.362	9.2	16°	.002	0.05			○			
	CTPA10FLKFT	2	No	.630	16.0	.039	1.0	.311	7.9	16°	.0	0.0	●					
	CTPA15FLK	1	Yes	.571	14.5	.059	1.5	.362	9.2	16°	.002	0.05	●	●	●	●		
	CTPA15FLKFT	2	No	.630	16.0	.059	1.5	.394	10.0	16°	0.0	0.0	●					
	CTPA15FLKV ^M	2	No	.571	14.5	.059	1.5	.362	9.2	20°	0.0	0.0	●					
	CTPA20FLK	1	Yes	.571	14.5	.079	2.0	.362	9.2	16°	.002	0.05	●	●	●	●		
	CTPA20FLKV ^M	2	No	.571	14.5	.079	2.0	.362	9.2	20°	0.0	0.0			○		●	
	CTPW25FLK	3	Yes	.787	20.0	.098	2.5	.472	12	17°	.002	0.05				●		

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

FLN

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide				Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DT4	VM1	ZM3	KM1	PD1
Figure-1 	CTP05FLN-SH	1	Yes	.197	5.0	.020	0.5	.110	2.8	0°	.001	0.03				●		
	CTP10FLN-SH	1	Yes	.275	7.0	.039	1.0	.161	4.1	0°	.002	0.05		○		○		
	CTP10FLN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05		●		●		
	CTP15FLN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05			○	●		
	CTPX15FLN	1	Yes	.472	12.0	.059	1.5	.264	6.7	0°	.002	0.05	●	●				
Figure-2 Flat top 	CTP15FLNV	2	No	.472	12.0	.059	1.5	.264	6.7	0°	0.0	0.0					●	
	CTP20FLN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05			○	●		
	CTPX20FLN	1	Yes	.472	12.0	.079	2.0	.264	6.7	0°	.002	0.05	●	●				
	CTP20FLNV	2	No	.472	12.0	.079	2.0	.264	6.7	0°	0.0	0.0					●	
Figure-3 PCD tipped 	CTPA10FLN	1	Yes	.472	12.0	.039	1.0	.264	6.7	0°	.002	0.05	●			●		
	CTPA10FLND	1	Yes	.630	16.0	.039	1.0	.362	9.2	0°	.002	0.05				○		
	CTPA10FLS	2	No	.630	16.0	.039	1.0	.362	9.2	0°	.002	0.05	●					
	CTPA15FLN	1	Yes	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●	●	○	●		
	CTPA15FLS	2	No	.630	16.0	.059	1.5	.362	9.2	0°	.002	0.05	●					
Figure-4 	CTPA20FLN	1	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05	●	●	○	●		
	CTPA20FLS	2	No	.630	16.0	.079	2.0	.362	9.2	0°	.002	0.05	●			○		
	CTPA20FLNV (M)	2	No	.630	16.0	.079	2.0	.362	9.2	0°	0.0	0.0					●	
	CTPA20FLN-P	3	Yes	.630	16.0	.079	2.0	.362	9.2	0°	.004	0.1						○
Figure-5 Flat top 	CTPA30FLN	1	Yes	.630	16.0	.118	3.0	.362	9.2	0°	.002	0.05	○					
	CTPW25FLN	4	Yes	.787	20.0	.098	2.5	.472	12	0°	.002	0.05					●	
	CTPW25FLNV (M)	5	No	.787	20.0	.098	2.5	.472	12	0°	0.0	0.0					●	

Cut-off

FL

Shape	Item Number	Figure	Chip-breaker	Max. Cut-off Dia. ϕD		w		L		θ	$r_{\epsilon 1}$		Coated Carbide				Carbide	PCD
				(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DT4	VM1	ZM3	KM1	PD1
Figure-1 	CTP07FL	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05				●		
	CTP10FL	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05				●		
	CTP10FLV (M)	2	No	.472	12.0	.039	1.0	.264	6.7	20°	0.0	0.0			○	○		
	CTP15FL	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05				○		
Figure-2 Flat top 	CTPX15FL	1	Yes	.472	12.0	.059	1.5	.264	6.7	16°	.002	0.05		●				
	CTP15FLV (M)	2	No	.472	12.0	.059	1.5	.264	6.7	20°	0.0	0.0			○	○		
	CTP20FL	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05				●		
Figure-3 	CTPX20FL	1	Yes	.472	12.0	.079	2.0	.264	6.7	16°	.002	0.05		●				
	CTP20FLV (M)	2	No	.472	12.0	.079	2.0	.264	6.7	20°	0.0	0.0			○	○		
	CTPA07FL	1	Yes	.315	8.0	.028	0.7	.177	4.5	16°	.002	0.05				○		
	CTPA10FL	1	Yes	.472	12.0	.039	1.0	.264	6.7	16°	.002	0.05				○		
	CTPA15FL	1	Yes	.630	16.0	.059	1.5	.362	9.2	16°	.002	0.05		●		○		
Figure-4 Flat top 	CTPA20FL	1	Yes	.630	16.0	.079	2.0	.362	9.2	16°	.002	0.05		●		○		
	CTPA20FLV (M)	2	No	.630	16.0	.079	2.0	.362	9.2	20°	0.0	0.0			○			
	CTPW25FL	3	Yes	.787	20.0	.098	2.5	.472	12	17°	.002	0.05					○	
CTPW25FLP (M)	4	No	.787	20.0	.098	2.5	.472	12	17°	.002	0.05					○		

● : Stock ○ : 1-2 week delivery (M) : Mirror finish

Holders →S8

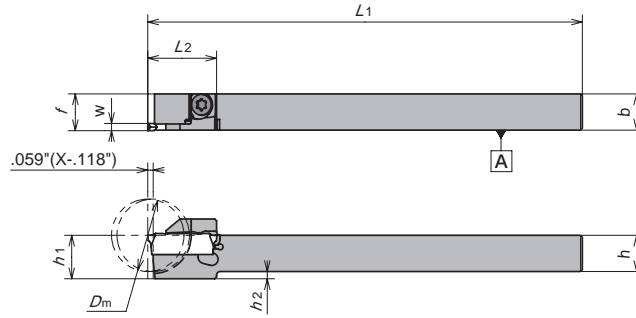
Tool selection guide →S4

Cutting Condition →S5

CTDP (Cut Duo) Series

Max. Cut-off Dia. - ϕ .787"(20.0mm), - ϕ 1"(25.4mm), ϕ 1.260"(32.0mm), - ϕ 1.339"(34.0mm)

CTDP



Right-Hand style shown

CTDP Series - Toolholders

CTDP

Gage Insert	Item Number	Stock		Max. Cut-off Dia. D_m		w	h	b	h_1	L_1	h_2	L_2	f	Clamp Screw	Wrench								
		R	L	(Inch)	(mm)											(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)
CTDP20	CTDP%{06-IN-20D20	●	●	.787	20.0	.079	2.0	3/8	.394	10	3/8	4.729	120	.019	0.5	.748	19.0	.400	10.150	LRIS-4 × 12	LLR-25S		
	CTDP%{08-IN-20D25	●	●	.984	25.0	.079	2.0	1/2	1/2	1/2	4.729	120	0	0	.866	22.0	.506	12.850	LRIS-4 × 12	LLR-25S			
	CTDP%{10-IN-20D32	●	●	1.260	32.0	.079	2.0	5/8	5/8	5/8	4.729	120	0	0	1.083	27.5	.631	16.025	LRIS-5 × 10	LLR-28S			
	CTDP%{12-IN-20D32	●	●	1.260	32.0	.079	2.0	3/4	3/4	3/4	4.729	120	0	0	1.083	27.5	.756	19.200	LRIS-5 × 10	LLR-28S			
	CTDP%{10-20D20	○	○	.787	20.0	.079	2.0	.394	10	.394	10	4.724	120	.079	2	.748	19.0	.400	10.15	LRIS-4 × 12	LLR-25S		
	CTDP%{12-20D20	○	○	.787	20.0	.079	2.0	.472	12	.472	12	4.724	120	0	0	.748	19.0	.478	12.15	LRIS-4 × 12	LLR-25S		
	CTDP%{12-20D25	●	○	1.000	25.4	.079	2.0	.472	12	.472	12	4.724	120	0	0	.866	22.0	.478	12.15	LRIS-4 × 12	LLR-25S		
	CTDP%{16-20D25	●	○	1.000	25.4	.079	2.0	.630	16	.630	16	4.724	120	0	0	.866	22.0	.636	16.15	LRIS-4 × 12	LLR-25S		
	CTDP%{16-20D32A	○	○	1.260	32.0	.079	2.0	.630	16	.630	16	4.724	120	0	0	1.083	27.5	.636	16.15	LRIS5 × 10	LLR-28S		
	CTDP%{2012-20D32A	○	○	1.260	32.0	.079	2.0	.787	20	.472	12	.787	20	4.724	120	0	0	1.161	29.5	.478	12.15	LRIS5 × 10	LLR-28S
CTDP%{20-20D32A	○	○	1.260	32.0	.079	2.0	.787	20	.787	20	.787	20	4.724	120	0	0	1.161	29.5	.793	20.15	LRIS5 × 10	LLR-28S	
CTDP25	CTDP%{16-25D34A	●	○	1.339	34.0	.098	2.5	.630	16	.630	16	4.724	120	0	0	1.122	28.5	.636	16.15	CS0516LSH	LW-3		
	CTDP%{2012-25D34A	○	○	1.339	34.0	.098	2.5	.787	20	.472	12	.787	20	4.724	120	0	0	1.161	29.5	.478	12.15	CS0516LSH	LW-3
	CTDP%{20-25D34A	○	○	1.339	34.0	.098	2.5	.787	20	.787	20	.787	20	4.724	120	0	0	1.161	29.5	.793	20.15	CS0516LSH	LW-3

CTDP Series - Inserts

CTDP

Shape	Item Number	w		L		θ	r_ϵ		Coated Carbide		
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DM4	TM4
<p>Two-sided</p>	CTDP20N	.079	2.0	.752	19.1	0°	.002	0.05	●	●	○
	CTDP20N02	.079	2.0	.752	19.1	0°	.008	0.2	●	●	○
	CTDP20R6	.079	2.0	.752	19.1	6°	.002	0.05	●	●	○
	CTDP20R15	.079	2.0	.752	19.1	15°	.002	0.05	●	●	○
	CTDP25N	.098	2.5	.835	21.2	0°	.002	0.05	●	●	○
	CTDP25N02	.098	2.5	.835	21.2	0°	.008	0.2	●	●	○
	CTDP25R6	.098	2.5	.835	21.2	6°	.002	0.05	●	●	○
	CTDP25R15	.098	2.5	.835	21.2	15°	.002	0.05	●	●	○

CTV Series

Max. Cut-off Dia. - ϕ .787"(20.0mm)

CTV-K2

Screw Accessible from both sides

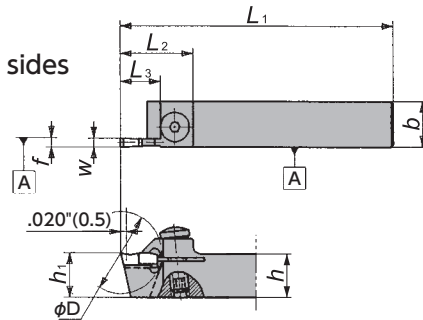
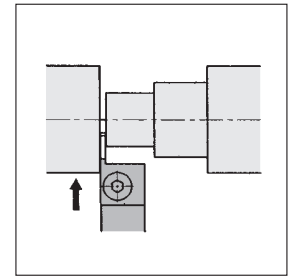


Figure-1



Right-Hand style shown

CTVN-K2

Screw Accessible from both sides

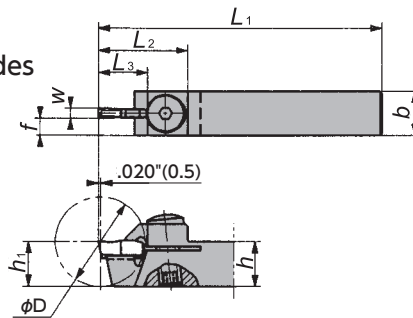
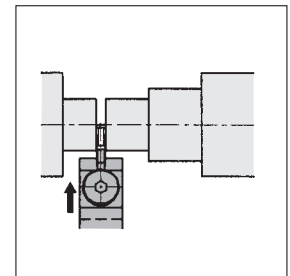


Figure-2



CTV Series - Toolholders

CTV

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. ϕ D	w		h		b		h_1		L_1		L_2		L_3		f		Clamp Screw	Wrench
			R	L		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	CTV $\frac{1}{2}$ 10K2	1	○	○	.787 20.0	.087(.098)	2.2(2.5)	.394 10	.394 10	.394 10	4.724 120	.787 20.0	.433 11	0.0 0.0	AOS-5 × 16	LW-2.5S							
	CTV $\frac{1}{2}$ 12GX2	1	○	○	.787 20.0	.087(.098)	2.2(2.5)	.472 12	.472 12	.472 12	3.346 85	.787 20.0	.433 11	0.0 0.0	AOS-5 × 16	LW-2.5S							
	CTV $\frac{1}{2}$ 12K2	1	○	○	.787 20.0	.087(.098)	2.2(2.5)	.472 12	.472 12	.472 12	4.724 120	.787 20.0	.433 11	0.0 0.0	AOS-5 × 16	LW-2.5S							
	CTVN10K2	2	○	○	.787 20.0	.087(.098)	2.2(2.5)	.394 10	.394 10	.394 10	4.724 120	.768 19.5	.433 11	.154 3.9	AOS-5 × 16	LW-2.5S							
	CTVN12K2	2	○	○	.787 20.0	.087(.098)	2.2(2.5)	.472 12	.472 12	.472 12	4.724 120	.768 19.5	.433 11	.193 4.9	AOS-5 × 16	LW-2.5S							

Note: f shows when takes CTV22.. insert

CTV Series - Inserts

CTV-S

Shape	Item Number	w		L		θ	r_ϵ		Coated Carbide
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	
 Single-sided CTV..N.S CTV..R.S CTV..L.S	CTV22N05S	.087	2.2	.394	10	0°	.002	0.05	○
	CTV22N10S	.087	2.2	.394	10	0°	.004	0.10	○
	CTV25N05S	.098	2.5	.394	10	0°	.002	0.05	○
	CTV25N10S	.098	2.5	.394	10	0°	.004	0.10	○
	CTV22R05S	.087	2.2	.394	10	17°	.002	0.05	○
	CTV22R10S	.087	2.2	.394	10	17°	.004	0.10	○
	CTV25R05S	.098	2.5	.394	10	17°	.002	0.05	○
	CTV25R10S	.098	2.5	.394	10	17°	.004	0.10	○
	CTV22L05S	.087	2.2	.394	10	17°	.002	0.05	○
	CTV22L10S	.087	2.2	.394	10	17°	.004	0.10	○
	CTV25L05S	.098	2.5	.394	10	17°	.002	0.05	○
	CTV25L10S	.098	2.5	.394	10	17°	.004	0.10	○

● : Stock

○ : 1-2 week delivery

Cutting condition **→S5**

CTV Series

Max. Cut-off Dia. - ϕ 1.772"(45.0mm)

CTV (-S)

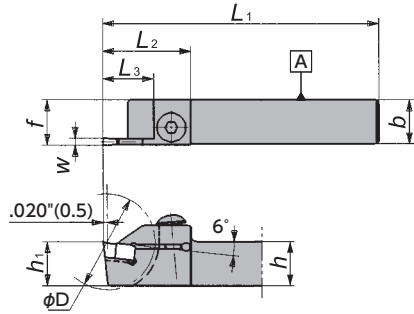
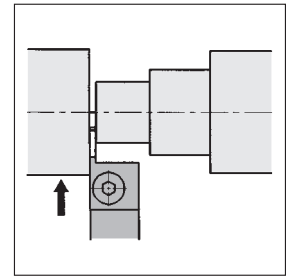


Figure-1



Right-Hand style shown

CTV-X

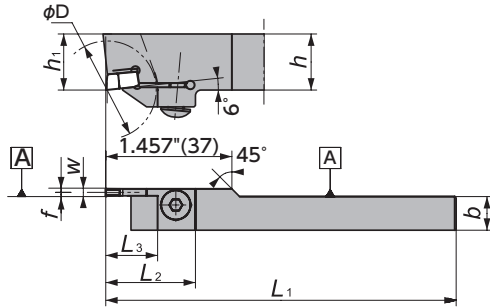
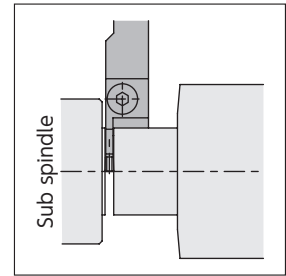


Figure-2



Left-Hand style shown

CTV-M (B)

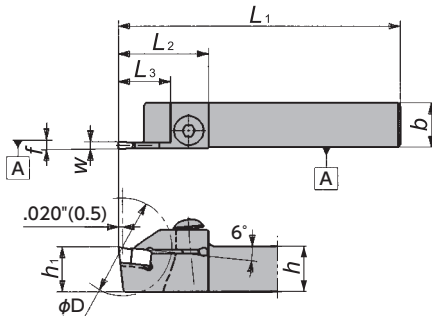
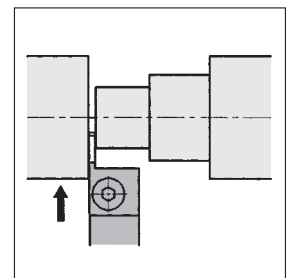


Figure-3



Right-Hand style shown

CTV Series - Toolholders



CTV

Gage Insert	Item Number	Figure	Stock		Max. Cut-off Dia. D_m		w		h		b		h_1		L_1		L_2		L_3		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)				
CTV25	CTV%08B	1	●		.900	22.9	.098	2.5	1/2	1/2	1/2	4.5	114	.945	24	.480	12.2	.520	13.2	BS0620	LW-4			
	CTV%16K25	1	●	●	1.378	35.0	.098	2.5	.630	16	.630	16	.630	16	4.921	125	1.260	32	.728	18.5	.650	16.5	BS0620	LW-4
	CTV%16K25S	1	○		.906	23.0	.098	2.5	.630	16	.630	16	.630	16	4.921	125	.945	24	.480	12.2	.650	16.5	BS0620	LW-4
	CTV%16-25M	3	○		1.102	28.0	.098	2.5	.630	16	.630	16	.630	16	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%20K25	1	●	○	1.378	35.0	.098	2.5	.787	20	.787	20	.787	20	4.921	125	1.260	32	.728	18.5	.807	20.5	BS0620	LW-4
	CTV%20K25S	1	○		.906	23.0	.098	2.5	.787	20	.787	20	.787	20	4.921	125	.945	24	.480	12.2	.807	20.5	BS0620	LW-4
	CTV%20-25M	3	○		1.102	28.0	.098	2.5	.787	20	.787	20	.787	20	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%1913L25	1	○	○	1.378	35.0	.098	2.5	.748	19	.512	13	.748	19	5.512	140	1.260	32	.728	18.5	.512	13.0	BS0620	LW-4
CTV30	CTV%16K30	1	○	○	1.378	35.0	.118	3.0	.630	16	.630	16	.630	16	4.921	125	1.260	32	.728	18.5	.650	16.5	BS0620	LW-4
	CTV%16K30S	1	○		.906	23.0	.118	3.0	.630	16	.630	16	.630	16	4.921	125	.945	24	.480	12.2	.650	16.5	BS0620	LW-4
	CTV%16-30M	3	○		1.102	28.0	.118	3.0	.630	16	.630	16	.630	16	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%20K30	1	○	○	1.378	35.0	.118	3.0	.787	20	.787	20	.787	20	4.921	125	1.260	32	.728	18.5	.807	20.5	BS0620	LW-4
	CTV%20K30S	1	○		.906	23.0	.118	3.0	.787	20	.787	20	.787	20	4.921	125	.945	24	.480	12.2	.807	20.5	BS0620	LW-4
	CTV%20-30M	3	○		1.102	28.0	.118	3.0	.787	20	.787	20	.787	20	4.724	120	1.004	25.5	.591	15	.020	0.5	BS0520	LW-3
	CTV%25-30B	3	○	○	1.772	45.0	.118	3.0	.984	25	.984	25	.984	25	5.906	150	1.358	34.5	.925	23.5	.020	0.5	BS0625	LW-4
	CTV%1913L30	1	○	○	1.378	35.0	.118	3.0	.748	19	.512	13	.748	19	5.512	140	1.260	32	.728	18.5	.512	13.0	BS0620	LW-4
	CTVL2012K30X-1	2	○	○	1.378	35.0	.118	3.0	.787	20	.472	12	.787	20	4.921	125	1.260	32	.728	18.5	.118	3.0	BS0620	LW-4

CTV Series - Inserts

CTV

Shape	Item Number	W		L		θ	r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	ZM3
<p>Single-sided</p>	CTV25N	.098	2.5	.472	12	0°	.008	0.20		○
	CTV30N	.118	3.0	.472	12	0°	.008	0.20	○	○
	CTV25R	.098	2.5	.472	12	8°	.008	0.20		●
	CTV30R	.118	3.0	.472	12	8°	.008	0.20		○
	CTV30L	.118	3.0	.472	12	8°	.008	0.20		○
<p>Single-sided</p>	CTV30N038	.118	3.0	.472	12	0°	.008	0.20		○
<p>Single-sided</p>	CTV25R00A	.098	2.5	.472	12	8°	.002 MAX.	0.05 max.		●
	CTV30R00A	.118	3.0	.472	12	8°	.002 MAX.	0.05 max.		○
	CTV25R00B	.098	2.5	.472	12	17°	.002 MAX.	0.05 max.		●
	CTV30R00B	.118	3.0	.472	12	17°	.002 MAX.	0.05 max.		○

Cut-off

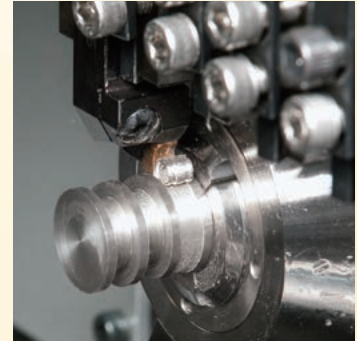
● : Stock

○ : 1-2 week delivery

Cutting condition → S5

MEMO

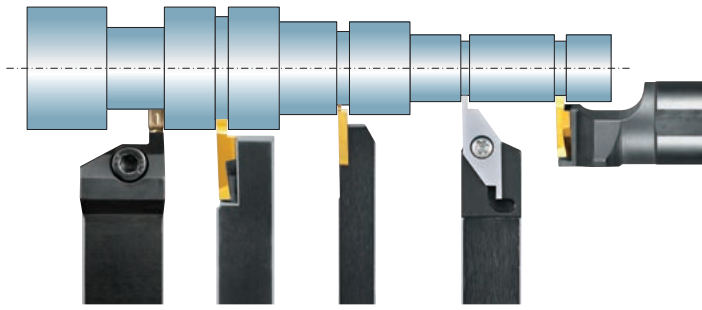
T












Grooving / Side Turning





- Grooving Tools T2
- Recommended Cutting Condition ... T4
- General Information T5
- Tool List T6
 - CSV Series T6
 - CTPS Series T8
 - GTW Series (GROOVE DUO) T9
 - GTM.32 Series..... T10
 - TWG Series T17
 - GTM.43 Series..... T18
 - SATURN DUO Series (Face grooving) T20
 - GTPA Series T24

NTK Grooving / Side Turning Tools - Product Lines

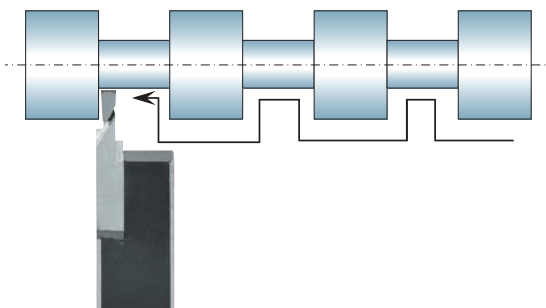


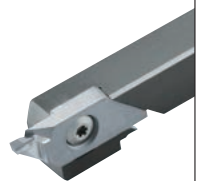


Insert	CSVG →T7		GTPS →T8
	CSV	DS-CSV	CTPS
Holder	 →T6	 →T6	 →T8
Blade width	.010" - .059" (0.25 - 1.50mm)		.030" - .079" (0.75 - 2.0mm)
Depth of cut	~.102" (~2.59mm)		~.098" (~2.50mm)

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

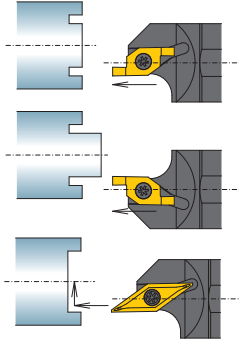
Insert	GWP →T9	GTM43 / GTMA43 / GTMT43 →T19		TWG →T17
	GTWP NEW	NGTN	NGTB	TWG
Holder	 →T9	 →T18	 →T18	 →T17
Blade width	.118" - .236" (3.0 - 5.9mm)	.039" - .216" (1.0 - 5.49mm)		.079" - .118" (2.0 - 3.0mm)
Depth of cut	~.354" (~9.0mm)	.177" (4.50mm)		~.118" (~3.0mm)

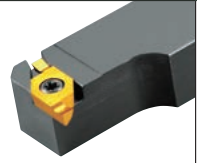


■ Multifunctional Grooving for non-ferrous material



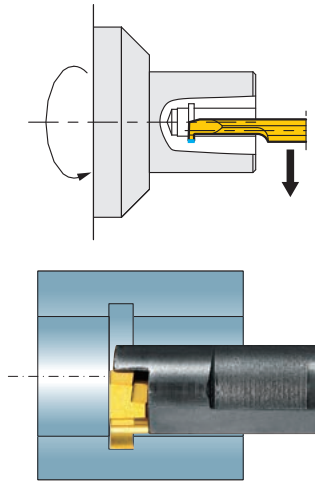
Insert	GTPA →T24		
	GTPA	Y-GTPA	Y-GTPA-OH NEW
Holder	 →T24	 →T24 Y-axis	 →T24 Y-axis w/ Coolant through
Blade width	.079" - .098" (2.0 - 2.50mm)		
Depth of cut	~.236" (~6.0mm)		



■ Face Grooving



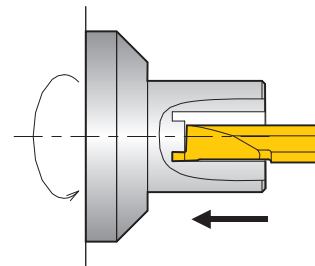
Insert	FGV →T23	FBV →T23	
Holder	FGV	DS-FGV	CH-FGV
			
	→T22	→T22	→T22
Blade width	.039" - .079" (1.0mm - 2.0mm)		
Depth of cut	~.118" (~3.0mm)	FGV: ~.118" (~3.0mm) FBV: ~.157" (~4.0mm)	


■ ID Grooving



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

■ ID Face Grooving



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

Recommended Cutting Conditions

Grooving

CSV / GTPS / GTG / GTMH / GTMT / GTMX / TMG / SBG

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4			DM4 / DT4	TM4	QM3	
	2nd choice	TM4 / QM3			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	Carbide C7Z(X)	150 300 500 400 500 800
Feed Rate (IPR) A. Grooving B. Side turning*	Width .010-.020	A. .0002 - .0012						
		B. .0001 - .0002						
	.020-.040	A. .0008 - .0024						A. .0008 - .0028
		B. .0002 - .0004						B. .0002 - .0004
	.040-.080	A. .0012 - .0028						A. .0012 - .0031
B. .0008 - .0020						B. .0012 - .0024		
> .080	A. .0012 - .0079							
		B. .0012 - .0024						

*When side turning, Max. DOC is under .0079". Under .016" width side turning impossible

GVP / GWP / TWG

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	QM3						
	2nd choice	QM3						
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	150 300 500	
Feed Rate (IPR) A. Grooving B. Side turning*	Width .118-.157	A. .0020 - .0059						
	.157-.197	A. .0039 - .0079						A. .0039 - .0098
								B. .0059 - .0118
> .197	A. .0059 - .0138							

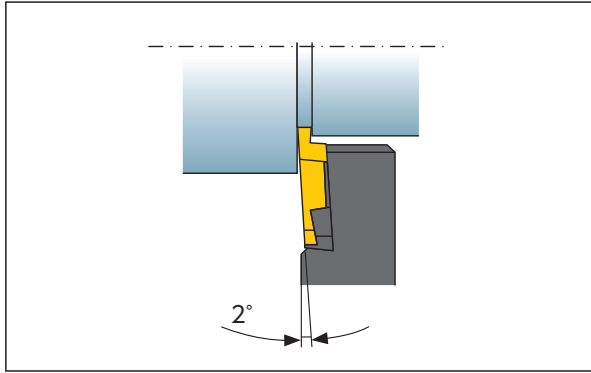
*Max DOC is 80% of width

GTPA

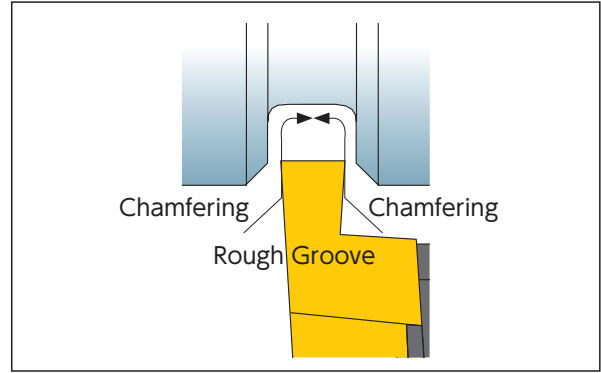
Work Material		Aluminum Alloy
Common Name		ASTM 5056 ASTM 6061
Grade	1st choice	PD1
	2nd choice	KM1
Cutting Speed (SFM)		PD1 330 650 1000 KM1 160 330 650
Feed Rate (IPR) A. Grooving B. Side turning		A. .0020 - .0079 B. .0039 - .0079

OD Grooving

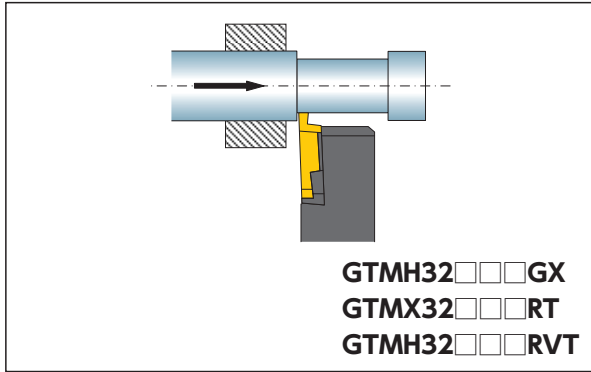
NTK GTMT / GTMH series can be used for uneven diameter grooving thanks to the 2 degree slanted insert mounting on the toolholder



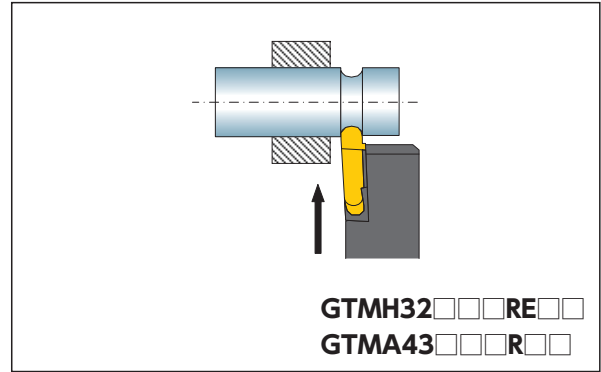
Chamfering and radius machining can be done after the rough grooving process at the center of the groove



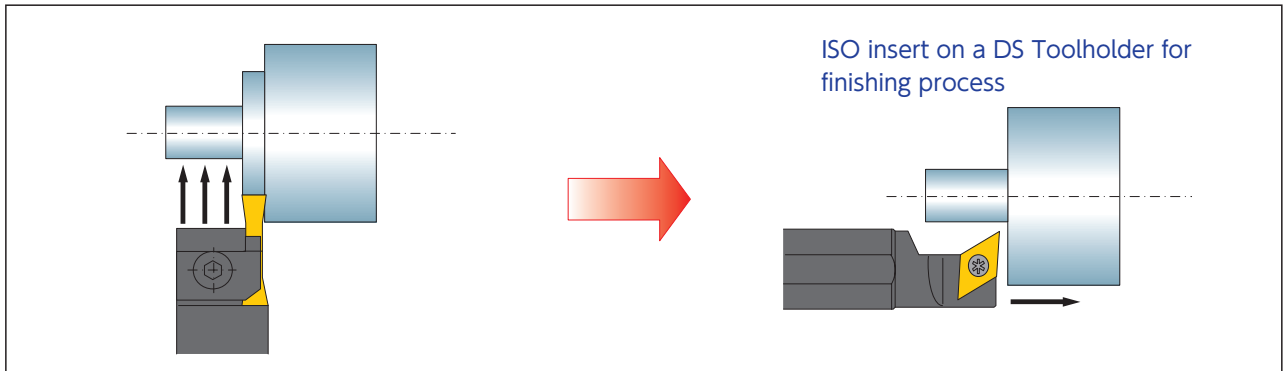
Side Turning



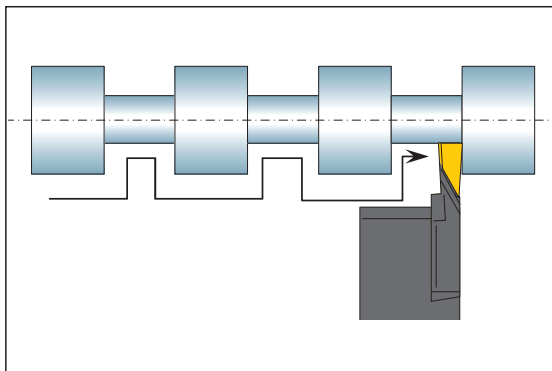
Full Radius



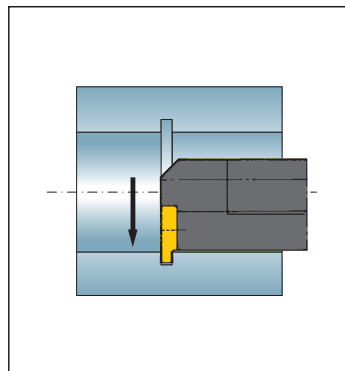
Rough Plunging for OD Turning



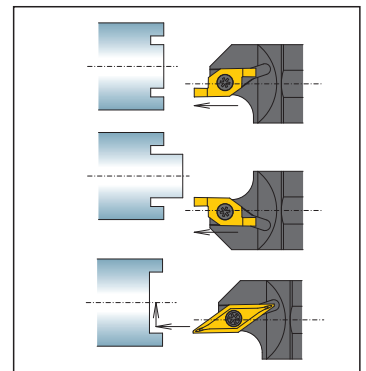
Spool Grooving



ID Grooving



Face Grooving



Grooving / Side-Turning

CSV Series

Best for up to .200" diameter material

CSV-NC

For Gang-style machine

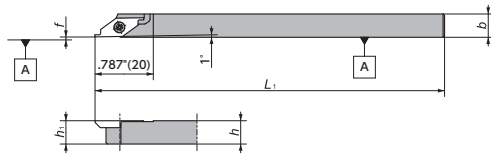


Figure-1

Right-Hand style shown

CSV

For Cam-style machine

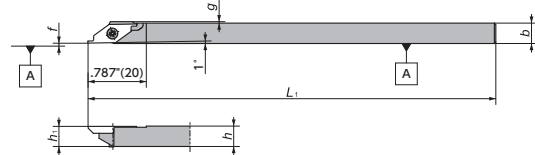


Figure-2

Right-Hand style shown

DS-CSVL

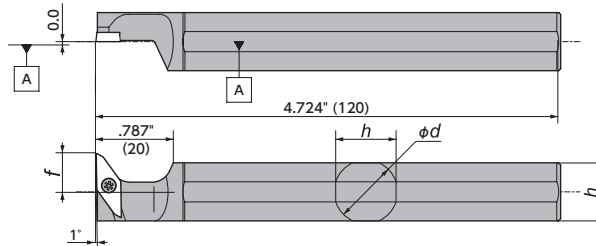



Figure-3


Left-Hand style shown
Takes Right-hand insert

CSV Series - Toolholders

CSV^R/_L / CSV^R/_L-NC

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV ^R / _L 06-IN-NC	1	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08-IN-NC	1	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12NC	1	●	●	.472	12	.472	12	.472	12	4.724	120	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 08	2	●	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 10	2	●	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV ^R / _L 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV ^R / _L 12	2	●	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	3	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

CSV Series - Inserts

■ CSVG - Grooving **Mirror finish**

Shape	Item Number	Chip-breaker	Groove Width <i>W</i>		Max Depth of Cut		<i>L</i>		<i>r_ε</i>		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	
											R	L
<p>Thickness: .094"(2.38)</p> <p>1/4" (6.35)</p> <p>0.0</p> <p>$W_{+0.01"} (0.03)$</p> <p>L</p>	CSVG11F ^R /V025 M	No	.010	0.25	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R /V030 M	No	.012	0.30	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R /V035 M	No	.014	0.35	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R /V040 M	No	.016	0.40	.006	0.15	.020	0.50	0.0	0.0	●	
	CSVG11F ^R /V045 M	No	.018	0.45	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R /V050 M	No	.020	0.50	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R /V055 M	No	.022	0.55	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R /V060 M	No	.024	0.60	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R /V065 M	No	.026	0.65	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R /V070 M	No	.028	0.70	.018	0.45	.039	1.00	0.0	0.0	●	
	CSVG11F ^R /V075 M	No	.030	0.75	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F ^R /V080 M	No	.031	0.80	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R /V085 M	No	.033	0.85	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R /V090 M	No	.035	0.90	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R /V095 M	No	.037	0.95	.050	1.40	.079	2.00	0.0	0.0	●	○
	CSVG11F ^R /V100 M	No	.039	1.00	.050	1.40	.079	2.00	0.0	0.0	●	
	CSVG11F ^R /V110 M	No	.043	1.10	.102	2.60	.102	2.60	0.0	0.0	●	
	CSVG11F ^R /V120 M	No	.047	1.20	.102	2.60	.102	2.60	0.0	0.0	●	○
	CSVG11F ^R /V130 M	No	.051	1.30	.102	2.60	.102	2.60	0.0	0.0	●	
	CSVG11F ^R /V140 M	No	.055	1.40	.102	2.60	.102	2.60	0.0	0.0	●	
CSVG11F ^R /V150 M	No	.059	1.50	.102	2.60	.102	2.60	0.0	0.0	●		

Right-Hand style shown

Grooving / Side-Turning

● : Stock

○ : 1-2 week delivery

M : Mirror finish

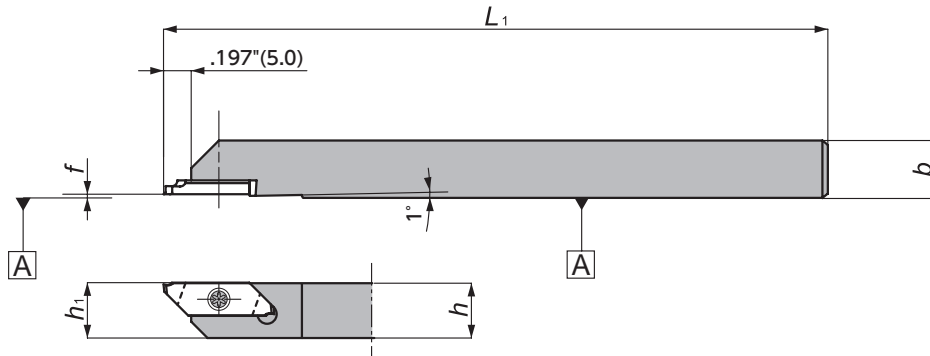
CSV series **→O27**

Cutting condition **→T4**

CTPS Series

CTPS


For Cam-style machine



Right-Hand style shown

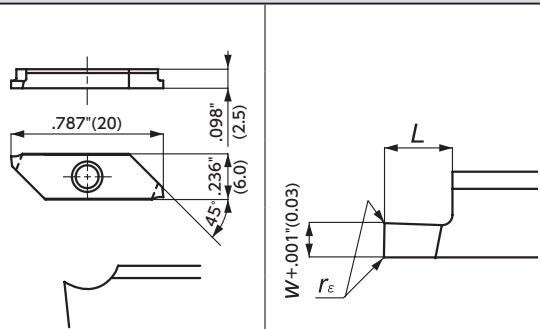
CTPS - Toolholders

CTPS

Gage Insert	Item Number	Figure	Stock	Groove Width Range <i>w</i> (Inch) (mm)	<i>h</i> (Inch) (mm)	<i>b</i> (Inch) (mm)	<i>h</i> ₁ (Inch) (mm)	<i>L</i> ₁ (Inch) (mm)	<i>f</i> (Inch) (mm)	Clamp Screw	Wrench
 GTPS	CTPSR06-IN	1	●	.030-.079 0.75-2.00	3/8	3/8	3/8	4.724 120	0 0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR08-IN	1	●	.030-.079 0.75-2.00	1/2	1/2	1/2	4.724 120	0 0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR10	1	○	.030-.079 0.75-2.00	.394 10	.394 10	.394 10	4.724 120	0 0.0	LRIS-2.5 × 7	CLR-15S
	CTPSRR12	1	○	.030-.079 0.75-2.00	.472 12	.472 12	.472 12	4.724 120	0 0.0	LRIS-2.5 × 7	CLR-15S

CTPS Series - Inserts

CTPS - Grooving

Shape	Item Number	Groove Width <i>w</i>		Max Depth of Cut		<i>r_ε</i>		<i>L</i>		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	ZM3
 <p>Right-Hand style shown</p>	GTPS075FR	.030	0.75	.039	1.0	0.0	0.0	.059	1.5	○	○
	GTPS095FR	.037	0.95	.059	1.5	0.0	0.0	.079	2.0	○	○
	GTPS100FR	.039	1.00	.059	1.5	0.0	0.0	.079	2.0	○	○
	GTPS120FR	.047	1.20	.098	2.5	0.0	0.0	.118	3.0	○	○
	GTPS150FR	.059	1.50	.098	2.5	0.0	0.0	.118	3.0	○	○
	GTPS200FR	.079	2.00	.098	2.5	0.0	0.0	.118	3.0	○	○

● : Stock ○ : 1-2 week delivery

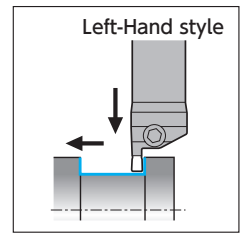
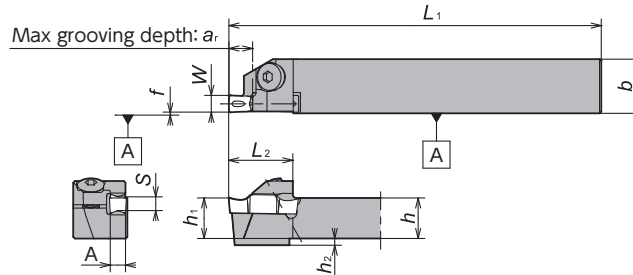
CTPS series → **O31**

Cutting condition → **T4**

GTW (GROOVE DUO) Series

GTWP

Side Turning Capable
For Swiss Machine



Right-Hand style shown

Figure-1

GTW Series - Toolholders



GWP

Gage Insert	Item Number	Figure	Stock		Groove Width W	a_r		h		b		h_1		L_1		h_2		f		L_2		A		Seat Size S	Clamp Screw	Wrench
			R	L		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)					
GWP ○ 300	GTWP%08-IN3D07	1	●		.118 3	.275 7	1/2	.630 16	1/2	4.724 120	0 0	.012 0.3	.748 19	.102 2.6	D	AOB-5 × 14	LW-3S									
	GTWP%10-IN3D09	1	●		.118 3	.354 9	5/8	.630 16	5/8	4.724 120	0 0	.012 0.3	.866 22	.102 2.6	D	AOB-5 × 16	LW-3S									
	GTWP%1016-3D07	1	○		.118 3	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.102 2.6	D	AOB-5 × 14	LW-3S									
	GTWP%1216-3D07	1	●		.118 3	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.102 2.6	D	AOB-5 × 16	LW-3S									
GWP ○ 400	GTWP%1616-3D09	1	○		.118 3	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.102 2.6	D	AOB-5 × 16	LW-3S									
	GTWP%08-IN4E07	1	●		.157 4	.275 7	1/2	.630 16	1/2	4.724 120	0 0	.012 0.3	.748 19	.138 3.5	E	AOB-5 × 14	LW-3S									
	GTWP%10-IN4E09	1	●		.157 4	.354 9	5/8	.630 16	5/8	4.724 120	0 0	.012 0.3	.866 22	.138 3.5	E	AOB-5 × 16	LW-3S									
	GTWP%1016-4E07	1	○		.157 4	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.138 3.5	E	AOB-5 × 14	LW-3S									
GWP ○ 500	GTWP%1216-4E07	1	●		.157 4	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.138 3.5	E	AOB-5 × 16	LW-3S									
	GTWP%1616-4E09	1	○		.157 4	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.138 3.5	E	AOB-5 × 16	LW-3S									
	GTWP%1016-5F07	1	○		.197 5	.275 7	.394 10	.630 16	.472 12	4.724 120	.079 2	.012 0.3	.748 19	.177 4.5	F	AOB-5 × 14	LW-3S									
	GTWP%1216-5F07	1	○		.197 5	.275 7	.472 12	.630 16	.472 12	4.724 120	0 0	.012 0.3	.768 19.5	.177 4.5	F	AOB-5 × 16	LW-3S									
GWP ○ 600	GTWP%1616-5F09	1	○		.197 5	.354 9	.630 16	.630 16	.630 16	4.724 120	0 0	.012 0.3	.866 22	.177 4.5	F	AOB-5 × 16	LW-3S									
	GTWP%1020-6G07	1	○		.236 6	.275 7	.394 10	.787 20	.394 10	4.724 120	.079 2	.012 0.3	.866 22	.209 5.3	G	AOB-5 × 14	LW-3S									
	GTWP%1220-6G07	1	○		.236 6	.275 7	.472 12	.787 20	.472 12	4.724 120	0 0	.012 0.3	.886 22.5	.209 5.3	G	AOB-5 × 16	LW-3S									
	GTWP%1620-6G09	1	○		.236 6	.354 9	.630 16	.787 20	.630 16	4.724 120	0 0	.012 0.3	.984 25	.209 5.3	G	AOB-5 × 16	LW-3S									

Grooving /
Side-Turning

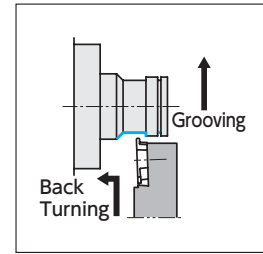
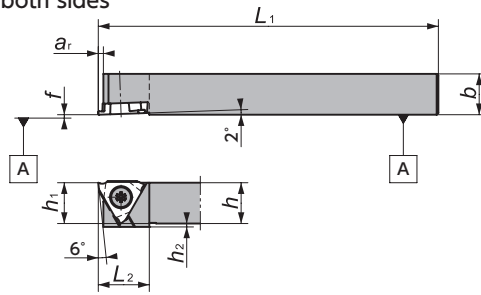
GTW Series - Inserts

Shape	Item Number	w		r_e	M		L		Seat Size S	Coated Carbide			
		Groove Width (Inch)	Width Tolerance (mm)		(Inch)	(mm)	(Inch)	(mm)		DM4			
<p>GWPG: Outside ground GWPM: Full-molded</p> <ul style="list-style-type: none"> ● Excellent chip control ● Best for side turning 	GWPG300N02D-GW	.118	3.0	.001	± 0.025	.008	0.2	.098	2.5	.811	20.6	D	●
	GWPG300N04D-GW	.118	3.0	.001	± 0.025	.016	0.4	.098	2.5	.811	20.6	D	●
	GWPG400N02E-GW	.157	4.0	.001	± 0.025	.008	0.2	.134	3.4	.811	20.6	E	●
	GWPG400N04E-GW	.157	4.0	.001	± 0.025	.016	0.4	.134	3.4	.811	20.6	E	●
	GWPG400N08E-GW	.157	4.0	.001	± 0.025	.031	0.8	.134	3.4	.811	20.6	E	●
	GWPG500N02F-GW	.197	5.0	.001	± 0.025	.008	0.2	.169	4.3	.811	20.6	F	○
	GWPG500N04F-GW	.197	5.0	.001	± 0.025	.016	0.4	.169	4.3	.811	20.6	F	○
	GWPG500N08F-GW	.197	5.0	.001	± 0.025	.031	0.8	.169	4.3	.811	20.6	F	○
	GWPG600N02G-GW	.236	6.0	.001	± 0.025	.008	0.2	.205	5.2	1.008	25.6	G	○
	GWPG600N04G-GW	.236	6.0	.001	± 0.025	.016	0.4	.205	5.2	1.008	25.6	G	○
	GWPG600N08G-GW	.236	6.0	.001	± 0.025	.031	0.8	.205	5.2	1.008	25.6	G	○
		GWPM300N04D-GW	.118	3.0	.002	± 0.05	.016	0.4	.098	2.5	.811	20.6	D
<ul style="list-style-type: none"> ● Less tool pressure design 	GWPG300N02D-GV	.118	3.0	.001	± 0.025	.008	0.2	.205	2.5	.811	20.6	D	●
	GWPG300N04D-GV	.118	3.0	.001	± 0.025	.016	0.4	.205	2.5	.811	20.6	D	●
	GWPG400N02E-GV	.157	4.0	.001	± 0.025	.008	0.2	.169	4.3	.811	20.6	E	●
	GWPG400N04E-GV	.157	4.0	.001	± 0.025	.016	0.4	.169	4.3	.811	20.6	E	●
	GWPG500N02F-GV	.197	5.0	.001	± 0.025	.008	0.2	.169	4.3	.811	20.6	F	○
	GWPG500N04F-GV	.197	5.0	.001	± 0.025	.016	0.4	.169	4.3	.811	20.6	F	○
	GWPG600N02G-GV	.236	6.0	.001	± 0.025	.008	0.2	.169	4.3	1.008	25.6	G	○
	GWPG600N04G-GV	.236	6.0	.001	± 0.025	.016	0.4	.169	4.3	1.008	25.6	G	○

GTT Series

GTT

Screw accessible from both sides



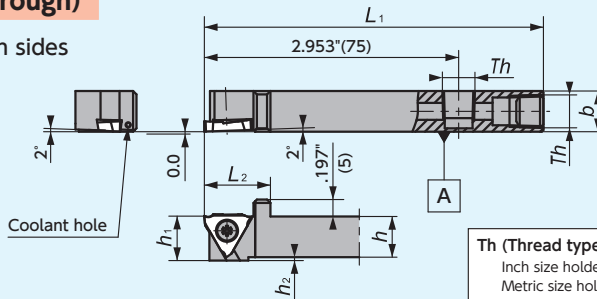
Right-Hand style shown

Figure-1

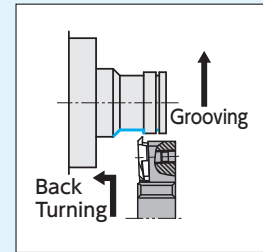
GTT-OH (Coolant through)

Screw accessible from both sides

NEW



Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

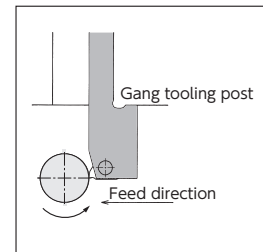
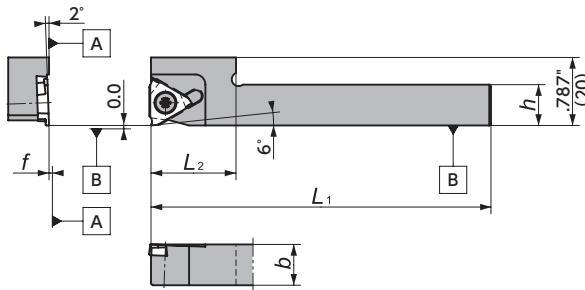


Right-Hand style shown

Figure-2

Y-GTT

Screw accessible from both sides



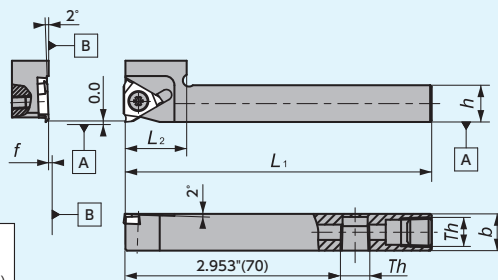
Right-Hand style shown
Takes Right-hand Insert

Figure-3

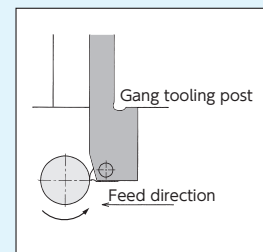
Y-GTT-OH (Coolant through)

Screw accessible from both sides

NEW



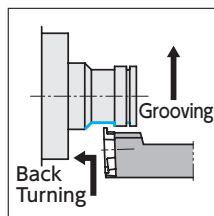
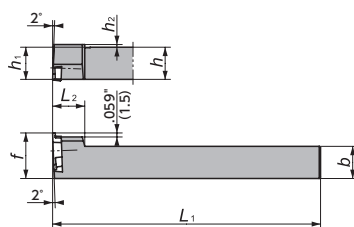
Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)



Right-Hand style shown
Takes Right-hand Insert

Figure-4

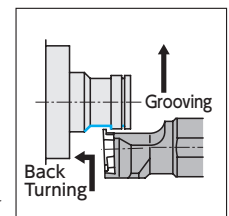
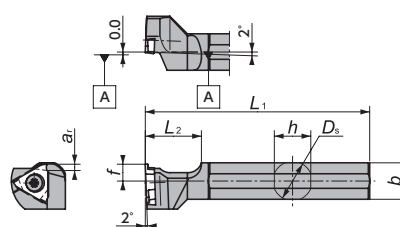
CH-GTT



Left-Hand style shown
Takes Right-hand Insert

Figure-5

DS-GTT



Left-Hand style shown
Takes Right-hand Insert

Figure-6

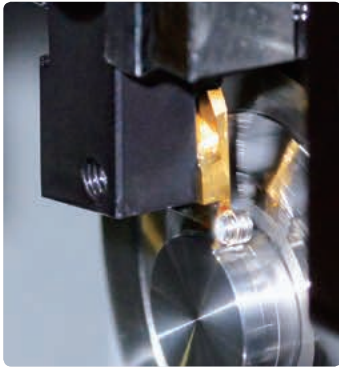
● : Stock ○ : 1-2 week delivery

💧 : Coolant through

Inserts → T12

Cutting condition → T4

NEW GTMH-GX Chipbreaker for Grooving / Side Turning



Features

- Can solve either problems of chips remaining in the grooves or bird's nest of chips
- Good surface finishes on groove side faces
- UP to .078" DOC side turning capability

Excellent Chip Control

• Grooving

DOC	Feed rate (IPR)	Feed rate (IPR)		
		.0004"	.0011"	.0020"
GX chipbreaker	.030" width			

Material : 304 SS (φ .630"), 260 SFM, .059", DOC

Best Solution for Chip Control

Now available in Coolant through toolholders



• Side Turning

DOC	Feed rate (IPR)	Feed rate (IPR)			
		.0004"	.0011"	.0020"	.0031"
.010"	φ.630"				

Material : 304 SS (φ .630"), 260 SFM, .030" width insert

GTMH32.. Inserts - Carbide

■ GTMH32-GX

Shape	Item Number	Groove Width W		Max Depth of Cut				L		r _ε		Coated Carbide			
		(Inch)	(mm)	Grooving		Side turning		(Inch)	(mm)	(Inch)	(mm)	DM4		TM4	
				(Inch)	(mm)	(Inch)	(mm)					R	L	R	L
Side Turning Capable NEW 	GTMH32075RGX	.030	0.75	.063	1.6	.030	0.75	.079	2.0	.002	0.05	●		○	
	GTMH32095RGX	.037	0.95	.063	1.6	.059	1.50	.079	2.0	.002	0.05	●		○	
	GTMH32100RGX	.039	1.00	.063	1.6	.059	1.50	.079	2.0	.002	0.05	●		○	
	GTMH32100RGX01	.039	1.00	.063	1.6	.059	1.50	.079	2.0	.004	0.1	●		○	
	GTMH32150RGX	.059	1.50	.106	2.7	.079	2.00	.118	3.0	.002	0.05	●		○	
	GTMH32150RGX01	.059	1.50	.106	2.7	.079	2.00	.118	3.0	.004	0.1	●		○	
	GTMH32150RGX02	.059	1.50	.106	2.7	.079	2.00	.118	3.0	.008	0.2	●		○	
	GTMH32200RGX	.079	2.00	.106	2.7	.079	2.00	.118	3.0	.002	0.05	●		○	
	GTMH32200RGX01	.079	2.00	.106	2.7	.079	2.00	.118	3.0	.004	0.1	●		○	
	GTMH32200RGX02	.079	2.00	.106	2.7	.079	2.00	.118	3.0	.008	0.2	●		○	
	GTMH32300RGX	.118	3.00	.106	2.7	.079	2.00	.118	3.0	.002	0.05	●		○	
	GTMH32300RGX02	.118	3.00	.106	2.7	.079	2.00	.118	3.0	.008	0.2	●		○	

GTMX32

Shape	Item Number	Groove Width W		Max Depth of Cut Grooving		L		r _ε		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3		DT4	
										R	L	R	L
	GTMX32030% T	.012	0.30	.010	0.25	.024	0.6	.002	0.05	●	□	○	
	GTMX32033% T	.013	0.33	.010	0.25	.024	0.6	.002	0.05	●	■		
	GTMX32043% T	.017	0.43	.035	0.9	.047	1.2	.002	0.05	●	□	○	
	GTMX32050% T	.020	0.50	.035	0.9	.047	1.2	.002	0.05	●	■	○	
	GTMX32053% T	.021	0.53	.035	0.9	.047	1.2	.002	0.05	●	□		
	GTMX32065% T	.026	0.65	.035	0.9	.047	1.2	.002	0.05	●	□	○	
	GTMX32075% T	.030	0.75	.063	1.6	.079	2.0	.002	0.05	●	●	○	○
	GTMX32080% T	.031	0.80	.063	1.6	.079	2.0	.002	0.05	●	■	○	
	GTMX32095% T	.037	0.95	.063	1.6	.079	2.0	.002	0.05	○	○	○	○
	GTMX32100% T	.039	1.00	.063	1.6	.079	2.0	.002	0.05	●	□		
	GTMX32100% T01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	●	□	○	
	GTMX32110% T	.043	1.10	.063	1.6	.079	2.0	.002	0.05	○	□		
	GTMX32120% T	.047	1.20	.063	1.6	.079	2.0	.002	0.05	●	□	○	
	GTMX32120% T01	.047	1.20	.063	1.6	.079	2.0	.004	0.1	●	□	○	
	GTMX32125% T	.049	1.25	.063	1.6	.079	2.0	.002	0.05	●	■		
	GTMX32130% T	.051	1.30	.063	1.6	.079	2.0	.002	0.05	○	□	○	
	GTMX32140% T	.055	1.40	.063	1.6	.079	2.0	.002	0.05	○	□	○	
	GTMX32145% T	.057	1.45	.106	2.7	.118	3.0	.002	0.05	○	□		
	GTMX32150% T	.059	1.50	.106	2.7	.118	3.0	.002	0.05	●	●	○	○
	GTMX32150% T01	.059	1.50	.106	2.7	.118	3.0	.004	0.1	●	□	○	
	GTMX32150% T02	.059	1.50	.106	2.7	.118	3.0	.008	0.2	●	■		
	GTMX32160% T	.063	1.60	.106	2.7	.118	3.0	.002	0.05	●	□		
	GTMX32175% T	.069	1.75	.106	2.7	.118	3.0	.002	0.05	○	●	○	
	GTMX32180% T	.071	1.80	.106	2.7	.118	3.0	.002	0.05	○	□	○	
	GTMX32200% T	.079	2.00	.106	2.7	.118	3.0	.002	0.05	●	●	○	○
	GTMX32200% T01	.079	2.00	.106	2.7	.118	3.0	.004	0.1	○	○	○	○
	GTMX32200% T02	.079	2.00	.106	2.7	.118	3.0	.008	0.2	●	■		
	GTMX32250% T	.098	2.50	.106	2.7	.118	3.0	.002	0.05	●	○	○	○
GTMX32250% T01	.098	2.50	.106	2.7	.118	3.0	.004	0.1	○		○		
GTMX32250% T02	.098	2.50	.106	2.7	.118	3.0	.008	0.2	○		○		
GTMX32300% T	.118	3.00	.106	2.7	.118	3.0	.002	0.05	●	■	○		
GTMX32300% T02	.118	3.00	.106	2.7	.118	3.0	.008	0.2	●		○		

Right-Hand style shown

Grooving / Side-Turning

GTMH32 - VT Mirror finish

Shape	Item Number	Groove Width W		Max Depth of Cut Grooving		L		r _ε		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	VM1	
										R	L
	GTMH32033% VT M	.013	0.33	.010	0.25	.024	0.6	0.0	0.0	●	
	GTMH32043% VT M	.017	0.43	.035	0.9	.047	1.2	0.0	0.0	●	
	GTMH32053% VT M	.021	0.53	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32065% VT M	.026	0.65	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32075% VT M	.030	0.75	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32080% VT M	.031	0.80	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32085% VT M	.033	0.85	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32095% VT M	.037	0.95	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32100% VT M	.039	1.00	.063	1.6	.079	2.0	0.0	0.0	●	
	GTMH32110% VT M	.043	1.10	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32120% VT M	.047	1.20	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32130% VT M	.051	1.30	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32140% VT M	.055	1.40	.063	1.6	.079	2.0	0.0	0.0	○	
	GTMH32150% VT M	.059	1.50	.106	2.7	.118	3.0	0.0	0.0	●	
	GTMH32200% VT M	.079	2.00	.106	2.7	.118	3.0	0.0	0.0	●	

Right-Hand style shown

Side turning instruction for GTMH-GX / GTMX-T / GTMH-VT

- ① To perform side turning with an insert whose groove width is greater than .017" set side turning feed rate to .001 IPR or smaller.
- ② When performing side turning with an insert whose groove width is greater than .017" and the feed rate is over .001 IPR (.004 IPR max), it is likely that chips will damage grooved sides. In this case, please perform grooving in two or more passes to make room for chips before performing side turning.

● : Stock ○ : 1-2 week delivery ■, □ : While stock lasts M : Mirror finish Holders T10 Cutting condition T4

Grooving / Side-Turning

GTMH32 - E

Shape	Item Number	Groove width W		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3	
										R	L
<p>Right-Hand style shown</p>	GTMH32033% $\frac{1}{2}$ E	.013	0.33	.012	0.3	.024	0.6	.001	0.03	○	○
	GTMH32043% $\frac{1}{2}$ E	.017	0.43	.035	0.9	.047	1.2	.001	0.03	●	○
	GTMH32053% $\frac{1}{2}$ E	.021	0.53	.035	0.9	.047	1.2	.002	0.05	○	○
	GTMH32075% $\frac{1}{2}$ E	.030	0.75	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32077% $\frac{1}{2}$ E	.030	0.77	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32095% $\frac{1}{2}$ E	.037	0.95	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32097% $\frac{1}{2}$ E	.038	0.97	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32100% $\frac{1}{2}$ E	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32100% $\frac{1}{2}$ E01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	○	○
	GTMH32120% $\frac{1}{2}$ E	.047	1.20	.063	1.6	.079	2.0	.002	0.05	●	○
	GTMH32120% $\frac{1}{2}$ E01	.047	1.20	.063	1.6	.079	2.0	.004	0.1	○	○
	GTMH32125% $\frac{1}{2}$ E	.049	1.25	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32140% $\frac{1}{2}$ E	.055	1.40	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32145% $\frac{1}{2}$ E	.057	1.45	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32150% $\frac{1}{2}$ E	.059	1.50	.106	2.7	.118	3.0	.002	0.05	○	○
	GTMH32150% $\frac{1}{2}$ E01	.059	1.50	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32175% $\frac{1}{2}$ E	.069	1.75	.106	2.7	.118	3.0	.002	0.05	○	○
	GTMH32180% $\frac{1}{2}$ E	.071	1.80	.106	2.7	.118	3.0	.002	0.05	○	○
GTMH32200% $\frac{1}{2}$ E	.079	2.00	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32200% $\frac{1}{2}$ E01	.079	2.00	.106	2.7	.118	3.0	.004	0.1	○	○	
GTMH32225% $\frac{1}{2}$ E	.089	2.25	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32250% $\frac{1}{2}$ E	.098	2.50	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32275% $\frac{1}{2}$ E	.108	2.75	.106	2.7	.118	3.0	.002	0.05	○	○	
GTMH32300% $\frac{1}{2}$ E	.118	3.00	.106	2.7	.118	3.0	.002	0.05	○	○	

GTMH32 (Full radius style)

Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3		ZM3	
										R	L	R	L
<p>Right-Hand style shown</p>	GTMH32050% $\frac{1}{2}$ E025	.020	0.50	.035	0.9	.047	1.2	.010	0.25	●	●	○	○
	GTMH32070% $\frac{1}{2}$ E035	.028	0.70	.063	1.6	.079	2.0	.014	0.35	●	●	○	○
	GTMH32100% $\frac{1}{2}$ E05	.039	1.00	.063	1.6	.079	2.0	.020	0.50	●	●	○	○
	GTMH32150% $\frac{1}{2}$ E075	.059	1.50	.106	2.7	.118	3.0	.030	0.75	●	○	○	○
	GTMH32200% $\frac{1}{2}$ E10	.079	2.00	.106	2.7	.118	3.0	.039	1.00	●	○	○	○
GTMH32300% $\frac{1}{2}$ E15	.118	3.00	.106	2.7	.118	3.0	.059	1.50	●	○	○	○	

● : Stock

○ : 1-2 week delivery

■, □ : While stock lasts

Ⓜ : Mirror finish

Holders **→T10**

Cutting condition **→T4**

TMG32-E

Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3	
										R	L
<p>Right-Hand style shown</p>	TMG32031%LE01	.031	0.79	.063	1.6	.079	2.0	.004	0.1	●	■
	TMG32039%LE01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	●	●
	TMG32049%LE01	.049	1.25	.063	1.6	.079	2.0	.004	0.1	●	■
	TMG32062%LE02	.062	1.57	.106	2.7	.118	3.0	.008	0.2	●	□
	TMG32079%LE02	.079	2.00	.106	2.7	.118	3.0	.008	0.2	●	□
	TMG32094%LE02	.094	2.39	.106	2.7	.118	3.0	.008	0.2	●	□
	TMG32125%LE02	.125	3.18	.106	2.7	.118	3.0	.008	0.2	●	□

GTMH • X32 (Flat top chipbreaker)

Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	KM1	
										R	L
<p>Mirror finish Right-Hand style shown</p>	GTMH32100%SSH M	.039	1.00	.063	1.6	.079	2.0	.002	0.05	●	
	GTMH32150%SSH M	.059	1.50	.106	2.7	.118	3.0	.002	0.05	●	
	GTMH32200%SSH M	.079	2.00	.106	2.7	.118	3.0	.002	0.05	●	

Shape	Item Number	Groove Width W		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3	
										R	L
<p>Right-Hand style shown</p>	GTMX32100%SS	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○	
	GTMX32150%SS	.059	1.50	.106	2.7	.118	3.0	.002	0.05	○	
	GTMX32200%SS	.079	2.00	.106	2.7	.118	3.0	.002	0.05	○	
<p>Right-Hand style shown</p>	GTMX32100%LS	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○	
	GTMX32150%LS	.059	1.50	.106	2.7	.118	3.0	.002	0.05	○	
	GTMX32200%LS	.079	2.00	.106	2.7	.118	3.0	.002	0.05	○	

GTMX32 (90 Degree V-style)

Shape	Item Number	Max Depth of Cut		Edge Geometry	r_ϵ		L		Coated Carbide	
		(Inch)	(mm)		(Inch)	(mm)	(Inch)	(mm)	TM4	
									R	L
<p>Right-Hand style shown</p>	GTMX32V90%L005	.020	0.5	90°	.002	0.05	.020	0.5	○	
	GTMX32V90%L010	.028	0.7	90°	.004	0.1	.040	1.0	○	

GTMH32.. Inserts - Cermet

GTMH32-J

Shape	Item Number	Groove Width w		Max Depth of Cut		L		r_ϵ		Coated Cermet	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	C7Z	
										R	L
	GTMH32075% $\frac{1}{4}$ J005	.030	0.75	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32080% $\frac{1}{4}$ J005	.031	0.80	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32095% $\frac{1}{4}$ J005	.037	0.95	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32100% $\frac{1}{4}$ J005	.039	1.00	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32115% $\frac{1}{4}$ J005	.045	1.15	.063	1.6	.079	2.0	.002	0.05	○	○
	GTMH32120% $\frac{1}{4}$ J01	.047	1.20	.063	1.6	.079	2.0	.004	0.1	○	○
	GTMH32125% $\frac{1}{4}$ J01	.049	1.25	.063	1.6	.079	2.0	.004	0.1	○	○
	GTMH32145% $\frac{1}{4}$ J01	.057	1.45	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32150% $\frac{1}{4}$ J01	.059	1.50	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32150% $\frac{1}{4}$ J	.059	1.50	.106	2.7	.118	3.0	.008	0.2	○	○
	GTMH32160% $\frac{1}{4}$ J01	.063	1.60	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32175% $\frac{1}{4}$ J01	.069	1.75	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32180% $\frac{1}{4}$ J01	.071	1.80	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32200% $\frac{1}{4}$ J01	.079	2.00	.106	2.7	.118	3.0	.004	0.1	○	○
	GTMH32200% $\frac{1}{4}$ J	.079	2.00	.106	2.7	.118	3.0	.008	0.2	○	○
	GTMH32250% $\frac{1}{4}$ J01	.098	2.50	.106	2.7	.118	3.0	.004	0.1	○	○
GTMH32250% $\frac{1}{4}$ J	.098	2.50	.106	2.7	.118	3.0	.008	0.2	○	○	
GTMH32300% $\frac{1}{4}$ J	.118	3.00	.106	2.7	.118	3.0	.008	0.2	○	○	

Right-Hand style shown

GTM32 (Molded Chipbreaker)

Shape	Item Number	Groove Width w		Max Depth of Cut		L		r_ϵ		Cermet	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	XN4	
										R	L
	GTM32100% $\frac{1}{4}$ 01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	○	○
	GTM32100% $\frac{1}{4}$	.039	1.00	.063	1.6	.079	2.0	.008	0.2	○	○
	GTM32145% $\frac{1}{4}$	.057	1.45	.106	2.7	.118	3.0	.008	0.2	○	○
	GTM32150% $\frac{1}{4}$	.059	1.50	.106	2.7	.118	3.0	.008	0.2	○	○
	GTM32200% $\frac{1}{4}$	.079	2.00	.106	2.7	.118	3.0	.008	0.2	○	○
	GTM32230% $\frac{1}{4}$	.091	2.30	.106	2.7	.118	3.0	.008	0.2	○	○
	GTM32250% $\frac{1}{4}$	.098	2.50	.106	2.7	.118	3.0	.008	0.2	○	○
	GTM32300% $\frac{1}{4}$	.118	3.00	.106	2.7	.118	3.0	.008	0.2	○	○

Right-Hand style shown

TWG Series

TWG

Side Turning Capable
Up to .059"(1.5mm) doc.

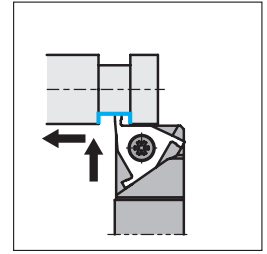
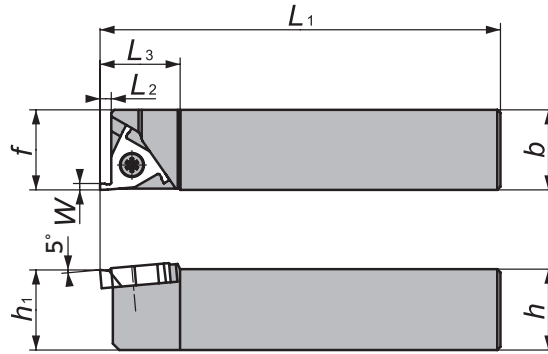



Figure-1

Right-Hand style shown

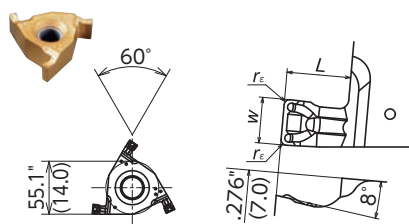
TWG Series - Toolholders

TWG

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		L_2		L_3		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TWG	TWG2012X	1	○		.472	12	.787	20	.472	12	4.724	120	.787	20	.138	3.5	.984	25	FSS25-5.0 × 10	RLR-20S
	TWG2016X	1	○		.630	16	.787	20	.630	16	4.724	120	.787	20	.138	3.5	.984	25	FSS10-5.0 × 14	LLR-20S
	TWG $\frac{1}{2}$ 2020K	1	○	○	.787	20	.787	20	.787	20	4.921	125	.787	20	.138	3.5	.984	25	FSS10-5.0 × 14	RLR-20S
	TWG $\frac{1}{2}$ 2525K	1	○	○	.984	25	.984	25	.984	25	4.921	125	.984	25	.138	3.5	.984	25	FSS10-5.0 × 14	RLR-20S

TWG Series - Inserts

TWG

Shape	Item Number	Groove Width w		Max Depth of Cut		L		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM1	
										R	L
 <p>Right-Hand style shown</p>	TWG20 $\frac{1}{2}$ 005	.079	2.0	.118	3.0	.138	3.5	.002	0.05	○	○
	TWG20 $\frac{1}{2}$ 020	.079	2.0	.118	3.0	.138	3.5	.008	0.2	○	○
	TWG25 $\frac{1}{2}$ 010	.098	2.5	.118	3.0	.138	3.5	.004	0.1	○	○
	TWG25 $\frac{1}{2}$ 030	.098	2.5	.118	3.0	.138	3.5	.012	0.3	○	○
	TWG30 $\frac{1}{2}$ 010	.118	3.0	.118	3.0	.138	3.5	.004	0.1	○	○
	TWG30 $\frac{1}{2}$ 030	.118	3.0	.118	3.0	.138	3.5	.012	0.3	○	○

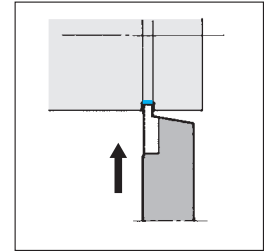
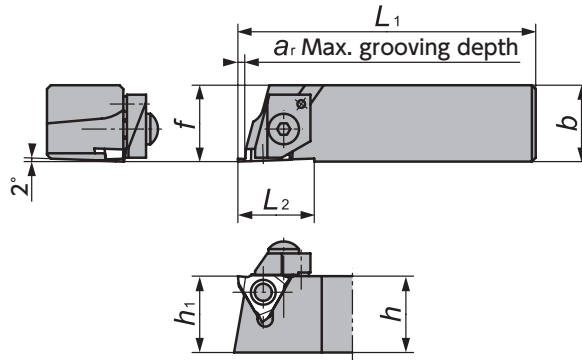
○ : 1-2 week delivery

Cutting condition **→T4**

GTM.43 Series - Toolholders

NGTN

No-Offset



(Parts)

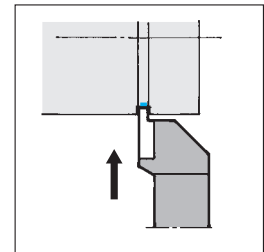
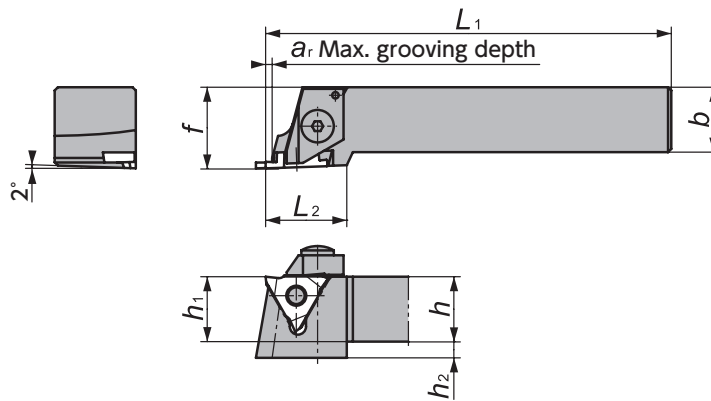
Clamp	Spring
CPR/L5S	ASG-5

Figure-1

Right-Hand style shown

NGTB

With Offset



(Parts)


Clamp	Spring
CPR/L5	ASG-5
CPR/L6	ASG-6

Figure-2

Right-Hand style shown

GTM.43 Series - Toolholders

NGTN / NTGB

Gage Insert	Item Number	Figure	Stock		Groove Width Range		a_r	h	b	h_1	L_1	f	L_2	h_2	Clamp Screw	Wrench
			R	L	(Inch)	(mm)										
 GTM43 GTMA43 GTMT43	NGTN%161643-20	1	○	○	.079-.137	2.00-3.49	.177 4.5	.630 16	.630 16	.630 16	3.071 78	.630 16	.787 20	.354 9	AOS-5 × 20	LW-2.5
	NGTN%161643-35	1	○	○	.138-.217	3.50-5.50	.177 4.5	.630 16	.630 16	.630 16	3.071 78	.630 16	.787 20	.354 9	AOS-5 × 20	LW-2.5
	NGTB%161643-00S	2	○	○	.039-.098	1.00-2.49	.118 3.0	.630 16	.630 16	.630 16	3.150 100	.787 20	.984 25	.354 9	AOS-5 × 25	LW-2.5
	NGTB%161643-20S	2	○	○	.079-.137	2.00-3.49	.177 4.5	.630 16	.630 16	.630 16	3.150 100	.787 20	.984 25	.354 9	AOS-5 × 25	LW-2.5
	NGTB%161643-35S	2	○	○	.138-.217	3.50-5.50	.177 4.5	.630 16	.630 16	.630 16	3.150 100	.787 20	.984 25	.354 9	AOS-5 × 25	LW-2.5

GTMA43.. Inserts - Carbide / Cermet

GTMT43 / GTMA43

Shape	Item Number	Groove Width <i>W</i>		Max Depth of Cut		<i>L</i>		<i>r_e</i>		<i>S</i>		Coated Carbide			
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3		DM4	
												R	L	R	L
	GTMT43145%L	.057	1.45	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43150%L	.059	1.50	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43175%L	.069	1.75	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43185%L	.073	1.85	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43200%L	.079	2.00	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43230%L	.091	2.30	.118	3.0	.138	3.5	.008	0.2	.187	4.76	○	○	○	○
	GTMT43250%L	.098	2.50	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43265%L	.104	2.65	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43280%L	.110	2.80	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43300%L	.118	3.00	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43330%L	.130	3.30	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43350%L	.138	3.50	.169	4.3	.217	5.5	.012	0.3	.187	4.76	○	○	○	○
	GTMT43400%L	.157	4.00	.169	4.3	.217	5.5	.016	0.4	.187	4.76	○	○	○	○
	GTMT43450%L	.177	4.50	.169	4.3	.217	5.5	.016	0.4	.187	4.76	○	○	○	○
	GTMT43500%L	.197	5.00	.169	4.3	.217	5.5	.016	0.4	.227	5.76	○	○	○	○
GTMT43550%L	.217	5.50	.169	4.3	.217	5.5	.016	0.4	.227	5.76	○	○	○	○	

GTMA43 / GTMA43 / GTM43

Shape	Item Number	Groove Width <i>W</i>		Max Depth of Cut		<i>L</i>		<i>r_e</i>		Coated Cermet		Cermet	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	C7Z		XN4	
										R	L	R	L
	GTMA43100%J01	.039	1.00	.063	1.6	.079	2.0	.004	0.1	○	○		
	GTMA43125%J01	.049	1.25	.063	1.6	.079	2.0	.004	0.1	○	○		
	GTMA43145%J01	.057	1.45	.118	3.0	.138	3.5	.004	0.1	○	○		
	GTMA43150%J	.059	1.50	.118	3.0	.138	3.5	.008	0.2	○	○		
	GTMA43175%J	.069	1.75	.118	3.0	.138	3.5	.008	0.2	○	○		
	GTMA43185%J	.073	1.85	.118	3.0	.138	3.5	.008	0.2	○	○		
	GTMA43200%J	.079	2.00	.118	3.0	.138	3.5	.008	0.2	○	○		
	GTMA43230%J	.091	2.30	.118	3.0	.138	3.5	.008	0.2	○	○		
	GTMA43250%J03	.098	2.50	.177	4.5	.217	5.5	.012	0.3	○	○		
	GTMA43265%J03	.104	2.65	.177	4.5	.217	5.5	.012	0.3	○	○		
	GTMA43280%J03	.110	2.80	.177	4.5	.217	5.5	.012	0.3	○	○		
	GTMA43300%J03	.118	3.00	.177	4.5	.217	5.5	.012	0.3	○	○		
	GTMA43330%J03	.130	3.30	.177	4.5	.217	5.5	.012	0.3	○	○		
GTMA43350%J03	.138	3.50	.177	4.5	.217	5.5	.012	0.3	○	○			
GTMA43400%J04	.157	4.00	.177	4.5	.217	5.5	.016	0.4	○	○			
GTMA43450%J04	.177	4.50	.177	4.5	.217	5.5	.016	0.4	○	○			
	GTM43200%L	.079	2.00	.118	3.0	.138	3.5	.008	0.2			○	○
	GTM43230%L	.091	2.30	.118	3.0	.138	3.5	.008	0.2			○	○
	GTM43250%L	.098	2.50	.165	4.2	.217	5.5	.008	0.2			○	○
	GTM43265%L	.104	2.65	.165	4.2	.217	5.5	.008	0.2			○	○
	GTM43300%L	.118	3.00	.165	4.2	.217	5.5	.008	0.2			○	○
	GTM43330%L	.130	3.30	.165	4.2	.217	5.5	.008	0.2			○	○
	GTM43350%L	.138	3.50	.165	4.2	.217	5.5	.008	0.2			○	○
	GTM43400%L	.157	4.00	.165	4.2	.217	5.5	.008	0.2			○	○
GTM43450%L	.177	4.50	.165	4.2	.217	5.5	.008	0.2			○	○	

GTMA43 (Full Radius style)

Shape	Item Number	Groove Width <i>W</i>		Max Depth of Cut		<i>L</i>		<i>r_e</i>		Coated Carbide		Coated Cermet	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3		C7Z	
										R	L	R	L
	GTMA43200%L10R	.079	2.00	.118	3.0	.138	3.5	.039	1.0	○			
	GTMA43300%L15R	.118	3.00	.177	4.5	.217	5.5	.059	1.5	○			
	GTMA43400%L20R	.157	4.00	.177	4.5	.217	5.5	.787	2.0	○			
	GTMA43100%LJ05R	.039	1.00	.063	1.6	.079	2.0	.020	0.50			○	
	GTMA43150%LJ075R	.059	1.50	.118	3.0	.138	3.5	.030	0.75			○	
	GTMA43200%LJ10R	.079	2.00	.118	3.0	.138	3.5	.039	1.00			○	
	GTMA43250%LJ125R	.098	2.50	.157	4.0	.217	5.5	.049	1.25			○	
GTMA43300%LJ15R	.118	3.00	.157	4.0	.217	5.5	.059	1.50			○		

○ : 1-2 week delivery

Cutting condition **T4**

Grooving / Side-Turning

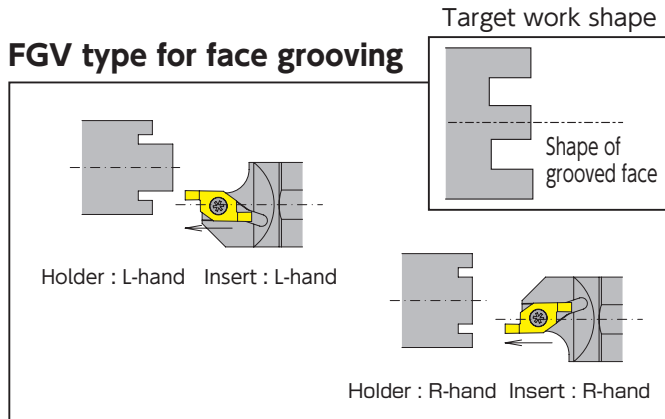
SATURN DUO

Face grooving tool

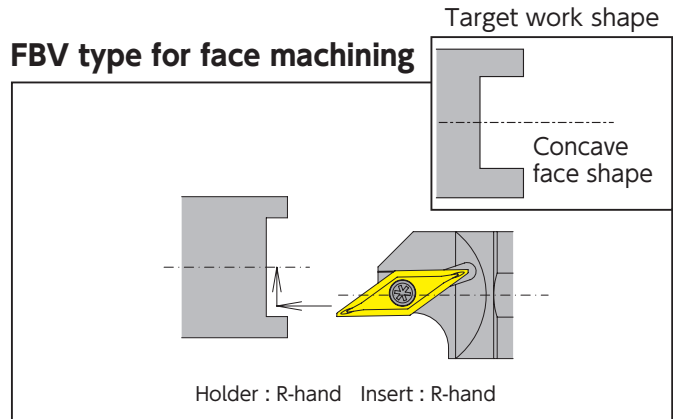
Features

- FGV type for face grooving and FBV type for face machining
- Economical double-corner specification
- Improved tool rigidity by optimizing the overhang and holder shape
- Gang-type, front-gang-type and sleeve holder types available

WATCH ON
YouTube



- Grooving is possible under a wide range of cutting conditions due to strengthened rigidity of both insert and holder
- Minimum machining diameter of $\phi .236"$, and groove width of $.039"$
- Left-hand types available for machining work with a boss



- Further improved face machining efficiency
- Minimum machining diameter of $\phi .315"$

Recommended Cutting Condition for FGV Style Tooling (for Face Grooving)

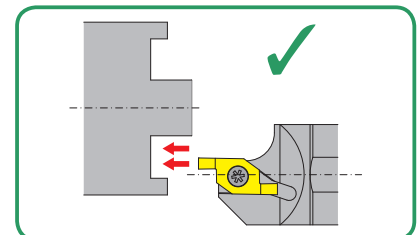
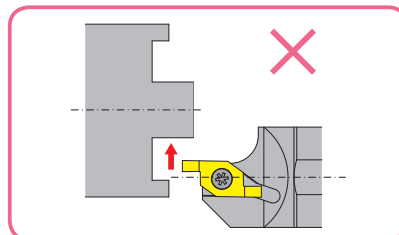
		Steel (Carbon Steel, Alloy Steel)	Stainless Steel (Excluding 303 SS)	Free Cutting Steel (Including 303 SS)	Non-ferrous Metals (Brass, Aluminum, Copper)
Speed (SFM)		160 (100 - 330)	130 (100 - 330)	200 (100 - 330)	260 (160 - 390)
Feed Rate (IPR)	Groove Depth (Inch)	.039	.0008 (.0004-.002)	.002 (.0004-.0025)	.002 (.0004-.0025)
		.059	.0008 (.0004-.002)	.0004 (.0002-.001)	.001 (.0004-.002)
		.079	.0004 (.0002-.001)	.0004 (.0002-.001)	.0008 (.0004-.002)

☆Tips for Successful Face Grooving

- ① Run multiple passes if turning wider grooves.
Make sure to groove from outer diameter to inner diameter to avoid any interference.
- ② If lines appear on the boss section, slow down feed rate when retracting the tool.
- ③ If scratch appears at the end of the boss, slow down the feed rate.
- ④ If groove surface looks torn, either slow down feed rate or increase speed.
- ⑤ If groove bottom looks torn with a speed and feed condition, increase the speed.

☆Note

Side turning cannot be performed with FGV style tooling



Recommended Cutting Conditions for FBV Style Tooling (for Face Grooving)

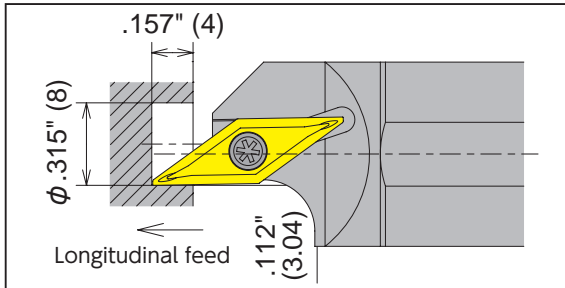
Minimum machining diameter: $\phi .315"$ (8mm) WET

		Steel (Carbon Steel, Alloy Steel)	Stainless Steel (Excluding 303 SS)	Free Cutting Steel (Including 303 SS)	Non-ferrous Metals (Brass, Aluminum, Copper)
Speed (SFM)		160 (100 - 330)	130 (100 - 330)	200 (100 - 330)	260 (160 - 390)
Feed Rate (IPR)	Groove Depth (Inch)	.039	.0008 (.0004-.002)	.002 (.0004-.0025)	.002 (.0004-.0025)
		.059	.0008 (.0004-.002)	.001 (.0004-.002)	.001 (.0004-.002)
		.079	.0004 (.0002-.001)	.0008 (.0004-.002)	.0008 (.0004-.002)

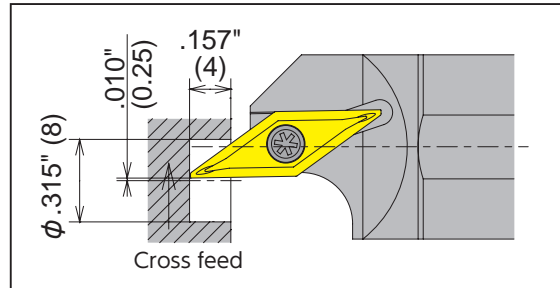
* When machining difficult materials where chip control is problematic (such as 304SS), it is recommended that the machining be carried out in several stages.

☆Machining process

- For materials with good machinability, it is possible to machine up to $.157"$ (4mm) deep at a low feed rate in a single pass for both longitudinal feed and cross feed.



Cutting in Z direction : Longitudinal feed



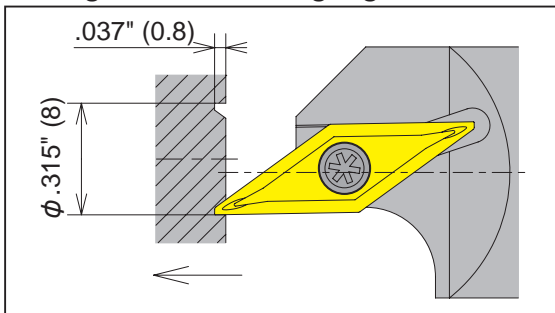
Cutting in X direction : Cross feed

☆Useful tips for machining

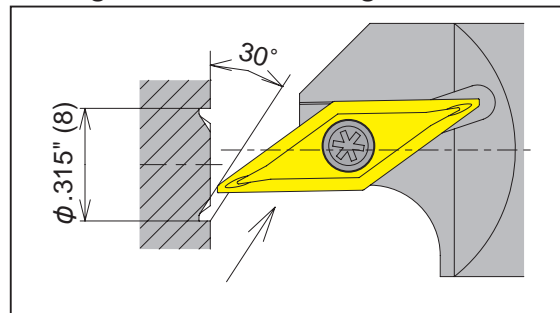
When burrs occur on ID surface, it is recommended to perform the cut in 2 passes, one for roughing and one for finishing as shown in the following procedure:

☆Example of 2-pass machining: Leave $.008"$ (0.2mm) on roughing then run a finish cut

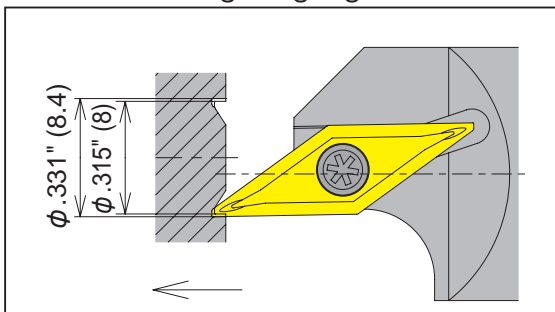
1 Longitudinal feed (roughing)



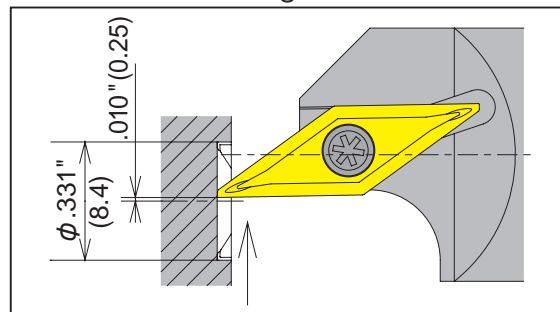
2 Longitudinal feed (finishing)



3 Slant machining (roughing)



4 Cross feed (finishing)



FGV Series

FGV

For Gang-style machine

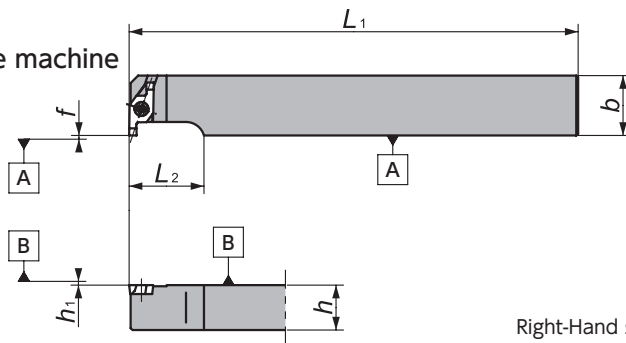
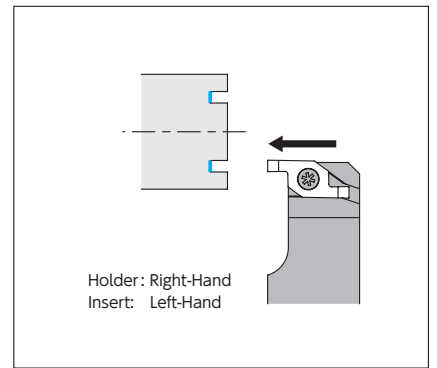


Figure-1

Right-Hand style shown
Takes Left-Hand insert



CH-FGV

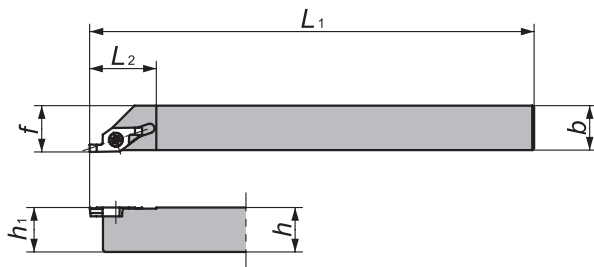
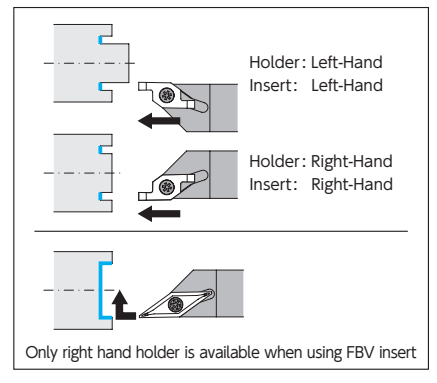


Figure-2

Right-Hand style shown



DS-FGV

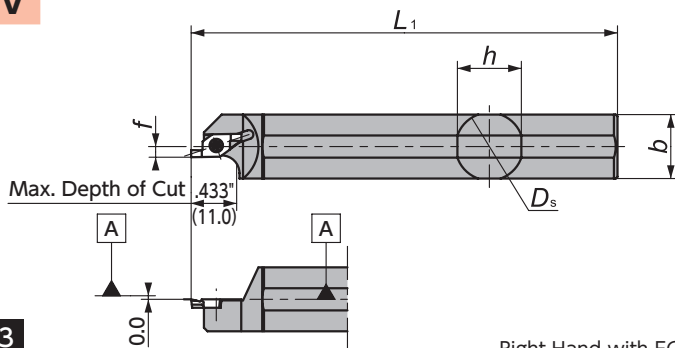
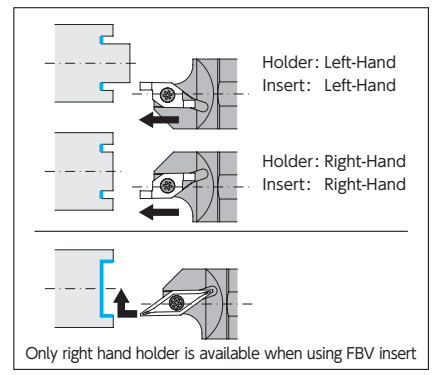


Figure-3

Right-Hand with FGV style shown



FGV - Toolholders

FGV

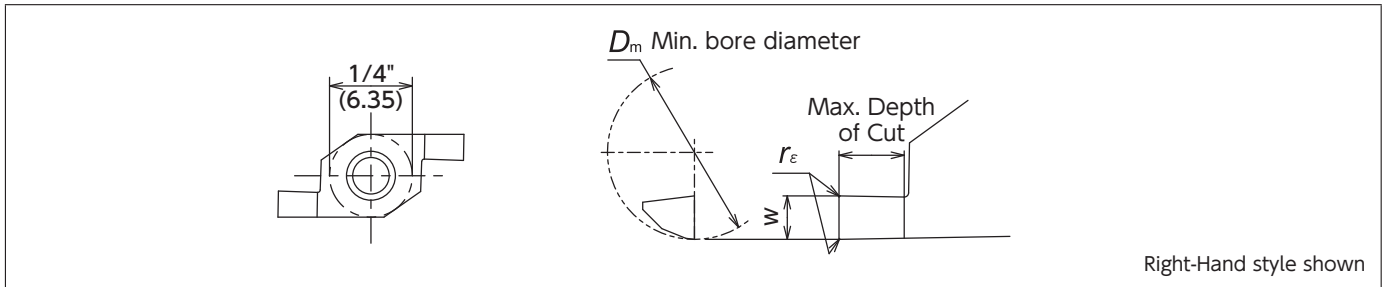
Gage Insert	Item Number	Figure	Stock		h (Inch) (mm)	b (Inch) (mm)	h ₁ (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	L ₂ (Inch) (mm)	Clamp Screw	Wrench
			R	L								
FGV...L	FGV%1016	1	○	○	.413 10	.630 16	0 0.0	4.724 120	0 0.0	.787 20	LRIS-2.5 × 7	CLR-15S
	FGV%1216	1	○	○	.472 12	.630 16	0 0.0	4.724 120	0 0.0	.787 20	LRIS-2.5 × 7	CLR-15S
	FGV%1616	1	○	○	.630 16	.630 16	0 0.0	4.724 120	0 0.0	.787 20	LRIS-2.5 × 7	CLR-15S
FGV FBV	CH-FGV%1010	2	○	○	.413 10	.394 10	.394 10	4.724 120	.413 10.5	.709 18	LRIS-2.5 × 7	CLR-15S
	CH-FGV%1212	2	○	○	.472 12	.472 12	.472 12	4.724 120	.492 12.5	.709 18	LRIS-2.5 × 7	CLR-15S
	CH-FGV%1616	2	○	○	.630 16	.630 16	.630 16	4.724 120	.650 16.5	.709 18	LRIS-2.5 × 7	CLR-15S



DS-FGV

Gage Insert	Item Number	Figure	Stock		D _s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	L ₁ (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
			R	L							
FGV FBV	DS-FGV%16-012	3	○	○	.630 16.000	.591 15	.591 15	3.150 80	.118 3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%19	3	○	○	3/4 19.050	.709 18	.709 18	4.724 120	.118 3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%20	3	○	○	.787 20.000	.748 19	.748 19	4.724 120	.118 3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%22	3	○	○	.866 22.000	.827 21	.827 21	4.724 120	.118 3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%22M	1	○	○	.866 22.000	.827 21	.827 21	5.906 150	.118 3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%25-MET	3	○	○	.984 25.000	.945 24	.945 24	5.906 150	.118 3.0	LRIS-2.5 × 7	CLR-15S
	DS-FGV%25	3	○	○	1 25.400	.965 24.5	.965 24.5	4.724 120	.118 3.0	LRIS-2.5 × 7	CLR-15S

FGV - Inserts

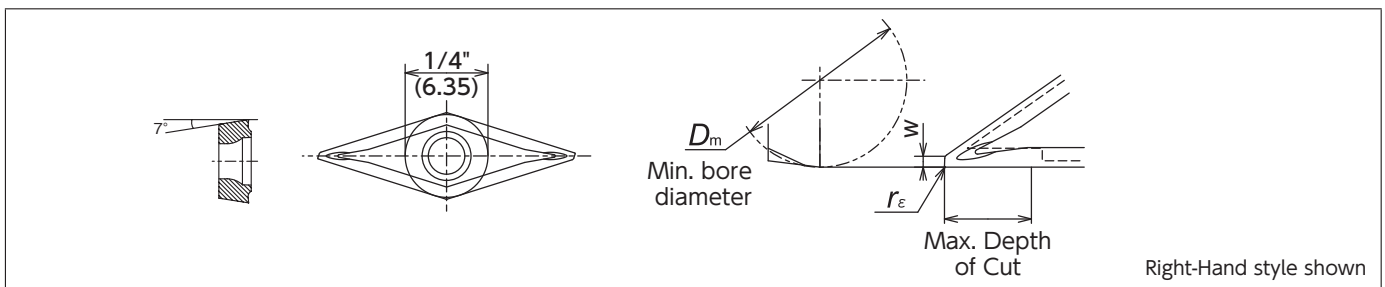
FGV




Shape	Item Number	Groove Width w		Min. Bore Diameter		Max Depth of Cut		Thickness		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM4	
												R	L
 Right-Hand style shown	FGV100RB00D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.000	0.00	○	
	FGV100RB05D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.002	0.05	○	
	FGV150RB00D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.000	0.00	○	
	FGV150RB05D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.002	0.05	○	
	FGV200RB00D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.000	0.00	○	
	FGV200RB05D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.002	0.05	○	
 Left-Hand style shown	FGV100LB00D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.000	0.00		○
	FGV100LB05D6	.039	1.0	.236	6.0	.059	1.5	3/32	2.38	.002	0.05		○
	FGV150LB00D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.000	0.00		○
	FGV150LB05D6	.059	1.5	.236	6.0	.079	2.0	3/32	2.38	.002	0.05		○
	FGV200LB00D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.000	0.00		○
	FGV200LB05D6	.079	2.0	.236	6.0	.118	3.0	3/32	2.38	.002	0.05		○

FBV - Inserts

FBV



Shape	Item Number	Groove Width w		Min. Bore Diameter		Max Depth of Cut		Thickness		r_ϵ		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM4	
												R	L
 Right-Hand style shown	FBV40%105D8AM3	.020	0.5	.315	8.0	.157	4.0	.102	2.58	.002	0.05	○	
	FBV40%115D8AM3	.020	0.5	.315	8.0	.157	4.0	.102	2.58	.006	0.15	○	

Note: Only CH-FGVR and DS-FGVR can take FBV Right hand insert.

○ : 1-2 week delivery

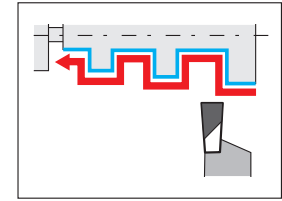
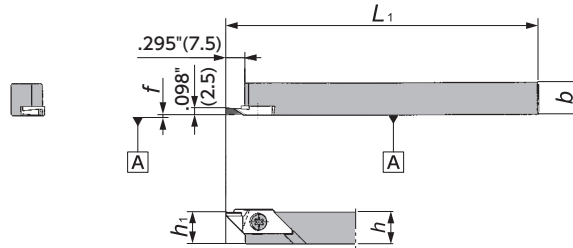
Cutting condition **T20**

GTPA Series

Best tool for Aluminum Spool Machining

GTPA

Screw Accessible from both sides

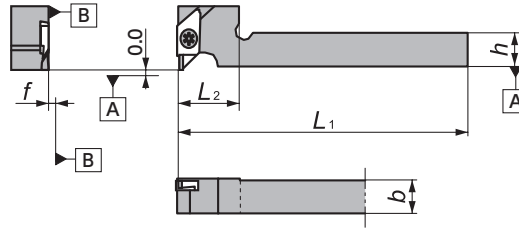


Right-Hand style shown

Figure-1

Y-GTPA

Screw Accessible from both sides



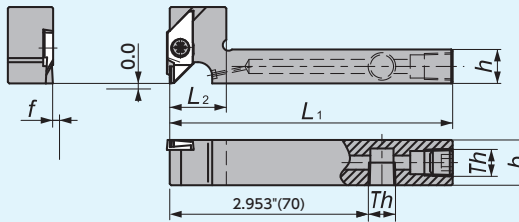
Right-Hand style shown

Figure-2

Y-GTPA-OH (Coolant through)

Screw Accessible from both sides

NEW



Th (Thread type)
Metric size holder: Rc1/8 (PT1/8)

Right-Hand style shown

Figure-3

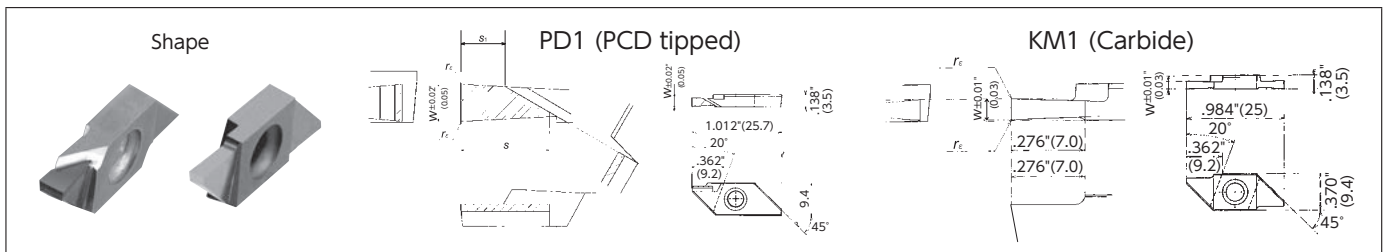
GTPA - Toolholders

GTPA

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		L ₂		Th	Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
	GTPA [®] 1010	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	—	—	—	LRIS-4 × 10PW	CLR-15S
	GTPA [®] 1212	1	○	○	.472	12	.472	12	.472	12	4.724	120	.004	0.1	—	—	—	LRIS-4 × 10PW	CLR-15S
	GTPA [®] 1616	1	○	○	.630	16	.630	16	.630	16	4.724	120	.004	0.1	—	—	—	LRIS-4 × 12PW	CLR-15S
	Y-GTPA [®] 1216	2	○	○	.472	12	.630	16	—	—	4.724	120	.004	0.1	.787	20	—	LRIS-4 × 12PW	CLR-15S
	Y-GTPA [®] 1216HS-OH	3	○	○	.472	12	.630	16	—	—	2.756	70	.004	0.1	.787	20	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S
Y-GTPA [®] 1216H-OH	3	○	○	.630	16	.630	16	—	—	2.756	70	.004	0.1	.984	25	Rc1/8(PT1/8)	LRIS-4 × 12PW	CLR-15S	

GTPA Series - Inserts

GTPA



Item Number	Groove Width w		Max Depth of Cut		s		s ₁		r _ε		Coated Carbide	PCD
	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
GTPA20FRN01-082	.079	2.0	.118	3.0	.157	4.0	.079	2.0	-.004	-0.1		○
GTPA20FRN01	.079	2.0	.197	5.0	.236	6.0	.157	4.0	-.004	-0.1		○
GTPA20FRN01	.079	2.0	.236	6.0	—	—	—	—	-.004	-0.1	○	
GTPA25FRN01-081	.098	2.5	.118	3.0	.157	4.0	.024	1.0	-.004	-0.1		○
GTPA25FRN01	.098	2.5	.197	5.0	.236	6.0	.118	3.0	-.004	-0.1		○
GTPA25FRN01	.098	2.5	.236	6.0	—	—	—	—	-.004	-0.1	○	

○ : 1-2 week delivery

⦿ : Coolant through

Cutting condition → T4

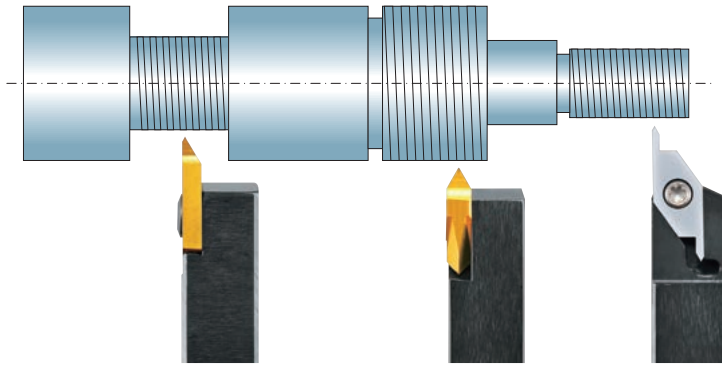
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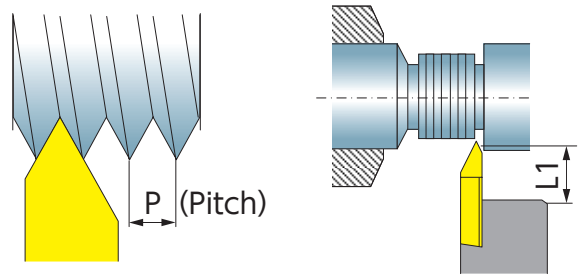
Threading

- **Threading Tools** **U2**
- **Recommended Cutting Conditions**..... **U4**
- **General Information** **U5**
- **Tool List** **U6**
 - CSV series.....U6
 - TTPS seriesU8
 - TTP series U10
 - TTMH series U14
 - Thread Whirling U16

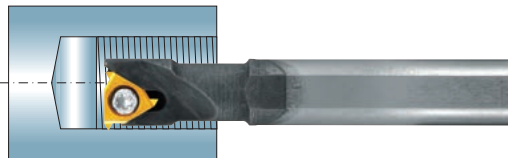
NTK Threading Tools - Product Lines



Insert	CSVT →U6		TTPS →U8
	CSV	DS-CSV	CTPS
Holder	 →U6	 →U6	 →U8
Profile	60°		60°
Pitch	127 - 51 TPI (0.2 - 0.5mm)		127 - 17 TPI (0.2 - 1.5mm)
L1	.118" (3.0mm)		.197" (5.0mm)



Insert	TTP →U11			TTMH32 →U14		
	TTP	DS-TTP	CH-TTP	STTN	DS-STT	NTTB
Holder	 →U10	 →U10	 →U10	 →U14	 →U14	 →U14
Profile	60° / 55°			60°		
Pitch	127 - 13 TPI (0.2 - 2.0mm)			31 - 9 TPI (0.8 - 3.0mm)		
L1	.217" (5.5mm)			.157" (4.0mm)	.118" (3.0mm)	.157" (4.0mm)



Insert	SBT →V20	TMN →V22
	NBH	TGC / HN
Holder	 →V14	 →V22
Profile	60°	60°
Pitch	51 - 15 TPI (0.5 - 1.75mm)	63 - 34 TPI (0.4 - 0.75mm)
L1	.024" - .071" (0.6 - 1.8mm)	.028" - .039" (0.7 - 1.0mm)

Tools and Thread Standards

Thread Type		ISO Metric	American Unified	Whitworth	Parallel Pipe	American Tapered Pipe	Tapered Pipe
		M	UNC UNE	W	G(PF)	NPT	R(PT)
		 Internal thread External thread	 Internal thread External thread	 Internal thread External thread	 Internal thread External thread	 Internal thread External thread	 Internal thread External thread
Profile	60°	60°	55°	55°	60°	55°	
Tool	Pitch	mm	TPI	TPI	TPI	TPI	TPI
External Thread	 CSVT	0.2 - 0.5	80 - 56	—	—	—	—
	 TTPS	0.2 - 1.5	80 - 18	—	—	(18)	—
	 TTP	0.2 - 2.0	80 - 13	40/24/20/18/16	(28/19)	(18/14)	(28/19)
	 TTMH	0.8 - 3.0	24 - 9	—	—	18/14/11.5	—
Internal Thread	 SBT	0.5 - 1.75	36 - 16	—	—	(18)	—
	 TGC/HN	0.4 - 0.75	56 - 36	—	—	—	—

(Please check Radius [Flat] shape over inserts)

Recommended Cutting Conditions

Threading

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	VM1		VM1 / ZM3		QM3		
	2nd choice	ZM3		QM3		VM1 / ZM3		
Cutting Speed (SFM)		75 125 225	100 200 275	130 230 330	150 300 600	150 300 500		

*Unless your machine is equipped with high speed threading program, please set the feed rate to 80 IPM or lower to prevent making incomplete threads

Recommended Depth of Cut (DOC) for Each Pass

TTP, TTPS, TTMH, TTMA, CSVT

Thread Type		Pitch (mm)	Total DOC (mm)	Number of pass	1	2	3	4	5	6	7	8	9	10	
Metric (60°)	Male thread	0.20	0.20	4	0.08	0.06	0.04	0.02							
		0.25	0.24	4	0.10	0.08	0.04	0.02							
		0.30	0.28	5	0.08	0.07	0.07	0.04	0.02						
		0.35	0.32	5	0.10	0.09	0.07	0.04	0.02						
		0.40	0.35	5	0.12	0.10	0.07	0.04	0.02						
		0.45	0.39	5	0.16	0.10	0.07	0.04	0.02						
		0.50	0.33	5	0.10	0.10	0.07	0.04	0.02						
		0.60	0.40	6	0.10	0.10	0.08	0.06	0.04	0.02					
		0.70	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02					
		0.75	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02				
		0.80	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02				
		1.00	0.71	8	0.15	0.15	0.12	0.10	0.08	0.06	0.03	0.02			
		1.25	0.90	9	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.05	0.02		
1.50	1.09	10	0.22	0.20	0.15	0.12	0.10	0.10	0.08	0.05	0.05	0.02			

Thread Type		Pitch (TPI)	Total DOC (inch)	Number of pass	1	2	3	4	5	6	7	8	9	10
American Unified	Male thread	80	.008	4	.003	.003	.002	.001						
		72	.009	4	.004	.003	.002	.001						
		64	.011	5	.003	.003	.002	.002	.001					
		56	.012	5	.004	.003	.002	.002	.001					
		48	.015	5	.005	.004	.003	.002	.001					
		44	.016	6	.005	.004	.003	.002	.002	.001				
		40	.018	6	.005	.004	.004	.003	.002	.001				
		36	.020	6	.005	.005	.004	.003	.002	.001				
		32	.022	7	.005	.005	.004	.003	.002	.002	.001			
		28	.025	7	.006	.005	.004	.004	.003	.002	.001			
		24	.030	8	.007	.006	.005	.004	.003	.002	.002	.001		
		20	.033	9	.007	.006	.005	.004	.003	.003	.002	.002	.001	
		18	.038	9	.008	.007	.006	.005	.004	.003	.002	.002	.001	
		16	.036	9	.007	.007	.006	.005	.004	.003	.002	.002	.001	
		14	.043	10	.008	.008	.007	.006	.005	.003	.002	.002	.002	.001

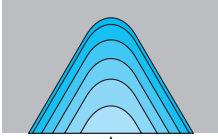
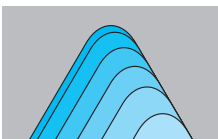
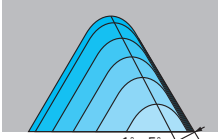
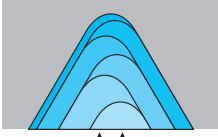
■ Cutting Conditions for STICK DUO

For 600 - 1500 RPM Recommended Depth of Cut (DOC) for Each Pass

Metric Thread		Number of Pass																				
Pitch (mm)	Total DOC (mm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.5	0.3	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—
0.7	0.43	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—
0.75	0.46	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—
0.8	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—
1.0	0.62	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—
1.25	0.76	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—
1.5	0.92	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.04	0.03	0.03	0.02	0.01	—	—	—
1.75	1.09	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—

UNF Thread		Number of Pass																			
Pitch (TPI)	Total DOC (inch)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
36	.017	.002	.002	.002	.002	.002	.002	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—	—
32	.019	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—
28	.022	.003	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—
24	.026	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—
20	.031	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—
18	.034	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.0008	.0004	—	—	—
16	.039	.003	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—

■ Infeed Threading Method

	Features	
	Advantage	Disadvantage
 <p>Radial Infeed</p>	<ul style="list-style-type: none"> ● Most popular and easiest method ● Easy to change parameter ● Uniform wear on both sides of insert 	<ul style="list-style-type: none"> ● Chip evacuation ● Vibration due to higher cutting force ● Ineffective for large pitch threading
 <p>Flank Infeed</p>	<ul style="list-style-type: none"> ● 2nd most popular and easy method ● Effective for larger pitch and gummy material thanks to lower cutting force ● Excellent chip evacuation 	<ul style="list-style-type: none"> ● Larger flank wear on right side of the insert ● Difficult to change cutting depth per cut
 <p>Modified Flank Infeed</p>	<ul style="list-style-type: none"> ● Reduce flank wear on right side ● Effective for larger pitch and gummy material thanks to lower cutting force ● Excellent chip evacuation 	<ul style="list-style-type: none"> ● Difficult to program ● Difficult to change cutting depth per cut
 <p>Incremental Infeed</p>	<ul style="list-style-type: none"> ● Uniform flank wear ● Effective for larger pitch and gummy material thanks to lower cutting force 	<ul style="list-style-type: none"> ● Difficult to program ● Difficult to change cutting depth per cut ● Chip evacuation

Threading

CSV Series

Best for up to .200" diameter material

CSV-NC For Gang-style machine

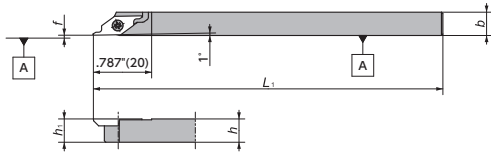


Figure-1

Right-Hand style shown

CSV For Cam-style machine

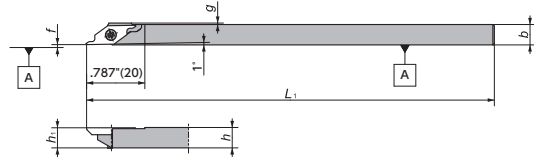


Figure-2

Right-Hand style shown

DS-CSVL

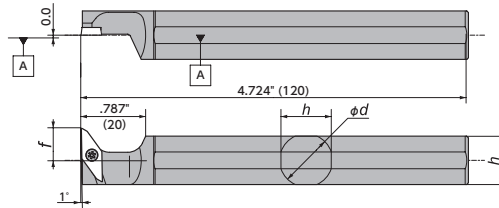




Figure-3

Left-Hand style shown
Takes Right-hand insert

CSV_{R/L} / CSV_{R/L}-NC

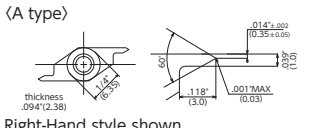
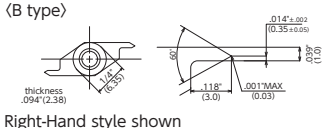
Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		g		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11..	CSV _{R/L} 06-IN-NC	1	●	●	3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08-IN-NC	1	●	●	1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08NC	1	○	○	.315	8	.315	8	.315	8	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08NC-F	1	○	○	.315	8	.315	8	.315	8	4.724	120	0-.004	0.0-0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10GXNC	1	○	○	.394	10	.394	10	.394	10	3.346	85	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10NC	1	○	○	.394	10	.394	10	.394	10	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 12NC	1	○	○	.472	12	.472	12	.472	12	4.724	120	.004	0.1	—	—	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 07GX	2	○	○	.275	7	.275	7	.275	7	3.346	85	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 07	2	○	●	.275	7	.275	7	.275	7	5.512	140	.004	0.1	.020	0.5	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08GX	2	○	○	.315	8	.315	8	.315	8	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 08	2	○	●	.315	8	.315	8	.315	8	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 095	2	○	○	.374	9.5	.374	9.5	.374	9.5	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 10	2	○	○	.394	10	.394	10	.394	10	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CSV _{R/L} 12GX	2	○	○	.472	12	.472	12	.472	12	3.346	85	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S
CSV _{R/L} 12	2	○	●	.472	12	.472	12	.472	12	5.512	140	.004	0.1	0.0	0.0	LRIS-2.5 × 7	CLR-15S	

DS-CSVL (Takes right-hand insert)

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 CSV..11FR..	DS-CSVL15	3	●		5/8	15.875	.591	15	.591	15	4.724	120	.394	10	LRIS-2.5 × 7	CLR-15S

CSV_T - Threading

Mirror finish

Shape	Item Number	Chip-breaker	r_e		Pitch		Coated Carbide	
			(TPI)	(mm)	(TPI)	(mm)	VM1	
							R	L
(A type)  Right-Hand style shown	CSV _T 11F _{R/L} P60-035A	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●
(B type)  Right-Hand style shown	CSV _T 11F _{R/L} P60-035B	No	-R.001	R0.03 MAX	127 - 51	0.2 - 0.5	●	●

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

CSVT Style



Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch			Applicable Inserts
	#1	#2	(TPI)	(inch)	(mm)	
Coarse		No.1-64 UNC	64	.016	0.3969	CSVT11F $\frac{1}{2}$ P60-035A CSVT11F $\frac{1}{2}$ P60-035B
	No.2-56 UNC		56	.018	0.4536	
Fine	No.0-80 UNF		80	.013	0.3175	
		No.1-72 UNF	72	.014	0.3528	
	No.2-64 UNF		64	.016	0.3969	
		No.3-56 UNF	56	.018	0.4536	

Metric (M) Threads / Fine and Coarse

	Pitch (mm)				
	0.50	0.40	0.35	0.25	0.20
M1				Coarse	Fine
M2		Coarse		Fine	
M3	Coarse		Fine		
M4	Fine				
M5					

Recommended Depth of Cut (DOC) for Each Pass (mm)

TTP, TTPS, TTMH, TTMA, CSVT

Thread Type		Pitch (mm)	Total DOC (mm)	Number of pass	1	2	3	4	5	6	7	8	9	10
Metric (60°)	Male thread	0.20	0.20	4	0.08	0.06	0.04	0.02						
		0.25	0.24	4	0.10	0.08	0.04	0.02						
		0.30	0.28	5	0.08	0.07	0.07	0.04	0.02					
		0.35	0.32	5	0.10	0.09	0.07	0.04	0.02					
		0.40	0.35	5	0.12	0.10	0.07	0.04	0.02					
		0.45	0.39	5	0.16	0.10	0.07	0.04	0.02					
		0.50	0.33	5	0.10	0.10	0.07	0.04	0.02					
		0.60	0.40	6	0.10	0.10	0.08	0.06	0.04	0.02				
		0.70	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02				
		0.75	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02			
		0.80	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02			
		1.00	0.71	8	0.15	0.15	0.12	0.10	0.08	0.06	0.03	0.02		
		1.25	0.90	9	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.05	0.02	
1.50	1.09	10	0.22	0.20	0.15	0.12	0.10	0.10	0.08	0.05	0.05	0.02		

● : Stock

○ : 1-2 week delivery

Ⓜ : Mirror finish

CSV series → **O27**

Cutting condition → **U4**

CTPS Series

CTPS

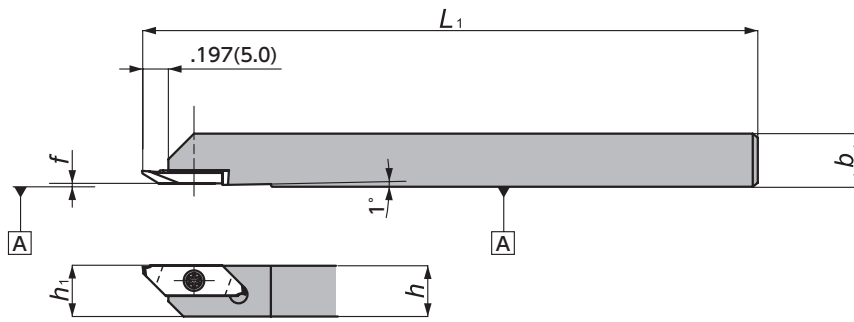



Figure-1

Right-Hand style shown

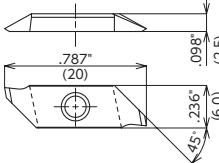
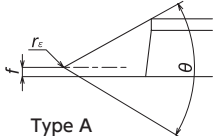
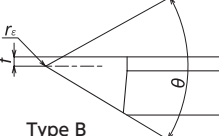
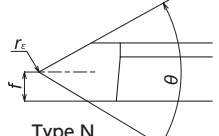

CTPS Series - Toolholders

CTPS (Takes right-hand inserts)

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
	CTPSR06-IN	1	●		3/8	3/8	3/8	3/8	3/8	3/8	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR08-IN	1	●		1/2	1/2	1/2	1/2	1/2	1/2	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR10	1	○		.394	10	.394	10	.394	10	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S
	CTPSR12	1	○		.472	12	.472	12	.472	12	4.724	120	0.0	0.0	LRIS-2.5 × 7	CLR-15S

CTPS Series - Inserts

TTPS - Threading

Shape	Item Number	Type	θ	f		r_ϵ		Pitch		Coated Carbide	
				(Inch)	(mm)	(Inch)	(mm)	(TPI)	(mm)	VM1	ZM3
	TTPS60FR4A	A	60°	.016	0.4	.002 MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	○	○
	TTPS60FR4B	B	60°	.016	0.4	.002 MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	○	○
	TTPS60FR8A	A	60°	.031	0.8	R.002	(0.05)	63 - 21	0.4 - 1.25	○	○
	TTPS60FR8B	B	60°	.031	0.8	R.002	(0.05)	63 - 21	0.4 - 1.25	○	○
	TTPS60FR-N	N	60°	.049	1.25	R.004	(0.1)	25 - 17	1.0 - 1.5	○	○

Right-Hand style shown

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

TTPS Style

Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch		Applicable Inserts	
	#1	#2	(TPI)	(mm)		
Coarse		No.1-64 UNC	64	0.397	TTPS60FR4A (B)	
	No.2-56 UNC		56	0.454	TTPS60FR4A (B) TTPS60FR8A (B)	
		No.3-48 UNC	48	0.529		
	No.4-40 UNC		40	0.635		
	No.5-40 UNC		40	0.635		
		No.6-32 UNC		32	0.794	TTPS60FR4A (B) TTPS60FR8A (B)
	No.8-32 UNC		32	0.794		
	No.10-24 UNC		24	1.058	TTPS60FR4A (B) TTPS60FR8A (B) TTPS60FR-N	
		No.12-24 UNC	24	1.058		
		1/4-20 UNC		20	1.270	TTPS60FR-N
	5/16-18 UNC		18	1.411		
Fine	No.0-80 UNF		80	0.318	TTPS60FR4A (B)	
		No.1-72 UNF	72	0.353		
	No.2-64 UNF		64	0.397		
		No.3-56 UNF	56	0.454	TTPS60FR4A (B) TTPS60FR8A (B)	
	No.4-48 UNF		48	0.529		
	No.5-44 UNF		44	0.577		
	No.6-40 UNF		40	0.635		
	No.8-36 UNF		36	0.706	TTPS60FR8A (B)	
	No.10-32 UNF		32	0.794		
		No.12-28 UNF	28	0.907	TTPS60FR8A (B)	
		1/4-28 UNF	28	0.907		
		5/16-24 UNF	24	1.058	TTPS60FR8A (B) TTPS60FR-N	
		3/8-24 UNF	24	1.058		
		7/16-20 UNF	20	1.270		
		1/2-20 UNF	20	1.270		
		9/16-18 UNF	18	1.411	TTPS60FR-N	
	5/8-18 UNF	18	1.411			

Metric (M) Threads / Fine and Coarse

Thread Type			Pitch (mm)										
#1	#2	#3	1.50	1.25	1.00	0.80	0.75	0.70	0.50	0.40	0.35	0.25	0.20
M1												Coarse	Fine
M2										Coarse		Fine	
M3									Coarse		Fine		
M4								Coarse	Fine				
M5						Coarse							
M6	M7				Coarse								
M8				Coarse	Fine								
	M9			Fine									
M10			Coarse										
	M11												
M12			Fine	Fine									
	M14												
	M15												
M16													
	M17												
	M18												
M20													
	M22												
M24													
		M25											
		M26											
	M27			Fine									
		M28											

Covered Thread Pitch Range

Inserts	Pitch	
	(TPI)	(mm)
TTPS60FR4A (B)	127 - 34	0.2 - 0.75
TTPS60FR8A (B)	63 - 21	0.4 - 1.25
TTPS60FR-N	25 - 17	1.0 - 1.5

● : Stock

○ : 1-2 week delivery

CTPS series → O31

Cutting condition → U4

TTP Series

TTP

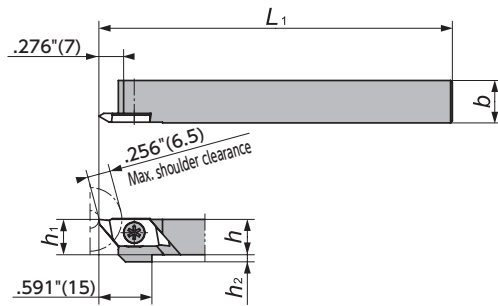
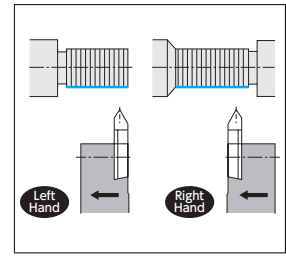


Figure-1



Right-Hand style shown

CH-TTP

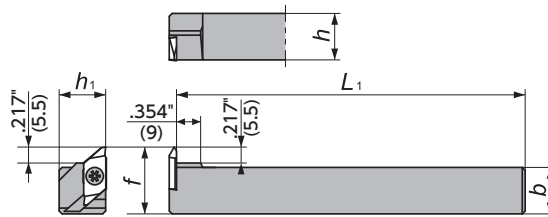
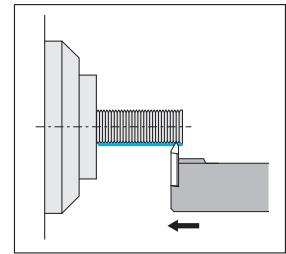


Figure-2



Left-Hand style shown
Takes Right-hand insert

DS-TTP

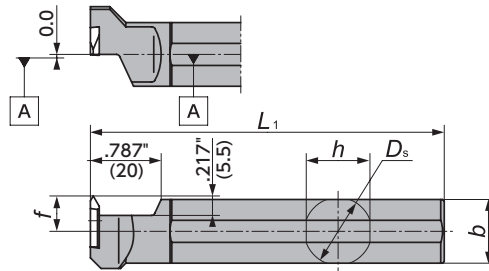
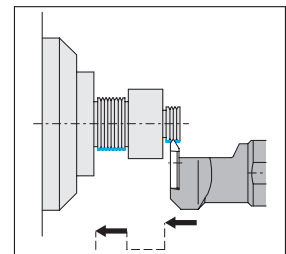



Figure-3




Left-Hand style shown
Takes Right-hand insert

TTP_{1/4} / CH-TTPL

Gage Insert	Item Number	Figure	Stock		h		b		h ₁		L ₁		f		h ₂		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TTP.. TTP..FR	TTP _{1/4} 06-IN	1	●	●	3/8		3/8		3/8		4.724	120	—	—	.079	2	LRIS-4 × 10PW	CLR-15S
	TTP _{1/4} 08-IN	1	●	●	1/2		1/2		1/2		4.724	120	—	—	0	0	LRIS-4 × 10PW	CLR-15S
	TTP _{1/4} 10-IN	1	●	●	5/8		5/8		5/8		4.724	120	—	—	0	0	LRIS-4 × 12PW	CLR-15S
	TTP _{1/4} 08	1	○	○	.315	8	.394	10	.315	8	4.724	120	—	—	.157	4	LRIS-4 × 12PW	CLR-15S
	TTP _{1/4} 10	1	○	○	.394	10	.394	10	.394	10	4.724	120	—	—	.079	2	LRIS-4 × 12PW	CLR-15S
	TTP _{1/4} 12GX	1	○	○	.472	12	.472	12	.472	12	3.346	85	—	—	0	0	LRIS-4 × 12PW	CLR-15S
	TTP _{1/4} 12	1	●	●	.472	12	.472	12	.472	12	4.724	120	—	—	0	0	LRIS-2.5 × 7	CLR-15S
	TTP _{1/4} 16H	1	○	○	.630	16	.630	16	.630	16	3.937	100	—	—	0	0	LRIS-2.5 × 7	CLR-15S
	TTP _{1/4} 16	1	○	○	.630	16	.630	16	.630	16	4.724	120	—	—	0	0	LRIS-2.5 × 7	CLR-15S
	TTP _{1/4} 20F	1	○	○	.787	20	.787	20	.787	20	3.150	80	—	—	0	0	LRIS-4 × 10	LLR-25S-20 × 65
CH-TTPL16	2		○	○	.630	16	.630	16	.630	16	4.724	120	.906	23	—	—	LRIS-4 × 10	LLR-25S-20 × 65
CH-TTPL20	2		○	○	.787	20	.787	20	.787	20	4.724	120	1.063	27	—	—	LRIS-4 × 10	LLR-25S-20 × 65

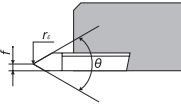
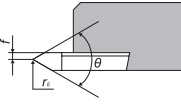
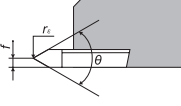
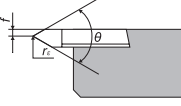
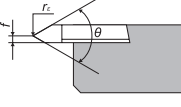
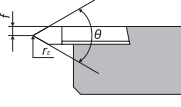
DS-TTP

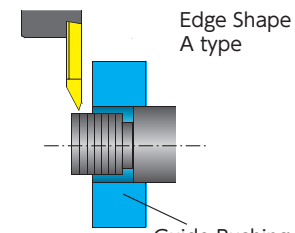
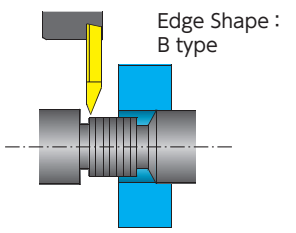
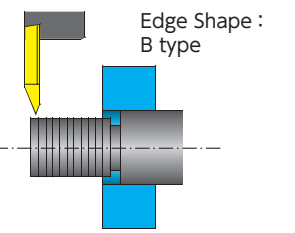
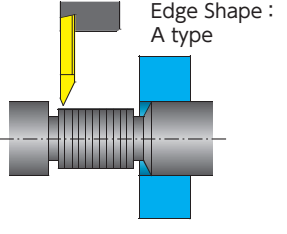
Gage Insert	Item Number	Figure	Stock		D _s		h		b		L ₁		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
 TTP..	DS-TTP _{1/4} 16F	3		○	.630	16.000	.591	15	.591	15	3.150	80	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{1/4} 19	3		○	3/4	19.050	.709	18	.709	18	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{1/4} 20	3		●	.787	20.000	.748	19	.748	19	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{1/4} 22	3		●	.866	22.000	.827	21	.827	21	4.724	120	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{1/4} 25-MET	3		○*	.984	25.000	.945	24	.945	24	5.906	150	.118	3.0	LRIS-4 × 10	LLR-25S-20 × 65
	DS-TTP _{1/4} 25	3		●	1	25.400	.945	24	.945	24	5.906	150	.394	10.0	LRIS-4 × 10	LLR-25S-20 × 65

* To be released in August 2015.

TTP Series - Inserts

TTP - Threading

Shape	Item Number	θ	f		r_ϵ		Pitch		Coated Carbide		Carbide			
			(Inch)	(mm)	(Inch)	(mm)	(TPI)	(mm)	QM3		KM1			
									R	L	R	L	R	L
Right-Hand	A type 	TTP60FR2A	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 63	0.2 - 0.4			○		
		TTP60FR4A	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	●		●		
		TTP60FR4AS \mathcal{M}	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○
		TTP60FR8A	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25	●		●		
		TTP60FR8AS \mathcal{M}	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○
		TTP55FR8A	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-			●		
	B type 	TTP60FR2B	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 63	0.2 - 0.4			○		
		TTP60FR4B	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75	●		●		
		TTP60FR4BS \mathcal{M}	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○
		TTP60FR8B	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25	●		●		
		TTP60FR8BS \mathcal{M}	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○
		TTP55FR8B	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-			●		
	N type 	TTP60FR-N	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5	●		●		
		TTP60FR-NS \mathcal{M}	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5					○
		TTP60FR-N02	60°	.049	1.25	(R.008)	(R0.2)	16 - 13	1.5 - 2.0	●		○		
Left-Hand	A type 	TTP60FL2A	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 63	0.2 - 0.4			○		
		TTP60FL4A	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75		●	●		
		TTP60FL4AS \mathcal{M}	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○
		TTP60FL8A	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25		●	●		
		TTP60FL8AS \mathcal{M}	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○
		TTP55FL8A	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-				●	
	B type 	TTP60FL2B	60°	.008	0.2	(.002) MAX Flat	(0.05) MAX Flat	127 - 63	0.2 - 0.4			○		
		TTP60FL4B	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75		●	●		
		TTP60FL4BS \mathcal{M}	60°	.016	0.4	(.002) MAX Flat	(0.05) MAX Flat	127 - 34	0.2 - 0.75					○
		TTP60FL8B	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25		○	●		
		TTP60FL8BS \mathcal{M}	60°	.031	0.8	(R.002)	(R0.05)	63 - 21	0.4 - 1.25					○
		TTP55FL8B	55°	.031	0.8	(R.002)	(R0.05)	48 - 16	-				●	
	N type 	TTP60FL-N	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5		●	●		
		TTP60FL-NS \mathcal{M}	60°	.049	1.25	(R.004)	(R0.1)	25 - 17	1.0 - 1.5					○
		TTP60FL-N02	60°	.049	1.25	(R.008)	(R0.2)	16 - 13	1.5 - 2.0		●	○		

Right Hand Toolholders				Left Hand Toolholders			
 <p>Edge Shape : A type</p>		 <p>Edge Shape : B type</p>		 <p>Edge Shape : B type</p>		 <p>Edge Shape : A type</p>	
Toolholder	TTPR	Toolholder	TTPR	Toolholder	TTPL	Toolholder	TTPL
Insert	TTP..FR..A	Insert	TTP..FR..B	Insert	TTP..FL..B	Insert	TTP..FL..A

● : Stock ○ : 1-2 week delivery

\mathcal{M} : Mirror finish

Cutting condition 

TTP Style



Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch		Applicable Inserts
			(TPI)	(mm)	
Coarse (UNC)		No.1-64 UNC	64	0.3969	TTP60F $\frac{3}{4}$ -2A (B) TTP60F $\frac{3}{4}$ -4A, AS (B, BS)
		No.2-56 UNC	56	0.4536	TTP60F $\frac{3}{4}$ -4A, AS (B, BS) TTP60F $\frac{3}{4}$ -8A, AS (B, BS)
		No.3-48 UNC	48	0.5292	
		No.4-40 UNC	40	0.6350	
		No.5-40 UNC	40	0.6350	TTP60F $\frac{3}{4}$ -8A, AS (B, BS)
		No.6-32 UNC	32	0.7938	
		No.8-32 UNC	32	0.7938	TTP60F $\frac{3}{4}$ -8A, AS (B, BS) TTP60F $\frac{3}{4}$ -N(S)
		No.10-24 UNC	24	1.0583	
		No.12-24 UNC	24	1.0583	TTP60F $\frac{3}{4}$ -N(S)
		1/4-20 UNC	20	1.2700	
		5/16-18 UNC	18	1.4111	TTP60F $\frac{3}{4}$ -N02
		3/8-16 UNC	16	1.5875	
		7/16-14 UNC	14	1.8143	TTP60F $\frac{3}{4}$ -N02
		1/2-13 UNC	13	1.9538	
Fine (UNF)		No.0-80 UNF	80	0.3175	TTP60F $\frac{3}{4}$ -2A (B) TTP60F $\frac{3}{4}$ -4A, AS (B, BS)
		No.1-72 UNF	72	0.3528	
		No.2-64 UNF	64	0.3969	
		No.3-56 UNF	56	0.4536	TTP60F $\frac{3}{4}$ -4A, AS (B, BS) TTP60F $\frac{3}{4}$ -8A, AS (B, BS)
		No.4-48 UNF	48	0.5292	
		No.5-44 UNF	44	0.5773	
		No.6-40 UNF	40	0.6350	TTP60F $\frac{3}{4}$ -8A, AS (B, BS) TTP60F $\frac{3}{4}$ -N(S)
		No.8-36 UNF	36	0.7056	
		No.10-32 UNF	32	0.7938	TTP60F $\frac{3}{4}$ -N(S)
		No.12-28 UNF	28	0.9071	
		1/4-28 UNF	28	0.9071	TTP60F $\frac{3}{4}$ -N(S)
		5/16-24 UNF	24	1.0583	
		3/8-24 UNF	24	1.0583	TTP60F $\frac{3}{4}$ -N(S)
		7/16-20 UNF	20	1.2700	
		1/2-20 UNF	20	1.2700	TTP60F $\frac{3}{4}$ -N(S)
		9/16-18 UNF	18	1.4111	
		5/8-18 UNF	18	1.4111	TTP60F $\frac{3}{4}$ -N02
		3/4-16 UNF	16	1.5875	
	7/8-14 UNF	14	1.8143	TTP60F $\frac{3}{4}$ -N02	

■ Metric (M) Threads / Fine and Coarse

Thread Type		Pitch (mm)												
		2.00	1.50	1.25	1.00	0.80	0.75	0.70	0.50	0.40	0.35	0.25	0.20	
M1													Coarse	Fine
M2													Coarse	Fine
M3													Coarse	Fine
M4													Coarse	Fine
M5													Coarse	Fine
M6													Coarse	Fine
M7													Coarse	Fine
M8													Coarse	Fine
M9													Coarse	Fine
M10													Coarse	Fine
M11													Coarse	Fine
M12													Coarse	Fine
M14													Coarse	Fine
M15													Coarse	Fine
M16													Coarse	Fine
M17													Coarse	Fine
M18													Coarse	Fine
M20													Coarse	Fine
M22													Coarse	Fine
M24													Coarse	Fine
M25													Coarse	Fine
M26													Coarse	Fine
M27													Coarse	Fine
M28													Coarse	Fine
M30													Coarse	Fine
M32													Coarse	Fine

Covered Thread Pitch Range		
Inserts	Pitch	
	(TPI)	(mm)
TTP60F ^R 2A (B)	127 - 63	0.2 - 0.4
TTP60F ^R 4A, AS (B, BS)	127 - 34	0.2 - 0.75
TTP60F ^R 8A, AS (B, BS)	63 - 21	0.4 - 1.25
TTP60F ^R L-N (S)	25 - 17	1.0 - 1.5
TTP60F ^R L-N02	16 - 13	1.5 - 2.0

TTP60F^R L-N02 can be used up to M150 when the pitch is 2.0 mm

■ Whitworth

Applicable Insert	Thread Type	Pitch	
		(TPI)	(mm)
TTP55F ^R 8A (B)	W 1/8	40	0.63
	W 3/16	24	1.06
	W 1/4	20	1.27
	W 5/16	18	1.41
	W 3/8	16	1.54

STTN Series

STTN

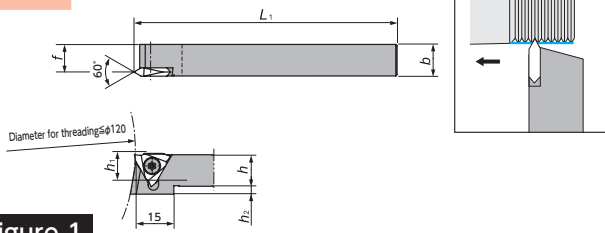


Figure-1

Right-Hand style shown

NTTB

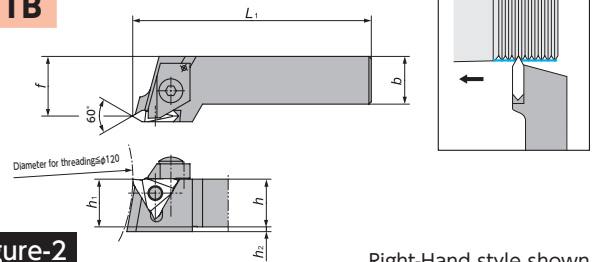


Figure-2

Right-Hand style shown

DS-STT

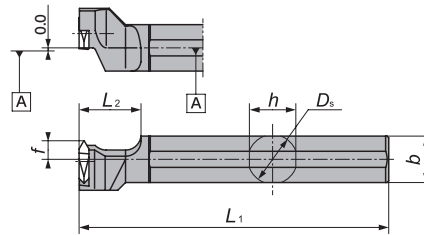


Figure-3

Left-Hand style shown
Takes Right-hand insert

STTN^{R/L} / NTTB^{R/L}

Gage Insert	Item Number	Figure	Stock		h		b		h_1		L_1		f		h_2		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TTMH3260	STTN ^{R/L} 101032	1	○		.394	10	.394	10	.394	10	3.150	80	.335	8.5	.197	5.0	LR-S-4 × 9	RLR-20S
	STTN ^{R/L} 121232	1	○		.472	12	.472	12	.472	12	3.150	80	.413	10.5	.197	5.0	LR-S-4 × 9	RLR-20S
	STTN ^{R/L} 121232-K	1	○		.472	12	.472	12	.472	12	4.912	125	.413	10.5	.197	5.0	LR-S-4 × 9	RLR-20S
	NTTB ^{R/L} 161632	2	○		.630	16	.630	16	.630	16	4.724	120	.787	20.0	.157	4.0	—	LW-2.5
	NTTB ^{R/L} 202032	2	○		.787	20	.787	20	.787	20	5.512	140	.984	25.0	0.0	0.0	—	LW-2.5

DS-STT^{R/L}

Gage Insert	Item Number	Figure	Stock		D_s		h		b		L_1		f		Clamp Screw	Wrench
			R	L	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
TTMH3260	DS-STT ^{R/L} 14F	3	○		.551	14.000	.512	13	.512	13	3.150	80	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT ^{R/L} 15H	3	○		5/8	15.875	.591	15	.591	15	3.937	100	.236	6.0	LR-S-4 × 9	RLR-20S
	DS-STT ^{R/L} 16X*	3	○		.630	16.000	.591	15	.591	15	3.346	85	.236	6.0	LR-S-4 × 9	RLR-20S

STTN Series - Inserts

TTMH

Shape	Item Number	d		s		r_e		Pitch		Coated Carbide		Coated Cermet	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	ZM3		C7X	
										R	L	R	L
	TTMH3260R010	3/8	9.525	1/8	3.18	.004	0.10	31 - 9	0.8 - 3.0	○		○	
	TTMH3260R015	3/8	9.525	1/8	3.18	.006	0.15	25 - 9	1.0 - 3.0	○		○	
	TTMH3260R020	3/8	9.525	1/8	3.18	.008	0.20	16 - 9	1.5 - 3.0	○			
	TTMH3260R025	3/8	9.525	1/8	3.18	.010	0.25	14 - 9	1.75 - 3.0			○	

Right-Hand style shown

TTMH Style



Unified Standard (UN, UNF, UNC) Threads

	Thread Type		Pitch		Applicable Inserts
	#1	#2	(TPI)	(mm)	
Coarse (UNC)	No.10-24 UNC		24	1.0583	TTMH3260R010 TTMH3260R015
		No.12-24 UNC	24	1.0583	
	1/4-20 UNC		20	1.2700	
	5/16-18 UNC		18	1.4111	
					TTMH3260R010,R015 TTMH3260R020
	3/8-16 UNC		16	1.5875	
	7/16-14 UNC		14	1.8143	TTMH3260R010,R015 TTMH3260R020,R025
	1/2-13 UNC		13	1.9538	
	9/16-12 UNC		12	2.1167	
	5/8-11 UNC		11	2.3091	
3/4-10 UNC		10	2.5400		
7/8-9 UNC		9	2.8222		
Fine (UNF)		No.12-28 UNF	28	0.9071	TTMH3260R010
	1/4-28 UNF		28	0.9071	TTMH3260R010 TTMH3260R015
	5/16-24 UNF		24	1.0583	
	3/8-24 UNF		24	1.0583	
	7/16-20 UNF		20	1.2700	
	1/2-20 UNF		20	1.2700	TTMH3260R010,R015 TTMH3260R020
	9/16-18 UNF		18	1.4111	
	5/8-18 UNF		18	1.4111	
	3/4-16 UNF		16	1.5875	TTMH3260R010,R015 TTMH3260R020,R025
	7/8-14 UNF		14	1.8143	
	1-12 UNF		12	2.1167	
	1 1/8-12 UNF		12	2.1167	
	1 1/4-12 UNF		12	2.1167	
	1 3/8-12 UNF		12	2.1167	
1 1/2-12 UNF		12	2.1167		

Metric (M) Threads / Fine and Coarse

Thread Type			Pitch (mm)							
#1	#2	#3	3.00	2.50	2.00	1.75	1.50	1.25	1.00	0.80
M5										Coarse
M6									Coarse	
	M7								Fine	
M8		M9						Coarse	Fine	
M10		M11					Coarse	Fine	Fine	
M12		M14			Coarse			Fine	Fine	
		M15			Coarse				Fine	
M16		M17							Fine	
	M18			Coarse	Fine				Fine	
M20		M22			Fine				Fine	
		M25							Fine	
M24		M26	Coarse						Fine	
	M27		Coarse		Fine				Fine	
		M28			Fine				Fine	
M30		M32	Fine		Fine				Fine	
		M35			Fine				Fine	
M36		M38	Fine		Fine				Fine	
		M39			Fine				Fine	
	M39	M40	Fine		Fine				Fine	

Covered Thread Pitch Range

Inserts	Pitch	
	(TPI)	(mm)
TTMH3260R010	31 - 9	0.8 - 3.0
TTMH3260R015	25 - 9	1.0 - 3.0
TTMH3260R020	16 - 9	1.5 - 3.0
TTMH3260R025	14 - 9	1.75 - 3.0

● : Stock ○ : 1-2 week delivery

Cutting condition → U4

Thread Whirling



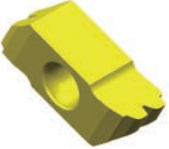
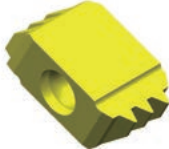
Features



- NTK's unique patented design technology makes precise and correct inserts possible the first time, *without any redesign or remanufacture even if it is a multiple-lead thread*
- The sharper cutting edges produce a better surface finish and longer tool life than competitor's inserts

Form Double-lead or Multiple-lead with Single Pass

Patented

	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm gear
Work material	Ti-6Al-4V ELI	brass
Work appearance		
Insert appearance		
Major Dia.	φ.157"(4.0mm)	φ.278"(7.0mm)
Minor Dia.	φ.094"(2.4mm)	φ.185"(4.7mm)
Lead [Pitch×No. of Lead]	.135"(3.42mm) [.067"×2(1.71mm×2)]	.193"(4.9mm) [.064"×3(1.63mm×3)]

- Can reduce cycle time by more than half
- NTK can achieve what other competitors cannot

Double-lead Bone Screw Process Example

- 1 1st thread whirl at taper part
- 2 Rotate the bar 180° and whirl the 2nd thread on same part as 1
- 3 Thread whirl whole straight part
- 4 Thread whirl at very last part to get two-exits, after back of bar has been backed up a half lead (one pitch) and rotated 180°

Special Item Capability

- Even though almost all bone screw shapes are special, NTK thread whirling inserts can make the correct shape of thread the first time, without any redesign and remanufacture
- Inserts will be delivered in 5 weeks after the order is received
- Within a 3 week time period, expedite delivery is available with an expedite fee
- Basically NTK thread whirling inserts are ground with topping and coated

Recommended Cutting Conditions

No. of teeth		9	6	4	
Conditions					
Main spindle	RPM	10 - 40	10 - 25	7 - 15	Faster RPM reduces machining time
	F	5400 - 14400	3600 - 9000	2500 - 5400	
Whirling cutter	RPM	1500 - 4000			
Feed Rate		Same as thread-lead			
Bar stock	φ	~φ .400" *		~φ .200"	* For cutter with φ 12mm ID
Work Material		Ti-6Al-4V ELI / 316SS / Titanium			

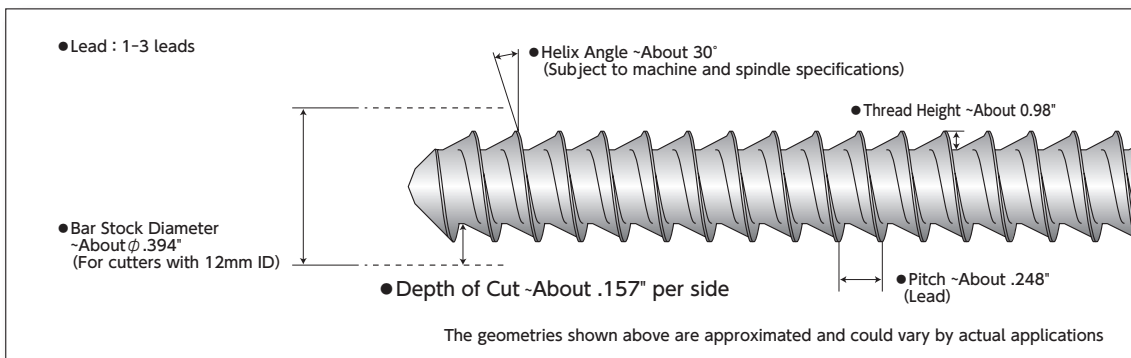
- Formula for calculating thread whirling process time

$$T \text{ (Seconds)} = \frac{60 \times \text{Thread length}}{\text{Main spindle rpm} \times \text{Feed rate (Thread lead)}}$$

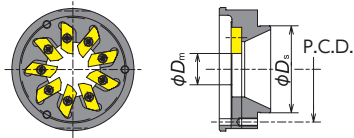
Ex.) Double lead / 2" length / .100" lead (2×.050" pitch) / 30 rpm

$$T \text{ (Seconds)} = \frac{60 \times 2}{30 \times .100"} = 40 \text{ Seconds}$$

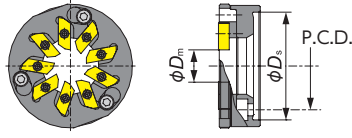
Applicable Thread Geometry (Approximated)



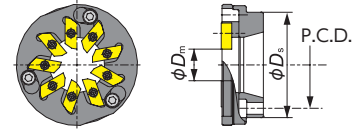
Thread Whirling System



Type 1



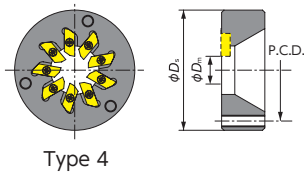
Type 2
Quick-change



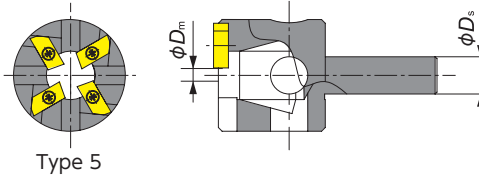
Type 3
Quick-change

Machine make	Model	Location	Spindle make	Spindle model	Helix angle	NTK Thread whirling system	Stock	No. of tooth	ϕD_m (mm)	Type	ϕD_s	P.C.D.	Mount adapter screw								
CITIZEN	M ₄ 32-VIII	Gang	CITIZEN	BTW-4000	0° - 15°	TWC9C0746HP1	●	9	$\phi 12$	1	$\phi 46$	$\phi 35$	M3								
	L20E/L20X	Gang		BTW-3000	0° - 15°	TWC9C1040HP1 TWC6C1040HP1 TWC9C1040HP1-D16	●	9	$\phi 12$	1	$\phi 33$	$\phi 40$	M3 (Provided with spindle)								
	A20	Gang		BTW-2000	±25°		●	6	$\phi 12$												
	M ₄ 32			0° - 25°	●		9	$\phi 16$													
	C32			±25°																	
	L20			+20° - -25°																	
	M20			±25°																	
	M ₃ 32																				
	C12/16	Gang		CITIZEN	LTR0170	±15°	TWC9C1037P2	●	9	$\phi 12$	2	$\phi 37$	$\phi 30.5$	CS0310(M3)							
	M12/16	Turret			LTR0168																
	M12/16 III		MSW105																		
	M20/32 III		KSW110																		
	L20	Gang	LTR0183	±15°	TWC9J1040P2	●	9	$\phi 12$	2	$\phi 40$	$\phi 32.5$	H-M4 × 12									
	M20/32	Turret	LTR0169																		
K16	Attachment	PCM	GSW-101	±15°	TWC6P1620HP1-D9	●	6	$\phi 9$	1	$\phi 32$	$\phi 26$	M4 (Provided with spindle)									
L20	Gang		LSW-101-L20	±10°	TWC9P1340P2	●	9	$\phi 12$	2	$\phi 40$	$\phi 32.5$	M4 (Provided with spindle)									
M12/16	Turret		MSW-101																		
M20/M32			KSW-101																		
STAR	ECAS-12/20	Attachment	STAR	54178	±10°	TWC9S1640P2	●	9	$\phi 12$	3	$\phi 40$	$\phi 33$	CS04148S(M4)								
	SB-12R/16R/20R			0M171	-20° - 0°																
	SR-20J/20R III			68172	-20° - 0°																
	SR-20R IV/SR-32J/SW-20																				
	ECAS-20T/ST-20	Turret		59172	±20°																
	ECAS-32T			58171	±10°																
	ST-38			43156	±20°																
	SV-12			45172	±10°																
	SV-20			42173	±10°																
	SV-32			43172	±10°																
	SV-38R			43156	±20°																
SV-12R II	Attachment	10159	±20°	TWC4S1433HP1	●*	4	$\phi 8$	7	$\phi 33$	$\phi 27$	CS0310(M3)										
TSUGAMI	BH20/BH38	Turret	3263-Y481	±10°	TWC9TS2252P2	●	9	$\phi 12$	3	$\phi 52$	$\phi 42$	CS0515(M5)									
	BS20	Attachment	3214-Y1371	±10°	TWC9TS20550P2	●	9	$\phi 16$	3	$\phi 50$	$\phi 40$	CS0515(M5)									
	SS20/SS26/SS32 B0265/B0266 - II B0325/B0326 - II	Attachment	3268-Y450 3268-Y451	0° - 10°	TWC9TS2244HP1	●	9	$\phi 12$	4	$\phi 52$	$\phi 44$	CS0520(M5)									
	S205/S206		3281-Y450 3281-Y451	0° - 20°	TWC9TS1944HP1	●	9	$\phi 12$	4	$\phi 52$	$\phi 44$	CS0520(M5)									
	B0123/B0124/B0125/ B0126 - II / III		3220-Y6540 3220-Y6541	0° - 25°	TWC9TS1644HP1	●	9	$\phi 12$	4	$\phi 52$	$\phi 44$	CS0515(M5)									
	B0203/B0204/B0205/ B0205/B0206 - II / III			0° - 30°	TWC9TS1044HP1	●	9	$\phi 12$	4	$\phi 52$	$\phi 44$	CS0515(M5)									
	SS20/SS26/SS32		3268-Y271	0° - 10°	TWC9TS1952P2BK	●	9	$\phi 12$	4	$\phi 52$	$\phi 38$	CS0515(M5)									
				0° - 20°	TWC9TS1652P2BK	●	9	$\phi 12$	4	$\phi 52$	$\phi 38$	CS0515(M5)									
	SS207/SS267/SS327	-	Using B-axis		0° - 15°	TWC4TS3010HP1	●	4	$\phi 7$	5	$\phi 10$	For single-corner inserts only									

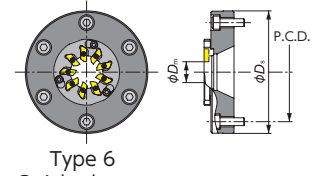
*To be released in July 2015.



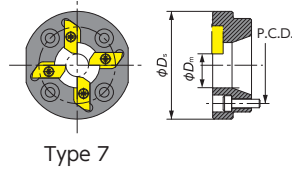
Type 4



Type 5



Type 6
Quick-change



Type 7

Machine make	Model	Location	Spindle make	Spindle model	Helix angle	NTK Thread whirling system	Stock	No. of tooth	ϕD_m (mm)	Type	ϕD_s	P.C.D.	Mount adapter screw
TORNOS	DECO 10/10a	Attachment	TORNOS	224-1900	$\pm 15^\circ$	TWC6TO11542HP1	●	6	$\phi 12$	4	$\phi 42$	$\phi 32$	CS0410(M4)
	Evo DECO 10/10			242-1900									
	DECO 13a/13e			226-1900	$\pm 15^\circ$	TWC9TO10540P2	●	9	$\phi 12$	3	$\phi 40$	$\phi 31$	CS0410(M4)
	Evo DECO 16/10			243-1900									
	Swiss ST26			246-1900									
	DECO 20a			223-1900									
	DECO 26a			225-1900	$\pm 25^\circ$	TWC9TO12050P2-D18	●	9	$\phi 18$	3	$\phi 50$	$\phi 40$	CS0410(M4)
	Sigma 20			234-2750									
Sigma 32	236-2750												
HASEGAWA	JS-1W	—	HASEGAWA	—	$0^\circ - 20^\circ$	TWC9HA22594P2	●	9	$\phi 16$	6	$\phi 94$	$\phi 76$	CS0620(M6)

■ Spare Insert Holder (Cartridge)

Item number	No. of tooth	ϕD_m (mm)	Compatible cutters
TWC6HP2	6	12	For Type 2 and Type 3*
TWC9HP2	9	12	For Type 2 and Type 3*
TWC9HP2-D16	9	16	For TWC9TS20550P2 and Type 6

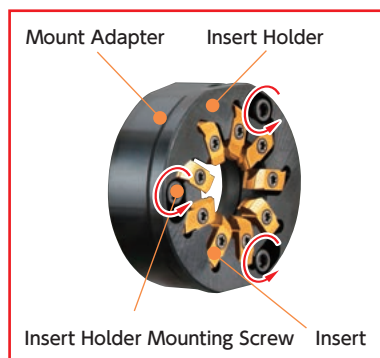
Note: Insert holder comes with insert screws and wrench
 Insert holder mounting screw is not included
 *Cannot be used for TWC9TS20550P2, TWC9TO12050P2-D18 and TWC9HA22594P2

■ 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 Screw		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

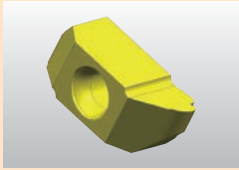


③ Detach the Insert Holder without removing the Mounting Screws

● : Stock ○ : 1-2 week delivery

Basic Insert Grade

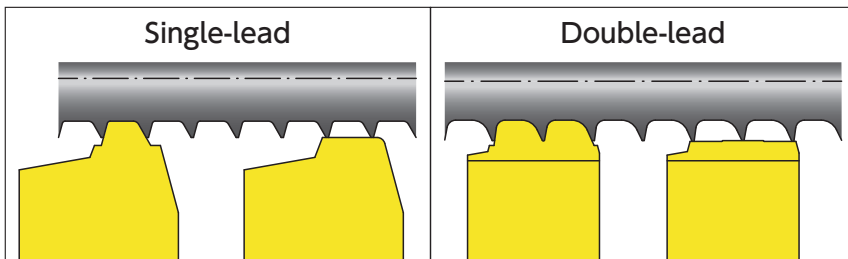
ZM3



- 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

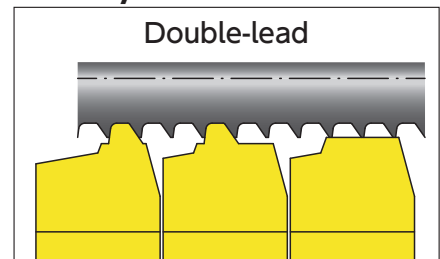
NTK Experiences and Solutions Example

For absolute flat on OD



- Two insert combination brings absolute flat on OD to meet the drawing

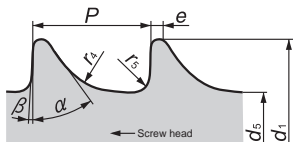
For tiny thread



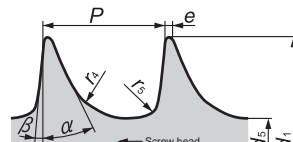
- NTK's Thread Whirling system can machine small diameter multi-lead screws to spec, with lower tool pressure, by using several types of specially designed and accurately ground inserts on the cutter.

Standard Thread Whirling Inserts (two-sided) for ISO Style Threads

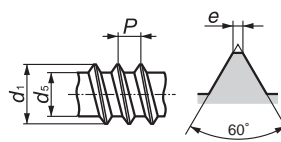
(Note: Must use Thread whirling cutters with 12mm ϕ Dm dimension. See page U18-19 to find ϕ Dm for each cutter.)



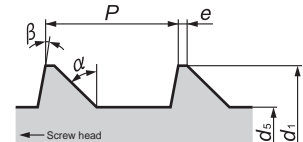
ISO5835 HA



ISO5835 HB



ISO9268 HC





ISO9268 HD

Item number	ISO Standard	d_1	d_5	P	e	r_4	r_5	α	β	Metric dimensions		
										Supposition material Dia.	Coated Carbide ZM3	
TW5835-HA1.5-D12	ISO5835	1.5 ⁰ _{0.15}	1.1 ⁰ _{0.1}	0.5	0.1	0.3	0.1	35°	3°	ϕ 8	○	
TW5835-HA2.0-D12		2.0 ⁰ _{0.15}	1.3 ⁰ _{0.1}	0.6	0.1	0.4	0.1	35°	3°		○	
TW5835-HA2.7-D12		2.7 ⁰ _{0.15}	1.9 ⁰ _{0.15}	1	0.1	0.6	0.2	35°	3°		○	
TW5835-HA3.5-D12		3.5 ⁰ _{0.15}	2.4 ⁰ _{0.15}	1.25	0.1	0.8	0.2	35°	3°		○	
TW5835-HA4.0-D12		4.0 ⁰ _{0.15}	2.9 ⁰ _{0.15}	1.5	0.1	0.8	0.2	35°	3°		○	
TW5835-HA4.5-D12		4.5 ⁰ _{0.15}	3.0 ⁰ _{0.15}	1.75	0.1	1	0.3	35°	3°		○	
TW5835-HA5.0-D12		5.0 ⁰ _{0.15}	3.5 ⁰ _{0.15}	1.75	0.1	1	0.3	35°	3°		ϕ 10	○
TW5835-HB4.0-D12	ISO5835	4.0 ⁰ _{0.15}	1.9 ⁰ _{0.15}	1.75	0.1	0.8	0.3	25°	5°	ϕ 8	○	
TW5835-HB6.5-D12		6.5 ⁰ _{0.15}	3.0 ⁰ _{0.15}	2.75	0.2	1.2	0.8	25°	5°	ϕ 10	○	
TW9268-HC2.9-D12	ISO9268	2.79 to 2.9	2.03 to 2.18	1.06	0.1max	—	—	—	—	ϕ 8	○	
TW9268-HC3.5-D12		3.43 to 3.53	2.51 to 2.64	1.27	0.1max	—	—	—	—		○	
TW9268-HC3.9-D12		3.78 to 3.91	2.77 to 2.92	1.27	0.1max	—	—	—	—		○	
TW9268-HC4.2-D12		4.09 to 4.22	2.95 to 3.25	1.27	0.1max	—	—	—	—		○	
TW9268-HD4.0-D12		4.0±0.03	2.92±0.03	1.59	0.1	—	—	—	45°		10°	○
TW9268-HD4.5-D12		4.5±0.03	2.92±0.03	2.18	0.1	—	—	—	45°		10°	○


● : Stock ○ : 1-2 week delivery


Application Examples

Double-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.375	Number of start	2
Major Dia.	φ.157	Helix Angle	28.5°
Minor Dia.	φ.098	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	15	Speed of whirling cutter (rpm)	3,500
Lead = Feed (IPR)	.217	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling		<i>Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.</i>	
NTK thread whirling succeeded in double lead screw machining when one of the major thread whirling suppliers has failed many times.			

Double-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.250	Number of start	2
Major Dia.	φ.118	Helix Angle	15.4°
Minor Dia.	φ.083	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	11	Speed of whirling cutter (rpm)	2,200
Lead = Feed (IPR)	.087	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling		<i>Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.</i>	
Customer was concerned with stock rigidity and long cycle time. NTK applied three geometry inserts to achieve single pass machining, in dramatically short time. The up-sharp cutting edges and low cutting pressure produced "excellent" surface finish.			

Single-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.197	Number of start	1
Major Dia.	φ.091	Helix Angle	5.3°
Minor Dia.	φ.067	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	30	Speed of whirling cutter (rpm)	3,100
Pitch = Feed (IPR)	.023	Result	OK
NTK Thread Whirling	2200 pcs		
This thread is up to 1.26" length with a small pitch. Cycle time could be increased with a single-point threading tool. NTK's inserts, designed for lower tool pressure, ran 2,200 pcs/corner at 30 rpm of bar stock (F10,800). It only took 110 seconds to finish a 1.26" length thread.			

Double-lead Bone Screw			
Work Material : Ti-6Al-4v ELI			
Bar Stock Dia.	φ.350	Number of start	2
Major Dia.	φ.180	Helix Angle	23.0°
Minor Dia.	φ.120	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	12	Speed of whirling cutter (rpm)	2,500
Lead = Feed (IPR)	.200	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling		<i>Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.</i>	
The customer could not get perfect double lead thread form in single pass from other manufacturers. NTK got perfect thread form with a single pass on first trial saving cycle time.			

Single-lead Bone Screw			
Work Material : 316SS			
Bar Stock Dia.	φ.315	Number of start	1
Major Dia.	φ.138	Helix Angle	7.5°
Minor Dia.	φ.098	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	23	Speed of whirling cutter (rpm)	2,000
Pitch = Feed (IPR)	.049	Result	OK
NTK Thread Whirling	2600 pcs		
Competitor's Thread Whirling		1000 pcs	
Some thread whirling manufacturers offer 6-teeth or 12-teeth systems, too many teeth cause chip packing issues and more tool pressure. Fewer teeth means greater cycle time. NTK concluded that 9-teeth is the best configuration. Our customers can run 1.5 times faster and get longer tool life.			

Triple-lead Worm Gear			
Work Material : Brass			
Bar Stock Dia.	φ.315	Number of start	3
Major Dia.	φ.276	Helix Angle	14.6°
Minor Dia.	φ.185	Hand of thread	Left
Cutting condition			
Main Spindle Speed (rpm)	20	Speed of whirling cutter (rpm)	3,500
Lead = Feed (IPR)	.189	Result	OK
Multi-lead threads, common in the Worm Gear industry are made by a forming or cutting process. The large helix angle is difficult to machine with single-point threading. NTK now makes thread whirling inserts for multi-lead threads. Cycle time is reduced with a one pass process and thread form dimensions are stable with the low tool pressure.			

MEMO

V

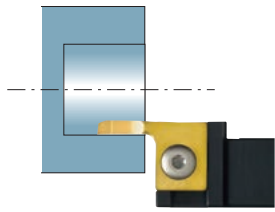





ID Tooling

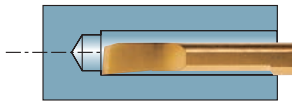
- **ID Tooling Tools V2**
- **Recommended Cutting Conditions..... V4**
- **Tools list V6**
 - LBM SeriesV6
 - STICK DUO SPLASHV8
 - STICK DUO HYPER V10
 - STICK DUO V14
 - ID Back Turning Tools V17
 - ID Grooving Tools V18
 - ID Threading Tools V20
 - Mogul Bar Series V23
- **Chipbreakers for Mogul Bar ... V32**

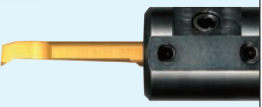


NTK ID Tooling - Product Lines




ID Boring

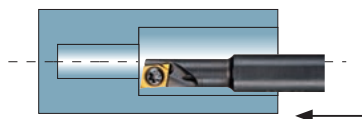



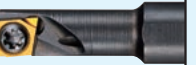


Insert	LBM →V7		
	LBMA	DS-LBMB	CH-LBM
Holder	 →V6	 →V6	 →V6
Min. Bore Dia.	$\phi .039'' (1.0\text{mm})$		

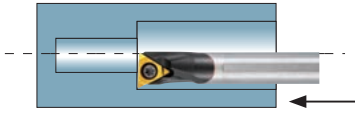





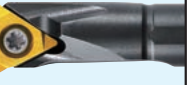
Insert	SHFS • SHFB • SBFS • SBFB →V12 • 16		
	HY-NBH-OH	HY-NBH	NBH
Holder	NEW  →V9 STICK DUO HYPER with Coolant through	 →V11 STICK DUO HYPER	 →V14
Min. Bore Dia.	$\phi .079'' (2.0\text{mm})$		

	Holder		HY-NBH-OH	HY-NBH	NBH
	Insert		STICK DUO HYPER with Coolant through	STICK DUO HYPER	STICK DUO
"S" chip breaker  Sharp cutting edge	SHFS-S High Precision Insert		Best fit	Best fit	2nd OPT.
	SBFS-S		2nd OPT.	2nd OPT.	Best fit
"F" chip breaker  Evacuates chips BACKWARD	SHFB-F High Precision Insert		Best fit	Best fit	2nd OPT.
	SBFB-F		2nd OPT.	2nd OPT.	Best fit
"H" Flat type  Mirror finish edge	SHFS-H High Precision Insert		Best fit	Best fit	2nd OPT.
	SBFS-H		2nd OPT.	2nd OPT.	Best fit
Back turning	SBB		2nd OPT.	2nd OPT.	Best fit
Grooving	SBG		2nd OPT.	2nd OPT.	Best fit
Threading	SBT		2nd OPT.	2nd OPT.	Best fit

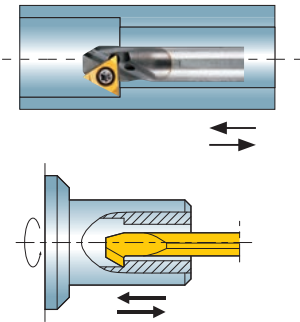





Insert	MBL →V23		ERGP →V24	
	C-MBR (Carbide shank)	S-MBR (Steel shank)	C-SEXR (Carbide shank)	S-SEXR (Steel shank)
Holder	 →V23 Coolant through	 →V23 Coolant through	 →V24 Coolant through	 →V24 Coolant through
Min. Bore Dia.	$\phi .197'' (5.0\text{mm})$		$\phi .236'' (6.0\text{mm})$	



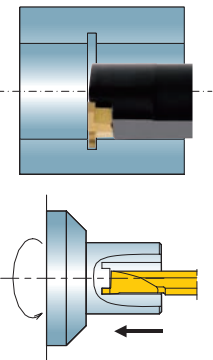
Insert	CC/CP ⇒V25 · 26		TC/TP ⇒V30	
	C-SCLC/P (Carbide shank)	S-SCLC/P (Steel shank)	C-STUC/P (Carbide shank)	S-STUC/P (Steel shank)
Holder				
	Coolant through ⇒V25 · 26	Coolant through ⇒V25 · 26	⇒V30 Coolant through	⇒V30 Coolant through
Min. Bore Dia.	$\phi .276" (7.0\text{mm})$		$\phi .315" (8.0\text{mm})$	




■ ID Back Turning



Insert	NEW SBB ⇒V17		TC/TP ⇒V30
	HY-NBH-OH		NBH
Holder			
	NEW ⇒V9 Coolant through	⇒V14	⇒V30
Min. Bore Dia.	$\phi .118" (3.0\text{mm})$		$\phi .394" (10\text{mm})$




■ ID Grooving



Insert	SBG ⇒V18	SFG ⇒V18	GTG ⇒V19
	HY-NBH-OH	NBH	NBH
Holder			
	NEW ⇒V9 Coolant through	⇒V14	⇒V14
Min. Bore Dia.	$\phi .118" (3.0\text{mm})$	$\phi .118" (3.0\text{mm})$	$\phi .394" (10\text{mm})$

■ ID Threading



Insert	SBT ⇒V20		TMN ⇒V22
	HY-NBH-OH		TGC/HN
Holder			
	NEW ⇒V9 Coolant through	⇒V14	⇒V22
Min. Bore Dia.	$\phi .118" (3.0\text{mm})$		$\phi .315" (8.0\text{mm})$

Recommended Cutting Conditions

■ ID Boring

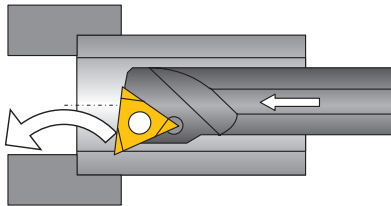
diameter ≤ .240"

Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
				Hard to cut	Free cutting		
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	TM4				VM1 / TM4	
	2nd choice	VM1 / ZM3				ZM3	
Cutting Speed (SFM)	60 160 230				100 200 300		
Feed Rate (IPR)	.0004 .0012 .0020						
Depth Of Cut (DOC)	.0020 .0031 .0039						

diameter > .240"

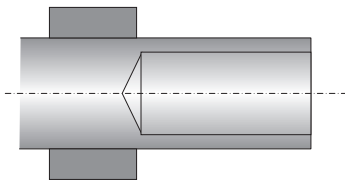
Work Material	High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
				Hard to cut	Free cutting		
Common Name	Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046
Grade	1st choice	DT4		DT4	TM4	QM3	
	2nd choice	TM4		QM3 / TM4	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (SFM)	150 230 330			130 230 330	150 300 600	Carbide C7Z(X)	150 300 500 400 500 800
Feed Rate (IPR)	.0008 .0024 .0047						
Depth Of Cut (DOC)	.0039 .0197 .0787						

■ Through hole

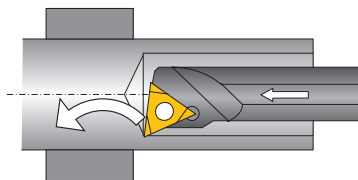


For chip control : chips can be evacuated forward

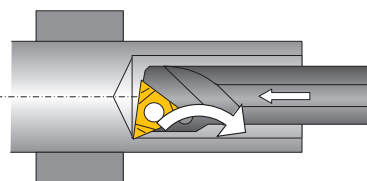
■ Blind hole



Blind hole due to bar stock



Typical inserts direct flow chips forward. Then packed chips damage and break cutting edge



F05, F1, and FG chipbreakers will direct chips backwards and eliminate chipping on inserts

*Note: Use right-hand inserts with F05, F1 and FG chipbreaker for right-hand boring bars

ID Grooving

GTG / SBG

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels	
					Hard to cut	Free cutting			
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	304 316 17-4PH	303 430F	5120 4137	1045 1046	
Grade	1st choice	DT4			DM4 / DT4	TM4	QM3		
	2nd choice	TM4 / QM3			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)		
Cutting Speed (SFM)		75 125 225	100 200 275		130 230 330	150 300 600	Carbide C7Z(X)	150 300 500 400 500 800	
Feed Rate (IPR) A. Grooving B. Side turning*	Width .010-.020	A. .0002 - .0012							
		B. .0001 - .0002							
	.020-.040	A. .0008 - .0024						A. .0008 - .0028	
		B. .0002 - .0004						B. .0002 - .0004	
	.040-.080	A. .0012 - .0028						A. .0012 - .0031	
B. .0008 - .0020						B. .0012 - .0024			
> .080	A. .0012 - .0079								
	B. .0012 - .0024								

*When side turning, Max. DOC is under .0079". Under .016" width side turning impossible

ID Threading

● Threading

For 600 - 1500 RPM Recommended Depth of Cut (DOC) for Each Pass

UNF Thread		Number of Pass																		
Pitch (TPI)	Total DOC (inch)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
36	0.43	.002	.002	.002	.002	.002	.002	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—
32	0.49	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—
28	0.56	.003	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—
24	0.66	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—
20	0.78	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—
18	0.87	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.0008	.0004	—	—
16	0.98	.003	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004

Metric Thread		Number of Pass																				
Pitch (mm)	Total DOC (mm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.5	0.3	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—
0.7	0.43	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—
0.75	0.46	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—
0.8	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—
1.0	0.62	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—
1.25	0.76	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—
1.5	0.92	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—
1.75	1.09	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—

LBM Series

Minimum bore diameter $\phi .039"$ (1.0mm) - $\phi .118"$ (3.0mm)

LBMA / LBMA-S

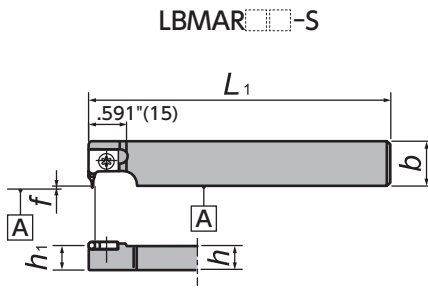


Figure-1

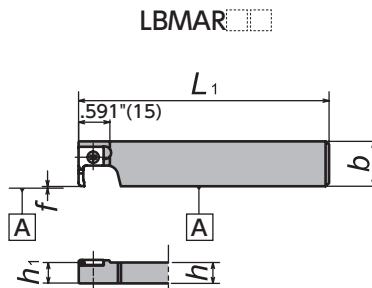


Figure-2

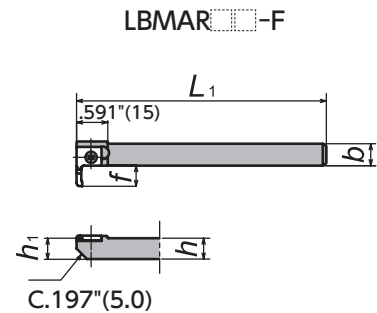


Figure-3

Right-Hand style shown

DS-LBMB

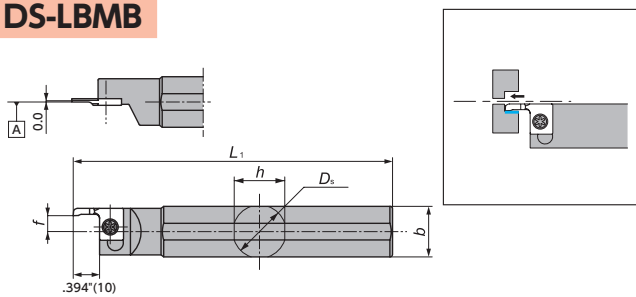


Figure-4

Left-Hand style shown

CH-LBM

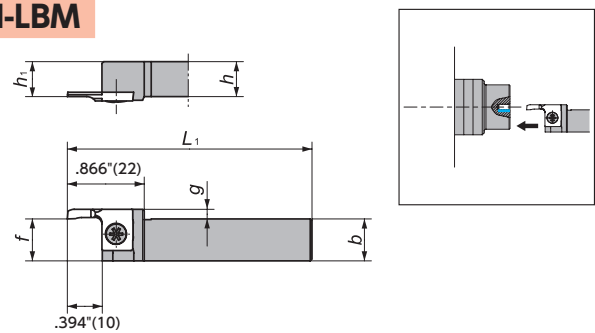


Figure-5

Left-Hand style shown

LBMAR / CH-TTPL

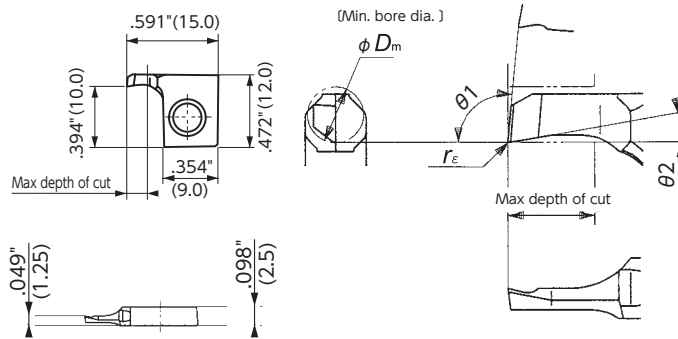
Gage Insert	Item Number	Figure	Stock	D_s (Inch) (mm)	h (Inch) (mm)	b (Inch) (mm)	h_1 (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	Clamp Screw	Wrench
Short type	LBMAR10SGX	1	○	— —	.394 10	.709 18	.394 10	3.346 85	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR10S	1	○	— —	.394 10	.709 18	.394 10	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR12S	1	○	— —	.472 12	.709 18	.472 12	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
Long type	LBMAR06-IN	2	●	— —	3/8	3/8	3/8	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR08-IN	2	●	— —	1/2	1/2	1/2	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
	LBMAR10-IN	2	●	— —	5/8	5/8	5/8	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
	LBMAR08	2	○	— —	.315 8	.846 21.5	.315 8	4.724 120	0 0.0	LRIS-4 × 10	LLR-25S
	LBMAR10	2	○	— —	.394 10	.846 21.5	.394 10	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR12	2	○	— —	.472 12	.846 21.5	.472 12	4.724 120	0 0.0	LRIS-4 × 10PW	CLR-15S
	LBMAR16	2	○	— —	.630 16	.846 21.5	.630 16	4.724 120	0 0.0	LRIS-4 × 12PW	CLR-15S
Long type	LBMAR10-F	3	○	— —	.394 10	.394 10.0	.394 10	4.724 120	.394 10.0	LRIS-4 × 12PW	CLR-15S
Long type	DS-LBMBL14F	4	○	.551 14.000	.512 13	.512 13	— —	3.150 80 *1	*3 *3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL15H	4	○	5/8 15.875	.591 15	.591 15	— —	3.937 100 *1	*3 *3	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL16X	4	●	.630 16.000	.591 15	.591 15	— —	3.740 95 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL19	4	●	3/4 19.050	.709 18	.709 18	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL20	4	●	.787 20.000	.748 19	.748 19	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL22	4	●	.866 22.000	.827 21	.827 21	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25-MET	4	○	.984 25.000	.945 24	.945 24	— —	4.724 120 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
	DS-LBMBL25	4	○	1 25.400	.945 24	.945 24	— —	5.906 150 *1	*2 *2	LRIS-4 × 10PW	CLR-15S
Short type	CH-LBML1012H	5	○	— —	.394 10	.472 12	.394 10	3.937 100	*3 *3	LRIS-4 × 10PW	CLR-15S
	CH-LBML1212H	5	○	— —	.472 12	.472 12	.472 12	3.937 100	*3 *3	LRIS-4 × 10PW	CLR-15S

LBM Series - Toolholders

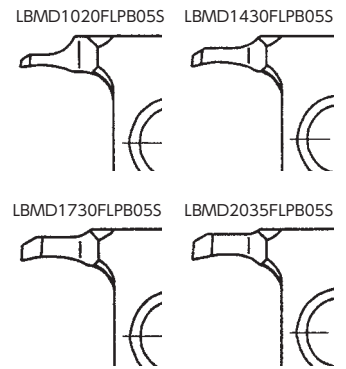
LBMD-S

Short type

Mirror finish



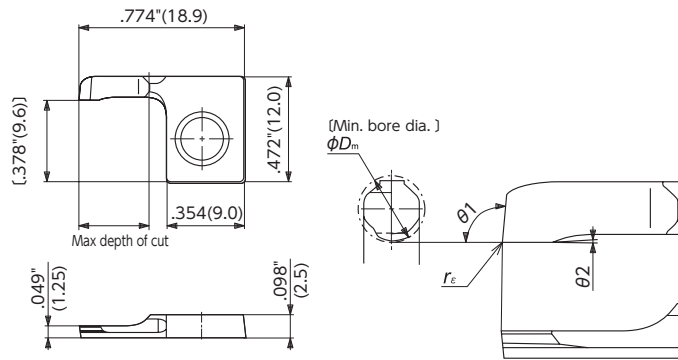
LBMD2335FLPB05S shown



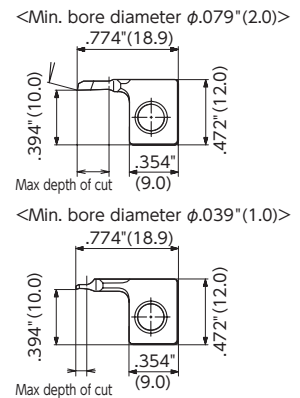
DS-LBMB

Long type

Mirror finish



Min. bore diameter ϕ .118" (3.0) shown



LBM Mirror finish

Insert type	Item Number	Chip-breaker	Min. Bore Dia.		Max. Depth		$\theta 1$	$\theta 2$	r_e		Coated Carbide	
			(Inch)	(mm)	(Inch)	(mm)			(Inch)	(mm)	VM1	ZM3
Short type	LBMD1020FLVBS	Yes	.039	1.0	.079	2.0	95°	10°	.000	0.00	○	
	LBMD1020FLPB05S	Yes	.039	1.0	.079	2.0	95°	10°	.002	0.05	○	
	LBMD1430FLVBS	Yes	.055	1.4	.118	3.0	95°	10°	.000	0.00	○	
	LBMD1430FLPB05S	Yes	.055	1.4	.118	3.0	95°	10°	.002	0.05	●	
	LBMD1730FLVBS	Yes	.067	1.7	.118	3.0	95°	10°	.000	0.00	○	
	LBMD1730FLPB05S	Yes	.067	1.7	.118	3.0	95°	10°	.002	0.05	○	
	LBMD2035FLVBS	Yes	.079	2.0	.138	3.5	95°	10°	.000	0.00	○	
	LBMD2035FLPB05S	Yes	.079	2.0	.138	3.5	95°	10°	.002	0.05	○	
	LBMD2335FLVBS	Yes	.091	2.3	.138	3.5	95°	10°	.000	0.00	○	
LBMD2335FLPB05S	Yes	.091	2.3	.138	3.5	95°	10°	.002	0.05	●		
Long type	LBMD1020FLVB	Yes	.039	1.0	.079	2.0	95°	10°	.000	0.00	●	
	LBMD1020FLPB05	Yes	.039	1.0	.079	2.0	95°	10°	.002	0.05	●	
	LBMD2060FLVB	Yes	.079	2.0	.236	6.0	95°	10°	.000	0.00	●	
	LBMD2060FLPB05	Yes	.079	2.0	.236	6.0	95°	10°	.002	0.05	●	
	LBME2060FLV	No	.079	2.0	.236	6.0	105°	2°	.000	0.00	○	
	LBME2060FLP05	No	.079	2.0	.236	6.0	105°	2°	.002	0.05	○	
	LBME2060FLVB	Yes	.079	2.0	.236	6.0	105°	2°	.000	0.00	○	
	LBME2060FLPB05	Yes	.079	2.0	.236	6.0	105°	2°	.002	0.05	○	
	LBMC3080FLV	No	.118	3.0	.315	8.0	95°	2°	.000	0.00	○	○
	LBMC3080FLP05	No	.118	3.0	.315	8.0	95°	2°	.002	0.05	○	○
	LBMC3080FLVB	Yes	.118	3.0	.315	8.0	90°	2°	.000	0.00	●	
	LBMC3080FLPB05	Yes	.118	3.0	.315	8.0	90°	2°	.002	0.05	●	
	LBMC3080FLVB	Yes	.118	3.0	.315	8.0	95°	2°	.000	0.00	○	○
LBMC3080FLPB05	Yes	.118	3.0	.315	8.0	95°	2°	.002	0.05	○	○	

● : Stock

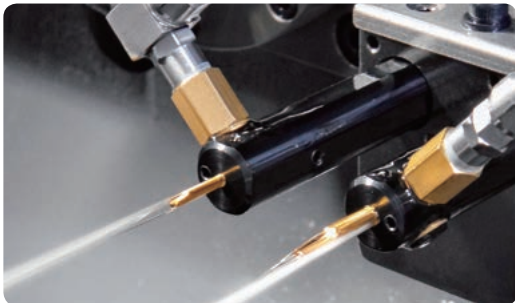
○ : 1-2 week delivery

M : Mirror finish

Cutting condition \rightarrow V4

STICK DUO SPLASH

- Coolant through sleeves for ID Boring with Adjustable Overhang Mechanism -



■ No chip problems

STICK DUO SPLASH	External coolant
No chip inside hole	Chip packed
Material : 4140 Insert bar : SHFS040R005S Hole depth : .590" (15mm) Pilot hole : $\phi .201" \times 1.102" L (\phi 5.1 \times 28.0 \text{mm} L)$ Coolant Pressure : 725psi (5MPa)	

■ Choose from 2 coolant directions

I) For Blind hole	II) For Through hole
Coolant hole	
Just rotated 180 degrees	

■ 3 coolant connection options

② Rear Connection (Rc1/8)

③ Sealed end for closed unit

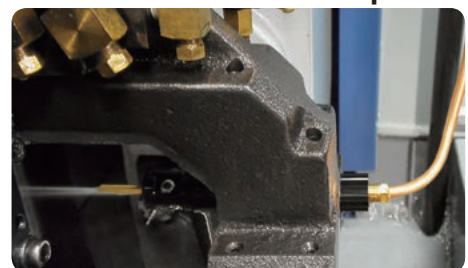
Adjustable overhang length (Hyper system)

① Front Connection (M6 x 1.0)

① Front Connection example



② Rear Connection example



SPLASH DUO - Stick Duo Hyper with Coolant through -

HY-NBH-OH (Coolant through)

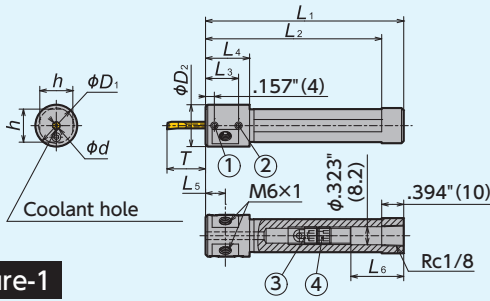


Figure-1

HY-NBH-OH (Coolant through)

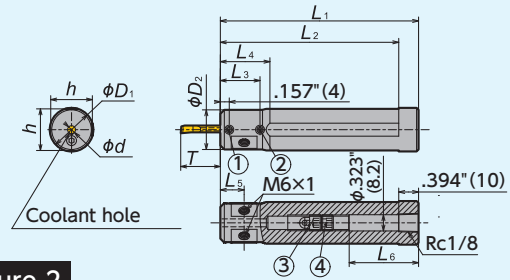


Figure-2

Item Number	Stock	Figure	ϕd		ϕD_1		ϕD_2	h	L_1	L_2	L_3	L_4	L_5	L_6	Overhang Length of Bar T			
			(Inch)	(mm)	(Inch)	(mm)									(mm)	(mm)	(Inch)	(mm)	(Inch)	(mm)
HY-NBH02016G-OH	●	1	.079	2	.630	16	19	15	90	80	15	19	9.5	29	.197	5.0	.709	18.0
HY-NBH02516G-OH	●	1	.098	2.5	.630	16	19	15	90	80	15	19	9.5	30	.248	6.3	.768	19.5
HY-NBH03016G-OH	●	1	.118	3	.630	16	19	15	90	80	15	19	9.5	31	.295	7.5	.827	21.0
HY-NBH03516G-OH	●	1	.138	3.5	.630	16	19	15	90	80	15	19	9.5	23	.346	8.8	.965	24.5
HY-NBH04016G-OH	●	1	.157	4	.630	16	19	15	90	80	20	24	12	23	.394	10.0	1.102	28.0
HY-NBH05016G-OH	●	1	.197	5	.630	16	19	15	90	80	20	24	12	16	.492	12.5	1.378	35.0
HY-NBH02019J-OH	●	2	.079	2	3/4	19.05	19.05	18	110	100	15	—	9.5	49	.197	5.0	.709	18.0
HY-NBH02519J-OH	●	2	.098	2.5	3/4	19.05	19.05	18	110	100	15	—	9.5	50	.248	6.3	.768	19.5
HY-NBH03019J-OH	●	2	.118	3	3/4	19.05	19.05	18	110	100	15	—	9.5	51	.295	7.5	.827	21.0
HY-NBH03519J-OH	●	2	.138	3.5	3/4	19.05	19.05	18	110	100	15	—	9.5	43	.346	8.8	.965	24.5
HY-NBH04019J-OH	●	2	.157	4	3/4	19.05	19.05	18	110	100	20	—	12	43	.394	10.0	1.102	28.0
HY-NBH05019J-OH	●	2	.197	5	3/4	19.05	19.05	18	110	100	20	—	12	36	.492	12.5	1.378	35.0
HY-NBH02020J-OH	●	2	.079	2	.787	20	20	19	110	100	15	—	9.5	49	.197	5.0	.709	18.0
HY-NBH02520J-OH	●	2	.098	2.5	.787	20	20	19	110	100	15	—	9.5	50	.248	6.3	.768	19.5
HY-NBH03020J-OH	●	2	.118	3	.787	20	20	19	110	100	15	—	9.5	51	.295	7.5	.827	21.0
HY-NBH03520J-OH	●	2	.138	3.5	.787	20	20	19	110	100	15	—	9.5	43	.346	8.8	.965	24.5
HY-NBH04020J-OH	●	2	.157	4	.787	20	20	19	110	100	20	—	12	43	.394	10.0	1.102	28.0
HY-NBH05020J-OH	●	2	.197	5	.787	20	20	19	110	100	20	—	12	36	.492	12.5	1.378	35.0
HY-NBH02022X-OH	●	2	.079	2	.866	22	20	21	120	110	15	25	9.5	59	.197	5.0	.709	18.0
HY-NBH02522X-OH	●	2	.098	2.5	.866	22	20	21	120	110	15	25	9.5	60	.248	6.3	.768	19.5
HY-NBH03022X-OH	●	2	.118	3	.866	22	20	21	120	110	15	25	9.5	61	.295	7.5	.827	21.0
HY-NBH03522X-OH	●	2	.138	3.5	.866	22	20	21	120	110	15	25	9.5	53	.346	8.8	.965	24.5
HY-NBH04022X-OH	●	2	.157	4	.866	22	20	21	120	110	20	25	12	53	.394	10.0	1.102	28.0
HY-NBH05022X-OH	●	2	.197	5	.866	22	20	21	120	110	20	25	12	46	.492	12.5	1.378	35.0
HY-NBH02025.0K-OH	●	2	.079	2	.984	25.0	20	24	125	115	15	25	9.5	64	.197	5.0	.709	18.0
HY-NBH02525.0K-OH	●	2	.098	2.5	.984	25.0	20	24	125	115	15	25	9.5	65	.248	6.3	.768	19.5
HY-NBH03025.0K-OH	●	2	.118	3	.984	25.0	20	24	125	115	15	25	9.5	66	.295	7.5	.827	21.0
HY-NBH03525.0K-OH	●	2	.138	3.5	.984	25.0	20	24	125	115	15	25	9.5	58	.346	8.8	.965	24.5
HY-NBH04025.0K-OH	●	2	.157	4	.984	25.0	20	24	125	115	20	25	12	58	.394	10.0	1.102	28.0
HY-NBH05025.0K-OH	●	2	.197	5	.984	25.0	20	24	125	115	20	25	12	51	.492	12.5	1.378	35.0
HY-NBH02025.4K-OH	●	2	.079	2	1	25.4	20	24	125	115	15	25	9.5	64	.197	5.0	.709	18.0
HY-NBH02525.4K-OH	●	2	.098	2.5	1	25.4	20	24	125	115	15	25	9.5	65	.248	6.3	.768	19.5
HY-NBH03025.4K-OH	●	2	.118	3	1	25.4	20	24	125	115	15	25	9.5	66	.295	7.5	.827	21.0
HY-NBH03525.4K-OH	●	2	.138	3.5	1	25.4	20	24	125	115	15	25	9.5	58	.346	8.8	.965	24.5
HY-NBH04025.4K-OH	●	2	.157	4	1	25.4	20	24	125	115	20	25	12	58	.394	10.0	1.102	28.0
HY-NBH05025.4K-OH	●	2	.197	5	1	25.4	20	24	125	115	20	25	12	51	.492	12.5	1.378	35.0

Parts for SPLASH DUO

Item Number	Clamp Screw		Overhang Adjustment		
	①	②	③	④	⑤
HY-NBH ... -OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F
	M6 Screw		Wrench		
	⑥		for ①②	for ③④⑤	for ⑥
	SS0605SC	LW-2	LW-4×104	LW-3	

● : Stock

💧 : Coolant through

Insert bars → V12

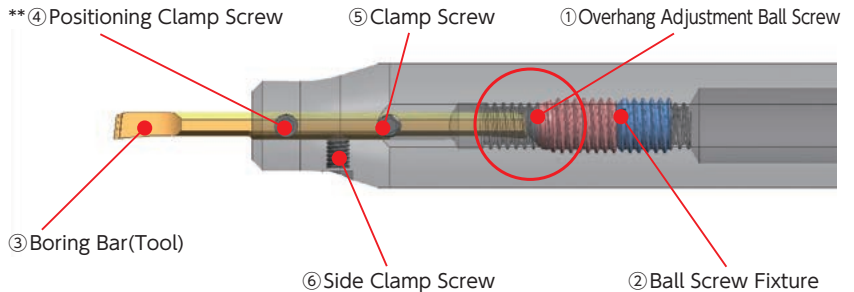
ID Tooling

STICK DUO HYPER

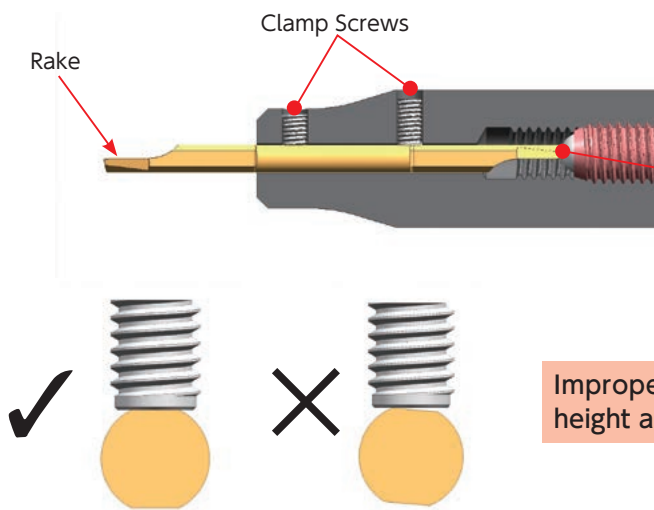
- Sleeves for ID Boring with Adjustable Overhang Mechanism -



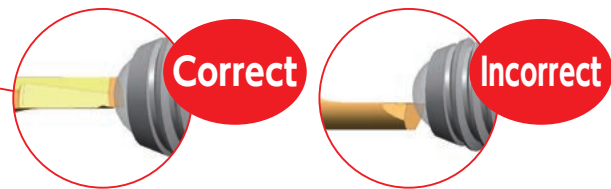
■ Can Index boring bars like inserts



■ Installation Procedure for STICK DUO Hyper



Caution: Improper installation dramatically increases the chance of chipping cutting edge



Improper clamping of boring bar causes unstable centerline height and offset

① Position the overhang adjustment ball screw to determine overhang amount

② Slide the ball screw fixture to secure the ball screw location

③ Insert a boring bar (tool)

Note: Make sure to insert the boring bar correctly so that the rake face is toward the side where the clamp screws are located

④ Secure the boring bar by tightening the positioning clamp screw ▶ Recommended Clamping Torque: 17.7 lb in

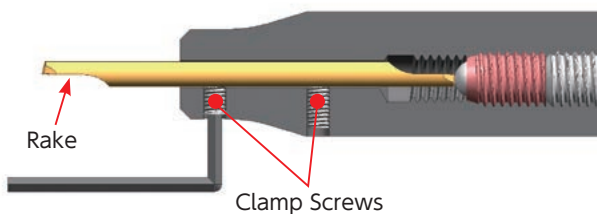
** Make sure to clamp the boring bar so that the flat surface of the bar makes proper contact with clamp screws

⑤ Secure the boring bar by tightening the remaining clamp screws ▶ Recommended Clamping Torque: 17.7 lb in

⑥ Even if 4 and 5 cannot be performed due to tool clearance and layout, the tool can be used by only securing the side clamp screw

Once the initial setup is complete, repeat the above procedures 3 thru 5 for each index

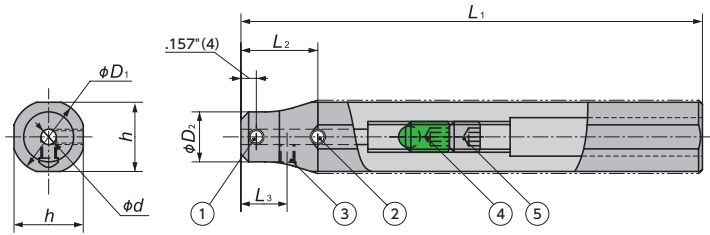
■ When the tool is installed upside down



Toolholder must be installed so that clamp screws and rake of the tool face toward the same side

STICK DUO HYPER

HY-NBH



Please refer to ϕd to find correct-size inserts (bars)

Item Number	Stock	ϕd		ϕD_1		ϕD_2	h	L_1	L_2	L_3	Clamp Screws		
		(Inch)	(mm)	(Inch)	(mm)						①	②	③
HY-NBH02016H	○	.079	2.0	.630	16	11	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02516H	○	.098	2.5	.630	16	11.5	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03016H	○	.118	3.0	.630	16	12	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03516H	○	.138	3.5	.630	16	12.5	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH04016H	○	.157	4.0	.630	16	13	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH05016H	○	.197	5.0	.630	16	14	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH02019K	●	.079	2.0	3/4	19.05	11	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02519K	●	.098	2.5	3/4	19.05	11.5	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03019K	●	.118	3.0	3/4	19.05	12	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03519K	●	.138	3.5	3/4	19.05	12.5	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04019K	●	.157	4.0	3/4	19.05	13	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05019K	●	.197	5.0	3/4	19.05	14	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02020K	○	.079	2.0	.787	20	11	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02520K	○	.098	2.5	.787	20	11.5	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03020K	○	.118	3.0	.787	20	12	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03520K	○	.138	3.5	.787	20	12.5	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04020K	○	.157	4.0	.787	20	13	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05020K	○	.197	5.0	.787	20	14	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02022K	●	.079	2.0	.866	22	11	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02522K	●	.098	2.5	.866	22	11.5	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03022K	●	.118	3.0	.866	22	12	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03522K	●	.138	3.5	.866	22	12.5	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04022K	●	.157	4.0	.866	22	13	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05022K	●	.197	5.0	.866	22	14	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K-MET	○	.079	2.0	.984	25	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K-MET	○	.098	2.5	.984	25	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K-MET	○	.118	3.0	.984	25	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K-MET	○	.138	3.5	.984	25	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K-MET	○	.157	4.0	.984	25	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K-MET	○	.197	5.0	.984	25	14	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K	●	.079	2.0	1	25.4	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K	●	.098	2.5	1	25.4	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K	●	.118	3.0	1	25.4	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K	●	.138	3.5	1	25.4	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K	●	.157	4.0	1	25.4	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K	●	.197	5.0	1	25.4	14	24	125	20	12	SS04045FS	SS0406F	SS0404F

■ Spare Parts

Item Number	Overhang Adjustment		Wrench	
	④	⑤	for ①②③	for ④⑤
HY-NBH ... K	SS0812R	SS0808F	LW-2	LW-4×104

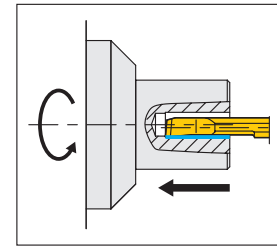
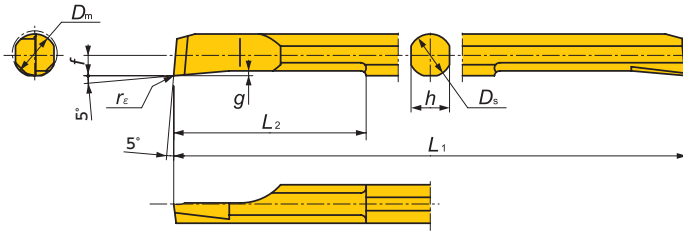
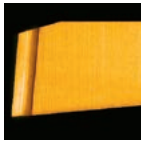
● : Stock ○ : 1-2 week delivery

Insert bars → **V12**

ID Tooling

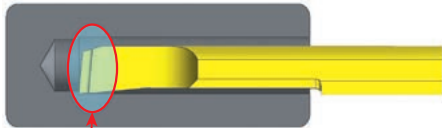
Bars for STICK DUO SPLASH/STICK DUO HYPER

SHFS-S type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



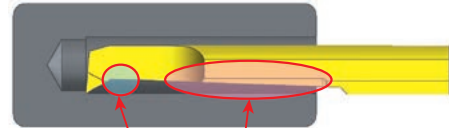
Item Number	D_s		Min Bore Dia. D_m		L_1	L_2	f	h	g	r_ϵ		Chipbreaker	Coated Carbide TM4
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		
SHFS020R005S	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	Type S	●
SHFS025R005S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	Type S	●
SHFS025R015S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	Type S	●
SHFS030R005S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	Type S	●
SHFS030R015S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	Type S	●
SHFS035R005S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	Type S	●
SHFS035R015S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	Type S	●
SHFS040R005S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	Type S	●
SHFS040R015S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	Type S	●
SHFS050R005S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	Type S	●
SHFS050R015S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	Type S	●

S.FS-S type



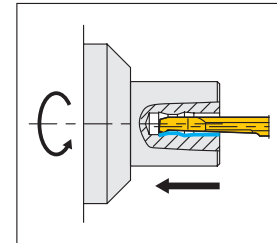
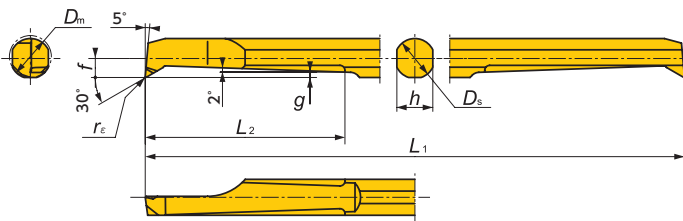
Chipbreaker for sharp cutting

S.FB-F type



Back taper
Wide area of chip pocket

SHFB-F type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)

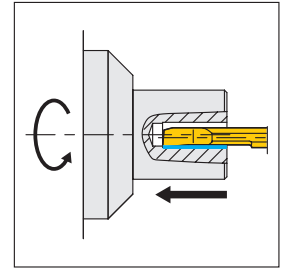
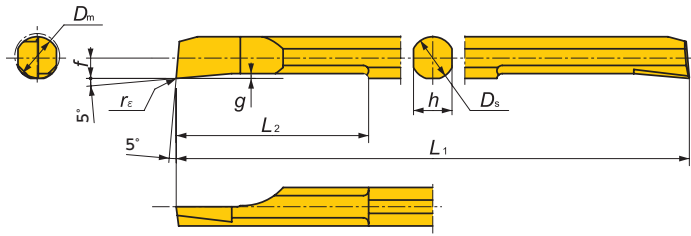


Evacuate chips backward

Item Number	D_s		Min Bore Dia. D_m		L_1	L_2	f	h	g	r_ϵ		Chipbreaker	Coated Carbide TM4
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		
SHFB020R005F	.087	2	.087	2.2	50	8	0.95	1.8	0.25	.002	0.05	Type F	●
SHFB025R005F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.002	0.05	Type F	●
SHFB025R015F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.006	0.15	Type F	●
SHFB030R005F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.002	0.05	Type F	●
SHFB030R015F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.006	0.15	Type F	●
SHFB035R005F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.002	0.05	Type F	●
SHFB035R015F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.006	0.15	Type F	●
SHFB040R005F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.002	0.05	Type F	●
SHFB040R015F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.006	0.15	Type F	●
SHFB050R005F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.002	0.05	Type F	●
SHFB050R015F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.006	0.15	Type F	●

SHFS-H type (for ID Boring)

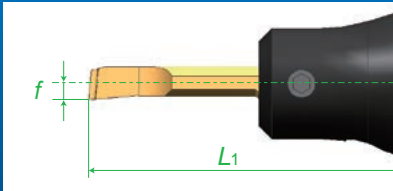
Minimum Bore Diameter .087" (2.2mm)



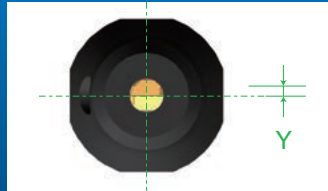
Mirror finish

Item Number	D_s		Min Bore Dia. D_m		L_1	L_2	f	h	g	r_e		Chipbreaker	Coated Carbide
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		TM4
SHFS020R005H M	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	None	●
SHFS025R005H M	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	None	●
SHFS025R015H M	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	None	●
SHFS030R005H M	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	None	●
SHFS030R015H M	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	None	●
SHFS035R005H M	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	None	●
SHFS035R015H M	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	None	●
SHFS040R005H M	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	None	●
SHFS040R015H M	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	None	●
SHFS050R005H M	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	None	●
SHFS050R015H M	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	None	●

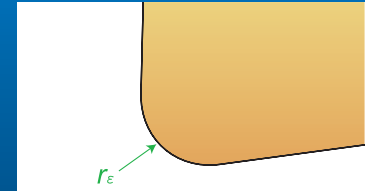
Tolerance of SHFS-S/SHFB-F/SHFS-H bars



Offset f : $\pm .0006''$
Tool Length L_1 : $\pm .0008''$

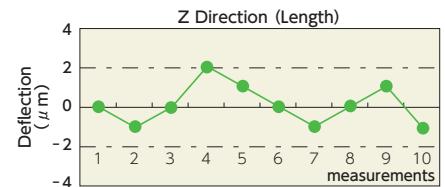
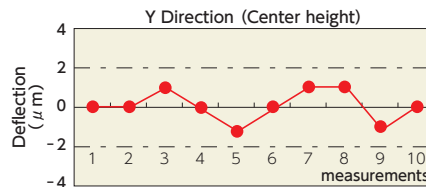
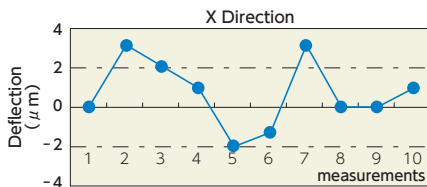


Centerline Y : $+ .002'' / - .000''$



Corner r_e : $\pm .0006''$

Repeatability of (STICK DUO SPLASH / STICK DUO Hyper) with (SHFS / SHFB) bars



● : Stock

○ : 1-2 week delivery

M : Mirror finish

Sleeves ➡ V9 · 11

Cutting condition ➡ V4

STICK DUO - Sleeves for ID machining -

NBH

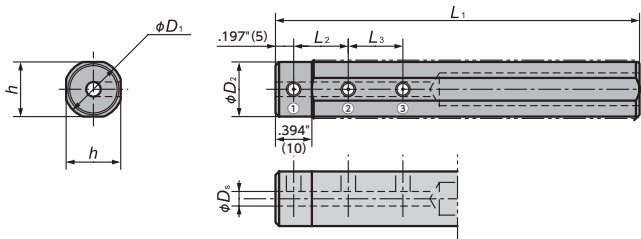


Figure-1

NBH

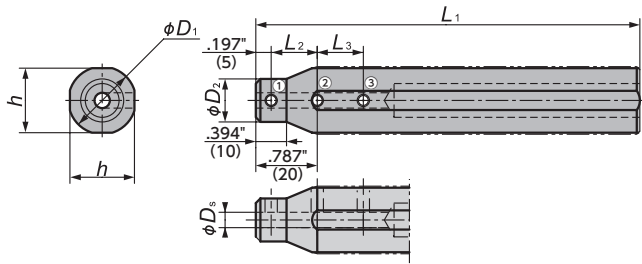


Figure-2

Item number	Figure	Stock	ϕD_s		ϕD_1		ϕD_2	h	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)	(Inch)	(mm)						①	②	③	
NBH02015H	1	○	.079	2.0	5/8		15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02515H	1	○	.098	2.5	5/8		15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03015H	1	○	.118	3.0	5/8		15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03515H	1	○	.138	3.5	5/8		15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04015H	1	○	.157	4.0	5/8		15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04515H	1	○	.177	4.5	5/8		15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05015H	1	○	.197	5.0	5/8		15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06015H	1	○	.236	6.0	5/8		15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08015H	1	○	.315	8.0	5/8		15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02016H	1	○	.079	2.0	.630	16	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02516H	1	○	.098	2.5	.630	16	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03016H	1	○	.118	3.0	.630	16	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03516H	1	○	.138	3.5	.630	16	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04016H	1	○	.157	4.0	.630	16	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04516H	1	○	.177	4.5	.630	16	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05016H	1	○	.197	5.0	.630	16	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06016H	1	●	.236	6.0	.630	16	15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH07016H	1	○	.276	7.0	.630	16	15	15	100	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH08016H	1	●	.315	8.0	.630	16	15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02019K	1	○	.079	2.0	3/4		18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH02519K	1	○	.098	2.5	3/4		18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH03019K	1	○	.118	3.0	3/4		18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH03519K	1	○	.138	3.5	3/4		18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH04019K	1	○	.157	4.0	3/4		18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH04519K	1	○	.177	4.5	3/4		18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH05019K	1	○	.197	5.0	3/4		18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH06019K	1	●	.236	6.0	3/4		18	18	125	20	20	SS0406F	SS0406F	SS0406F	LW-2
NBH07019K	1	○	.276	7.0	3/4		18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08019K	1	●	.315	8.0	3/4		18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10019K	1	○	.394	10.0	3/4		18	18	125	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH02020K	2	○	.079	2.0	.787	20	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH02520K	2	○	.098	2.5	.787	20	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH03020K	2	○	.118	3.0	.787	20	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH03520K	2	○	.138	3.5	.787	20	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH04020K	2	○	.157	4.0	.787	20	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04520K	2	○	.177	4.5	.787	20	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05020K	2	○	.197	5.0	.787	20	14	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06020K	2	●	.236	6.0	.787	20	15	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07020K	2	○	.276	7.0	.787	20	16	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08020K	2	●	.315	8.0	.787	20	17	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10020K	2	○	.394	10.0	.787	20	19	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2

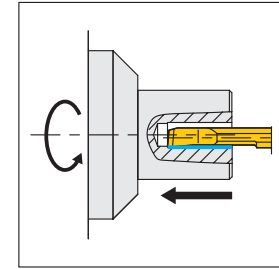
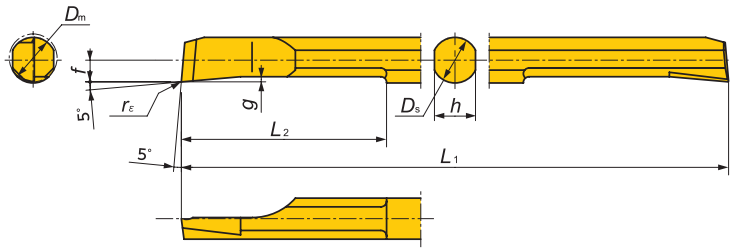
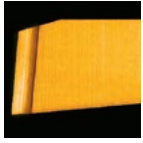
Item number	Figure	Stock	ϕD_s		ϕD_1		ϕD_2	h_1	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)	(Inch)	(mm)						①	②	③	
NBH02022K	2	○	.079	2.0	.866	22	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02522K	2	○	.098	2.5	.866	22	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03022K	2	○	.118	3.0	.866	22	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03522K	2	○	.138	3.5	.866	22	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04022K	2	○	.157	4.0	.866	22	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04522K	2	○	.177	4.5	.866	22	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05022K	2	○	.197	5.0	.866	22	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06022K	2	●	.236	6.0	.866	22	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07022K	2	○	.276	7.0	.866	22	16	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08022K	2	●	.315	8.0	.866	22	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10022K	2	○	.394	10.0	.866	22	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12022K	2	○	.472	12.0	.866	22	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02023K	2	○	.079	2.0	.906	23	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02523K	2	○	.098	2.5	.906	23	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03023K	2	○	.118	3.0	.906	23	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03523K	2	○	.138	3.5	.906	23	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04023K	2	○	.157	4.0	.906	23	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04523K	2	○	.177	4.5	.906	23	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05023K	2	○	.197	5.0	.906	23	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06023K	2	○	.236	6.0	.906	23	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08023K	2	○	.315	8.0	.906	23	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10023K	2	○	.394	10.0	.906	23	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12023K	2	○	.472	12.0	.906	23	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K-MET	2	○	.079	2.0	.984	25	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K-MET	2	○	.098	2.5	.984	25	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K-MET	2	○	.118	3.0	.984	25	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K-MET	2	○	.138	3.5	.984	25	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K-MET	2	○	.157	4.0	.984	25	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K-MET	2	○	.177	4.5	.984	25	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K-MET	2	○	.197	5.0	.984	25	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K-MET	2	●	.236	6.0	.984	25	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K-MET	2	○	.276	7.0	.984	25	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K-MET	2	●	.315	8.0	.984	25	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K-MET	2	○	.394	10.0	.984	25	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K-MET	2	○	.472	12.0	.984	25	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K	2	○	.079	2.0	1	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K	2	○	.098	2.5	1	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K	2	○	.118	3.0	1	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K	2	○	.138	3.5	1	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K	2	○	.157	4.0	1	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K	2	○	.177	4.5	1	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K	2	○	.197	5.0	1	25.4	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K	2	●	.236	6.0	1	25.4	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K	2	○	.276	7.0	1	25.4	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K	2	●	.315	8.0	1	25.4	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K	2	○	.394	10.0	1	25.4	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K	2	○	.472	12.0	1	25.4	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH04532K	2	○	.177	4.5	1.260	32	13	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05032K	2	○	.197	5.0	1.260	32	14	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06032K	2	○	.236	6.0	1.260	32	15	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07032K	2	○	.276	7.0	1.260	32	16	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08032K	2	○	.315	8.0	1.260	32	17	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH10032K	2	○	.394	10.0	1.260	32	19	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH12032K	2	○	.472	12.0	1.260	32	21	30	125	25	25	SS0404F	SS0406F	SS0406F	LW-2
NBH14032K	2	○	.551	14.0	1.260	32	23	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5
NBH16032K	2	○	.630	16.0	1.260	32	25	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5

○ : 1-2 week delivery

Insert bars **V16**

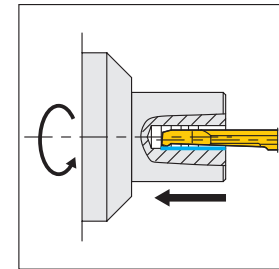
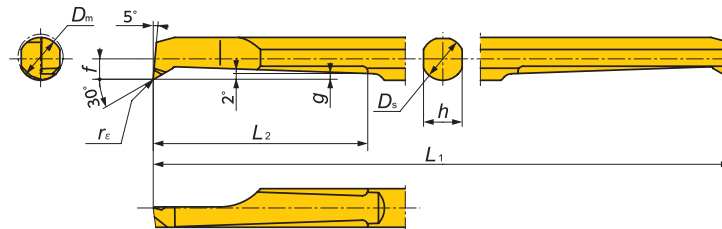
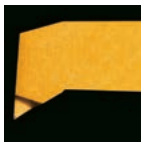
ID Tooling

SBFS-S type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



Item Number	Ds		Min Bore Dia. Dm		L1	L2	f	h	g	re		Chipbreaker	Coated Carbide	
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		DT4	ZM3
SBFS020R005S	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	Type S	○	○
SBFS025R005S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	Type S	○	○
SBFS025R015S	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	Type S	○	○
SBFS030R005S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	Type S	○	○
SBFS030R015S	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	Type S	○	○
SBFS035R005S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	Type S	○	○
SBFS035R015S	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	Type S	○	○
SBFS040R005S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	Type S	○	○
SBFS040R015S	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	Type S	○	○
SBFS050R005S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	Type S	○	○
SBFS050R015S	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	Type S	○	○
SBFS060R005S	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.002	0.05	Type S	○	○
SBFS060R015S	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.006	0.15	Type S	○	○

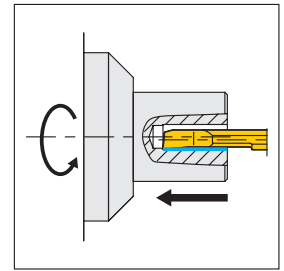
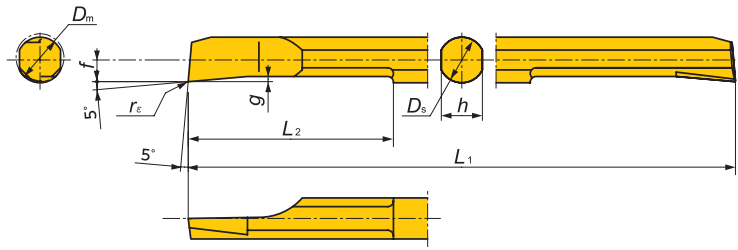
SBFB-F type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



Evacuate chips backward

Item Number	Ds		Min Bore Dia. Dm		L1	L2	f	h	g	re		Chipbreaker	Coated Carbide	
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		DT4	ZM3
SBFB020R005F	.087	2	.087	2.2	50	8	0.95	1.8	0.25	.002	0.05	Type F	○	○
SBFB025R005F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.002	0.05	Type F	○	○
SBFB025R015F	.098	2.5	.106	2.7	50	12.5	1.2	2.3	0.30	.006	0.15	Type F	○	○
SBFB030R005F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.002	0.05	Type F	○	○
SBFB030R015F	.118	3	.126	3.2	50	15	1.4	2.7	0.45	.006	0.15	Type F	○	○
SBFB035R005F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.002	0.05	Type F	○	○
SBFB035R015F	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.50	.006	0.15	Type F	○	○
SBFB040R005F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.002	0.05	Type F	○	○
SBFB040R015F	.157	4	.165	4.2	60	20	1.9	3.6	0.50	.006	0.15	Type F	○	○
SBFB050R005F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.002	0.05	Type F	○	○
SBFB050R015F	.197	5	.205	5.2	70	25	2.4	4.5	0.70	.006	0.15	Type F	○	○
SBFB060R005F	.236	6	.244	6.2	80	30	2.9	5.4	0.90	.002	0.05	Type F	○	○
SBFB060R015F	.236	6	.244	6.2	80	30	2.9	5.4	0.90	.006	0.15	Type F	○	○

SBFS-H type (for ID Boring) Minimum Bore Diameter .087" (2.2mm)



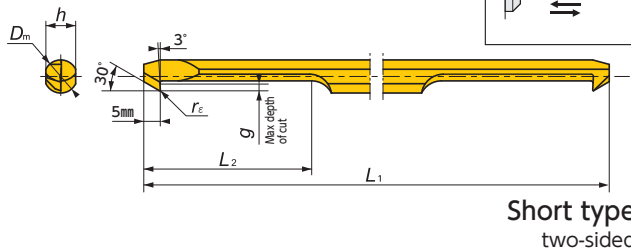
Mirror finish

Item Number	Ds		Min Bore Dia. Dm		L1	L2	f	h	g	rε		Chipbreaker	Coated Carbide	
	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		DT4	ZM3
SBFS020R005H M	.079	2	.087	2.2	50	10	0.9	1.8	0.25	.002	0.05	None		○
SBFS025R005H M	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.002	0.05	None		○
SBFS025R015H M	.098	2.5	.106	2.7	50	12.5	1.15	2.3	0.30	.006	0.15	None		○
SBFS030R005H M	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.002	0.05	None		○
SBFS030R015H M	.118	3	.126	3.2	50	15	1.4	2.7	0.40	.006	0.15	None		○
SBFS035R005H M	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.002	0.05	None		○
SBFS035R015H M	.138	3.5	.146	3.7	60	17.5	1.65	3.2	0.40	.006	0.15	None		○
SBFS040R005H M	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.002	0.05	None		○
SBFS040R015H M	.157	4	.165	4.2	60	20	1.9	3.6	0.45	.006	0.15	None		○
SBFS050R005H M	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.002	0.05	None		○
SBFS050R015H M	.197	5	.205	5.2	70	25	2.4	4.5	0.50	.006	0.15	None		○
SBFS060R005H M	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.002	0.05	None		○
SBFS060R015H M	.236	6	.244	6.2	80	30	2.9	5.4	0.60	.006	0.15	None		○
SBFS080R005H M	.315	8	.323	8.2	80	30	3.9	7.3	0.80	.002	0.05	None		○
SBFS080R015H M	.315	8	.323	8.2	80	30	3.9	7.3	0.80	.006	0.15	None		○

SBB Series ID Back turning

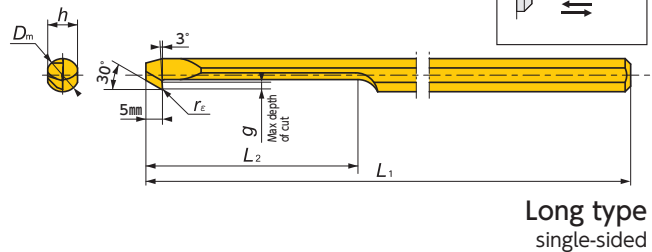
SBB-S type (for ID Back turning)

Minimum Bore Diameter .118" (3.0mm)



SBB type (for ID Back turning)

Minimum Bore Diameter .118" (3.0mm)



	Item Number	Ds		Min Bore Dia. Dm		L1	L2	f	h	g	rε		Chipbreaker	No. of edge	Coated Carbide
		(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)			ZM3
Short Type	SBB030RB005-S	.118	3	.118	3	50	15	1.3	2.7	0.5	.002	0.05	Yes	2	○
	SBB030RB010-S	.118	3	.118	3	50	15	1.3	2.7	0.5	.004	0.1	Yes	2	○
	SBB040RB005-S	.157	4	.157	4	60	18	1.8	3.6	0.8	.002	0.05	Yes	2	○
	SBB040RB015-S	.157	4	.157	4	60	18	1.8	3.6	0.8	.006	0.15	Yes	2	○
Long Type	SBB030RB005	.118	3	.118	3	50	19	1.3	2.7	0.5	.002	0.05	Yes	1	○
	SBB030RB010	.118	3	.118	3	50	19	1.3	2.7	0.5	.004	0.1	Yes	1	○
	SBB040RB005	.157	4	.157	4	60	24	1.8	3.6	0.8	.002	0.05	Yes	1	○
	SBB040RB015	.157	4	.157	4	60	24	1.8	3.6	0.8	.006	0.15	Yes	1	○

○ : 1-2 week delivery

M : Mirror finish

Sleeves → V9 · 11 · 14

Cutting condition → V4

SBG / SFG Series

ID Grooving

SBG (for ID Grooving)

Minimum Bore Diameter .118" (3.0mm)

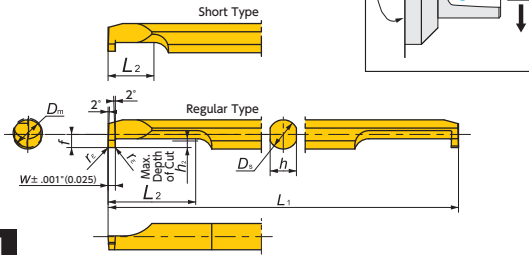


Figure-1

SFG (for ID Face Grooving)

Minimum Bore Diameter .236" (6.0mm)

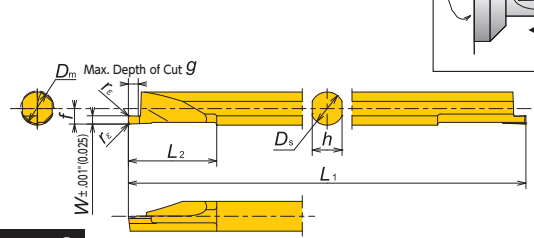


Figure-2

SBG

Item Number	Groove width <i>W</i>		Min Bore Dia. <i>D_m</i>		<i>D_s</i>		<i>L₁</i>	<i>L₂</i>	<i>f</i>	<i>h</i>	<i>h₂</i>	<i>r_ε</i>		Chip-breaker	Coated Carbide
	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		ZM3
SBG030050RB	.020	0.50	.118	3	.118	3	50	9	1.3	2.7	0.8	.002	0.05	Yes	●
SBG030075RB	.030	0.75	.118	3	.118	3	50	9	1.3	2.7	0.8	.002	0.05	Yes	●
SBG030100RB	.039	1.00	.118	3	.118	3	50	9	1.3	2.7	0.8	.002	0.05	Yes	●
SBG040050RB	.020	0.50	.157	4	.157	4	60	12	1.8	3.6	1.0	.002	0.05	Yes	●
SBG040075RB	.030	0.75	.157	4	.157	4	60	12	1.8	3.6	1.0	.002	0.05	Yes	●
SBG040100RB	.039	1.00	.157	4	.157	4	60	12	1.8	3.6	1.0	.002	0.05	Yes	●
SBG050050RB	.020	0.50	.197	5	.197	5	70	20	2.3	4.5	1.2	.002	0.05	Yes	●
SBG050100RB	.039	1.00	.197	5	.197	5	70	20	2.3	4.5	1.2	.002	0.05	Yes	●
SBG050150RB	.059	1.50	.197	5	.197	5	70	20	2.3	4.5	1.2	.002	0.05	Yes	●
SBG060100RB	.039	1.00	.236	6	.236	6	80	20	2.8	5.4	1.8	.002	0.05	Yes	●
SBG060150RB	.059	1.50	.236	6	.236	6	80	20	2.8	5.4	1.8	.002	0.05	Yes	●
SBG060200RB	.079	2.00	.236	6	.236	6	80	20	2.8	5.4	1.8	.002	0.05	Yes	●
SBG080100RB	.039	1.00	.315	8	.315	8	80	20	3.8	7.3	2.2	.002	0.05	Yes	●
SBG080150RB	.059	1.50	.315	8	.315	8	80	20	3.8	7.3	2.2	.002	0.05	Yes	●
SBG080200RB	.079	2.00	.315	8	.315	8	80	20	3.8	7.3	2.2	.002	0.05	Yes	●
SBG030050RB-S	.020	0.50	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
SBG030075RB-S	.030	0.75	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
SBG030100RB-S	.039	1.00	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
SBG030150RB-S	.059	1.50	.118	3	.118	3	50	4.5	1.3	2.7	0.8	.002	0.05	Yes	○
SBG040050RB-S	.020	0.50	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
SBG040075RB-S	.030	0.75	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
SBG040100RB-S	.039	1.00	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
SBG040150RB-S	.059	1.50	.157	4	.157	4	60	6	1.8	3.6	1.0	.002	0.05	Yes	○
SBG050050RB-S	.020	0.50	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
SBG050100RB-S	.039	1.00	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
SBG050150RB-S	.059	1.50	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
SBG050200RB-S	.079	2.00	.197	5	.197	5	70	7.5	2.3	4.5	1.2	.002	0.05	Yes	○
SBG060100RB-S	.039	1.00	.236	6	.236	6	80	7.5	2.8	5.4	1.8	.002	0.05	Yes	○
SBG060150RB-S	.059	1.50	.236	6	.236	6	80	7.5	2.8	5.4	1.8	.002	0.05	Yes	○
SBG060200RB-S	.079	2.00	.236	6	.236	6	80	7.5	2.8	5.4	1.8	.002	0.05	Yes	○
SBG080100RB-S	.039	1.00	.315	8	.315	8	80	8.5	3.8	7.3	2.2	.002	0.05	Yes	○
SBG080150RB-S	.059	1.50	.315	8	.315	8	80	8.5	3.8	7.3	2.2	.002	0.05	Yes	○
SBG080200RB-S	.079	2.00	.315	8	.315	8	80	8.5	3.8	7.3	2.2	.002	0.05	Yes	○

SFG

Item Number	Groove width <i>W</i>		Min Bore Dia. <i>D_m</i>		<i>D_s</i>		<i>L₁</i>	<i>L₂</i>	<i>f</i>	<i>h</i>	<i>g</i>	<i>r_ε</i>		Chip-breaker	Coated Carbide
	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)						(Inch)	(mm)		TM4
SFG060R100B	.039	1.00	.236	6	.236	6	80	16.0	2.8	5.4	1.5	.002	0.05	Yes	○
SFG060R150B	.059	1.50	.236	6	.236	6	80	16.0	2.8	5.4	2.5	.002	0.05	Yes	○
SFG060R200B	.079	2.00	.236	6	.236	6	80	16.0	2.8	5.4	3.0	.002	0.05	Yes	○
SFG080R100B	.039	1.00	.315	8	.315	8	80	16.0	3.8	7.3	1.5	.002	0.05	Yes	○
SFG080R150B	.059	1.50	.315	8	.315	8	80	16.0	3.8	7.3	2.5	.002	0.05	Yes	○
SFG080R200B	.079	2.00	.315	8	.315	8	80	16.0	3.8	7.3	3.0	.002	0.05	Yes	○
SFG080R300B	.118	3.00	.315	8	.315	8	80	16.0	3.8	7.3	3.0	.002	0.05	Yes	○

BG Series - Toolholders

S-BG (Takes Left-Hand Insert)

Minimum Bore Diameter .394"(10.0mm)

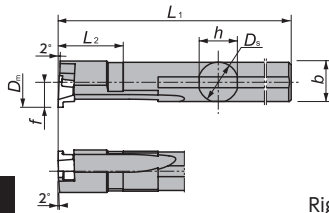


Figure-1

Right-Hand style shown

BG (Takes Left-Hand Insert)

Minimum Bore Diameter .394"(10.0mm)

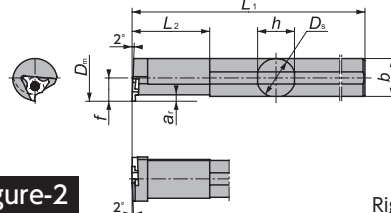


Figure-2

Right-Hand style shown

S08H-BG / S10K-BG / BG

Gage Insert	Item Number	Figure	Stock		Min. Bore Dia. D_m	Max. Depth Of Cut. a_r	D_s	h	b	L_1	f	L_2	Groove width covered w		Clamp Screw	Wrench
			R	L									(Inch)	(mm)		
GTG10	S08H-BG $\frac{1}{8}$ 10D10	1	○	○	.394 10	.039 1.0	.315 8	.303 7.7	.309 7.85	4.724 120	.197 5.0	.787 20	.020-079	0.50-2.00	LR-S-25 x 6.8	CLR-15S
	S10K-BG $\frac{1}{8}$ 10D12	1	○	○	.472 12	.039 1.0	.394 10	.378 9.6	.386 9.8	4.724 120	.236 6.0	.984 25	.020-079	0.50-2.00	LR-S-25 x 6.8	CLR-15S
GTG10	BG $\frac{1}{8}$ 08-00S	2	○	○	.394 10	.039 1.0	.315 8	.276 7.0	.295 7.5	4.921 125	.197 5.0	.787 20	.020-079	0.50-2.00	LR-S-25 x 6.8	CLR-15S
	BG $\frac{1}{8}$ 08-10S	2	○	○	.394 10	.039 1.0	.315 8	.276 7.0	.295 7.5	4.921 125	.197 5.0	.787 20	.039-079	1.00-2.00	LR-S-25 x 6.8	CLR-15S
	BG $\frac{1}{8}$ 10-00S	2	○	○	.472 12	.079 2.0	.394 10	.354 9.0	.374 9.5	5.906 150	.236 6.0	.984 25	.020-079	0.50-2.00	LR-S-25 x 6.8	CLR-15S
	BG $\frac{1}{8}$ 10-10S	2	○	○	.472 12	.079 2.0	.394 10	.354 9.0	.374 9.5	5.906 150	.236 6.0	.984 25	.039-079	1.00-2.00	LR-S-25 x 6.8	CLR-15S
GTG14	BG $\frac{1}{4}$ 12-00S	2	○	○	.551 14	.079 2.0	.472 12	.433 11.0	.453 11.5	7.087 180	.276 7.0	1.181 30	.039-079	1.00-2.00	LR-S-3 x 7.8	RRL-20S
	BG $\frac{1}{4}$ 12-12S	2	○	○	.551 14	.079 2.0	.472 12	.433 11.0	.453 11.5	7.087 180	.276 7.0	1.181 30	.057-079	1.45-2.00	LR-S-3 x 7.8	RRL-20S
	BG $\frac{1}{4}$ 14-00S	2	○	○	.630 16	.118 3.0	.551 14	.512 13.0	.531 13.5	7.087 180	.315 8.0	1.378 35	.039-079	1.00-2.00	LR-S-3 x 7.8	RRL-20S
	BG $\frac{1}{4}$ 14-12S	2	○	○	.630 16	.118 3.0	.551 14	.512 13.0	.531 13.5	7.087 180	.315 8.0	1.378 35	.057-079	1.45-2.00	LR-S-3 x 7.8	RRL-20S
GTG20	BG $\frac{1}{2}$ 16	2	○	○	.787 20	.118 3.0	.630 16	.591 15.0	.610 15.5	7.874 200	.394 10.0	1.575 40	.059-079	1.50-2.00	LR-S-3 x 7.8	RRL-20S
	BG $\frac{1}{2}$ 20	2	○	○	.984 25	.118 3.0	.787 20	.748 19.0	.768 19.5	7.874 200	.472 12.0	1.575 40	.059-079	1.50-2.00	LR-S-3 x 7.8	RRL-20S

BG Series - Inserts

GTG

Shape	Item Number	Groove width w		Max. Depth Of Cut. a_r		L		r_ϵ		d		Coated Carbide			Coated Cermet
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	QM3	TM4	ZM3	C7X
<p>Left-Hand style shown</p>	GTG10050FL005	0.020	0.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○		
	GTG10075FL005	0.030	0.75	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○		
	GTG10100FL005	0.039	1.00	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○		
	GTG10150FL005	0.059	1.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○		
	GTG10200FL005	0.079	2.00	.039	1.0	.047	1.2	.002	0.05	.219	5.56		○		
	GTG10050FL00	0.020	0.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○	
	GTG10065FL00	0.026	0.65	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○	
	GTG10075FL00	0.030	0.75	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○	
	GTG10100FL00	0.039	1.00	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○	
	GTG10125L	0.049	1.25	.039	1.0	.047	1.2	.008	0.2	.219	5.56				○
	GTG10150FL00	0.059	1.50	.039	1.0	.047	1.2	.002	0.05	.219	5.56			○	
	GTG10200FL01	0.079	2.00	.039	1.0	.047	1.2	.004	0.1	.219	5.56			○	
	GTG14100FL00	0.039	1.00	.079	2.0	.087	2.2	.002	0.05	.313	7.94			○	
	GTG14145L	0.057	1.45	.079	2.0	.087	2.2	.008	0.2	.313	7.94				○
	GTG14150FL00	0.059	1.50	.079	2.0	.087	2.2	.002	0.05	.313	7.94			○	
	GTG14175L	0.069	1.75	.079	2.0	.087	2.2	.008	0.2	.313	7.94				○
GTG14200FL01	0.079	2.00	.079	2.0	.087	2.2	.004	0.1	.313	7.94			○		
GTG20150FL	0.059	1.50	.118	3.0	.126	3.2	.008	0.2	.375	9.525		○			○
GTG20175L	0.069	1.75	.118	3.0	.126	3.2	.008	0.2	.375	9.525					○
GTG20200L	0.079	2.00	.118	3.0	.126	3.2	.008	0.2	.375	9.525					○
GTG20200FL	0.079	2.00	.118	3.0	.126	3.2	.008	0.2	.375	9.525		○			

● : Stock

○ : 1-2 week delivery

Cutting condition V5

SBT Series

ID Threading

SBT Minimum Bore Diameter .098" (2.5mm) ~

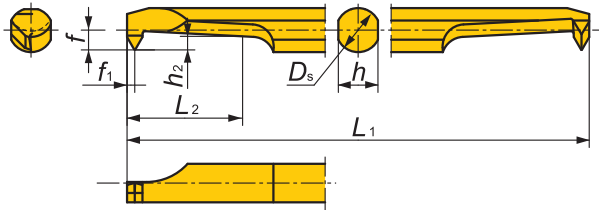


Figure-1

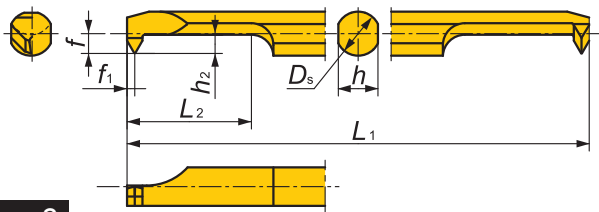
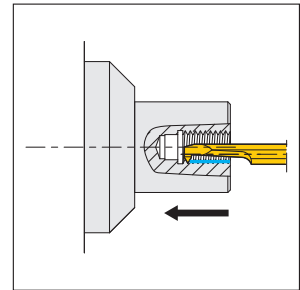
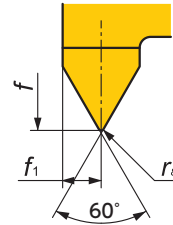


Figure-2



Right-Hand style shown

SBT Insert dimension

Item Number	Figure	Chip-breaker	Min. Bore Dia. D_m		D_s		L_2		h_2		L_1		f		f_1		h		r_e		Coated Carbide ZM3
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	
SBT025M3R	1	No	.098	2.5	.098	2.5	.213	5.4	.024	0.6	1.969	50	.043	1.10	.016	0.40	.091	2.3	.002	0.05	●
SBT030M4R	1	No	.118	3.0	.118	3.0	.295	7.5	.031	0.8	1.969	50	.051	1.30	.020	0.50	.028	2.7	.002	0.05	●
SBT030M4RB	1	Yes	.118	3.0	.118	3.0	.295	7.5	.031	0.8	1.969	50	.051	1.30	.020	0.50	.028	2.7	.002	0.05	●
SBT035M5RB	1	Yes	.138	3.5	.138	3.5	.335	8.5	.039	1.0	2.362	60	.061	1.55	.022	0.55	.013	3.2	.002	0.05	●
SBT040M6RB	1	Yes	.157	4.0	.157	4.0	.413	10.5	.047	1.2	2.362	60	.071	1.80	.028	0.70	.142	3.6	R.002	R0.05	●
SBT050M8RB	2	Yes	.197	5.0	.197	5.0	.622	15.8	.059	1.5	2.756	70	.091	2.30	.031	0.80	.117	4.5	R.002	R0.05	●
SBT060M10RB	2	Yes	.236	6.0	.236	6.0	.724	18.4	.071	1.8	3.150	80	.110	2.80	.037	0.95	.213	5.4	R.002	R0.05	●

SBT Applicable Thread

Item Number	Figure	Chip-breaker	Min. Bore Dia. D_m		Thread Type				Recommended Thread Type	
			(Inch)	(mm)	Metric Thread		UNF Thread		Metric Thread	UNF Thread
SBT025M3R	1	No	.098	2.5	M3	0.5	—	—	M3 × 0.5	—
SBT030M4R	1	No	.118	3.0	M4-	0.5-0.8	No.8-32UNC-	36-32	M4 × 0.7	No.8-32UNC
SBT030M4RB	1	Yes	.118	3.0	M4-	0.5-0.8	No.8-32UNC-	36-32	M4 × 0.7	No.8-32UNC
SBT035M5RB	1	Yes	.138	3.5	M4.5-	0.5-1.0	No.10-24UNC-	32-24	M5 × 0.8	No.10-24UNC No.12-24UNC
SBT040M6RB	1	Yes	.157	4.0	M5.5-	0.75-1.25	No.12-24UNC-	28-20	M6 × 1.0	1/4-20UNC
SBT050M8RB	2	Yes	.197	5.0	M7-	0.75-1.5	1/4-28UNF-	28-18	M8 × 1.25	5/16-18UNC
SBT060M10RB	2	Yes	.236	6.0	M8-	0.75-1.75	5/16-24UNF-	28-16	M10 × 1.5	3/8-16UNC

● : Stock ○ : 1-2 week delivery

Sleeves → V9 · 11 · 14

Unified Standard

	Thread Type		Pilot hole(mm)	Pitch		Applicable Inserts
	#1	#2		TPI	(mm)	
Coarse	No.8-32UNC	—	φ3.42	32	0.7938	SBT030M4R(B)
	No.10-24UNC	—	φ3.83	24	1.0583	SBT035M5RB
	—	No.12-24UNC	φ4.47	24	1.0583	
	1/4-20UNC	—	φ5.12	20	1.2700	SBT040M6RB
	5/16-18UNC	—	φ6.57	18	1.4111	SBT050M8RB
Fine	3/8-16UNC	—	φ7.98	16	1.5875	SBT060M10RB
	No.8-36UNF	—	φ3.51	36	0.7056	SBT030M4RB
	No.10-32UNF	—	φ4.07	32	0.7938	SBT035M5RB
	—	No.12-28UNF	φ4.61	28	0.9071	SBT040M6RB
	1/4-28UNF	—	φ5.47	28	0.9071	
	5/16-24UNF	—	φ6.91	24	1.0583	SBT050M8RB
	3/8-24UNF	—	φ8.51	24	1.0583	SBT060M10RB
	7/16-20UNF	—	φ9.88	20	1.2700	
	1/2-20UNF	—	φ11.47	20	1.2700	
	9/16-18UNF	—	φ12.9	18	1.4111	
5/8-18UNF	—	φ14.5	18	1.4111		
3/4-16UNF	—	φ17.5	16	1.5875		

ISO Metric

Thread Type			Pitch (mm)								
#1	#2	#3	2.0	1.75	1.5	1.25	1.0	0.8	0.75	0.7	0.5
M3											Coarse
M4										Coarse	Fine
	M4.5							Coarse	Coarse		
M5								Coarse			
		M5.5									
M6							Coarse				
	M7										
M8						Coarse				Fine	
		M9									
M10					Coarse	Fine					
		M11									
M12				Coarse		Fine					
	M14		Coarse								
		M15									

Cutting Conditions

Threading

For 600 - 1500 RPM Recommended Depth of Cut (DOC) for Each Pass

Metric Thread		Number of Pass																				
Pitch (mm)	Total DOC (mm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.5	0.3	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—
0.7	0.43	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—	—
0.75	0.46	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—	—
0.8	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—	—	—
1.0	0.62	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—	—
1.25	0.76	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.03	0.02	0.01	—	—	—	—	—	—
1.5	0.92	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	—	—	—
1.75	1.09	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01

UNF Thread		Number of Pass																				
Pitch (TPI)	Total DOC (inch)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
36	.017	.002	.002	.002	.002	.002	.002	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—	—	—
32	.019	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—	—
28	.022	.003	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—	—	—
24	.026	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—	—	—
20	.031	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.0008	.0004	—	—	—	—	—
18	.034	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.002	.001	.001	.001	.0008	.0004	—	—	—	—
16	.039	.003	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.0008	.0004	.0004

TMN Series

TGC Minimum Bore Diameter .315" (80mm) ~

Carbide shank

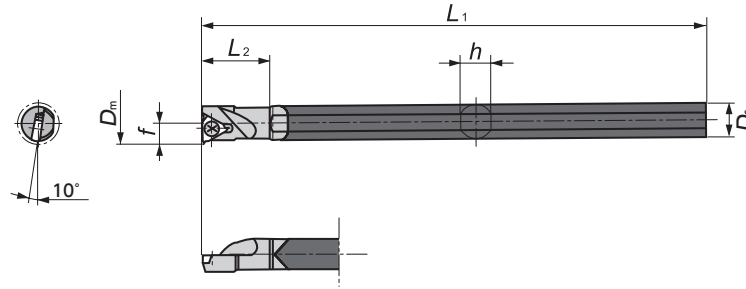


Figure-1

Right-Hand style shown

HN Minimum Bore Diameter .315" (80mm) ~

Steel shank

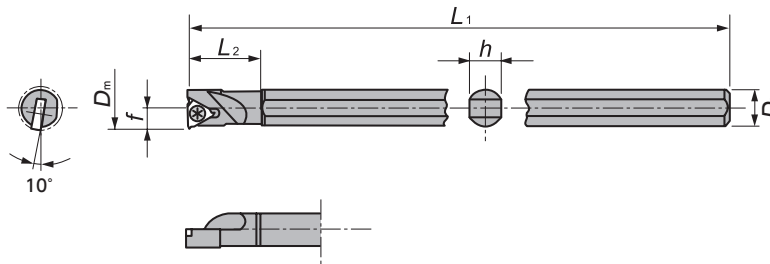


Figure-2

Right-Hand style shown

TMN Series - Toolholders



TGC/HN

Gage Insert	Item Number	Figure	Stock	Min. Machining Dia. D_n (Inch) (mm)	D_s (Inch) (mm)	h (Inch) (mm)	L_1 (Inch) (mm)	f (Inch) (mm)	L_2 (Inch) (mm)	Clamp Screw	Wrench
TMN..06..	TGC10T06H161R	1	○	.315 8	.236 6	.217 5.5	3.937 100	.150 3.8	.512 13.0	LR-S-2 × 4.4	CLR-13S
TMN..08..	TGC10T08K162R	1	○	.394 10	.315 8	.276 7.0	4.921 125	.185 4.7	.669 17.0	LR-S-2 × 5.5	CLR-13S
TMN..09..	TGC10T10M163R	1	○	.472 12	.394 10	.354 9.0	5.906 150	.236 6.0	.787 20.0	LRIS-2.2 × 6	CLR-13S
TMN..06..	HN59Z-0028	2	○	.315 8	.236 6	.217 5.5	3.937 100	.150 3.8	.512 13.0	LR-S-2 × 4.4	CLR-13S
TMN..08..	HN59Z-0029	2	○	.394 10	.315 8	.276 7.0	4.921 125	.185 4.7	.669 17.0	LR-S-2 × 5.5	CLR-13S
TMN..09..	HN59Z-0030	2	○	.472 12	.236 10	.354 9.0	5.906 150	.236 6.0	.787 20.0	LRIS-2.2 × 6	CLR-13S

TMN Series - Inserts

TMN

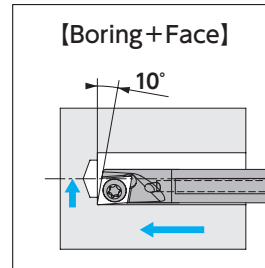
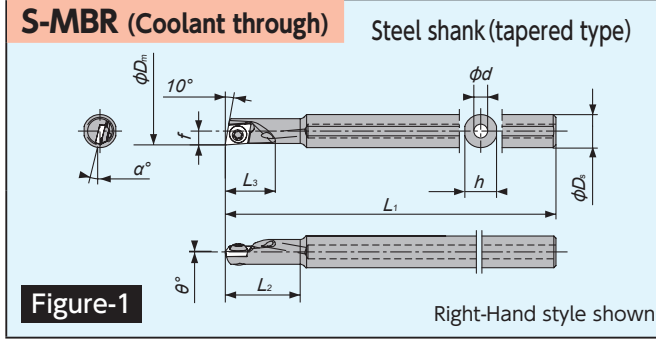
Shape	Item Number	ϕd		s		r_e		Recommended Pitch		Pitch		Coated Carbide
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(TPI)	(mm)	(TPI)	(mm)	ZM3
	TMN06FR03	.156	3.97	.063	1.59	.001	.003	51	0.5	63-34	0.4-0.75	○
	TMN08FR03	.187	4.76	.094	2.38	.001	.003	51	0.5	63-34	0.4-0.75	○
	TMN09FR03	.219	5.56	.094	2.38	.001	.003	51	0.5	63-34	0.4-0.75	○

Right-hand type shown

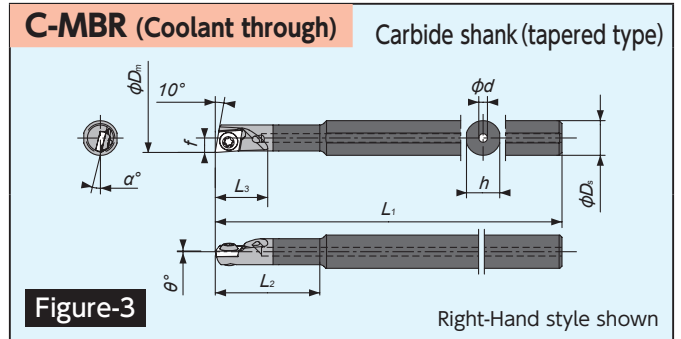
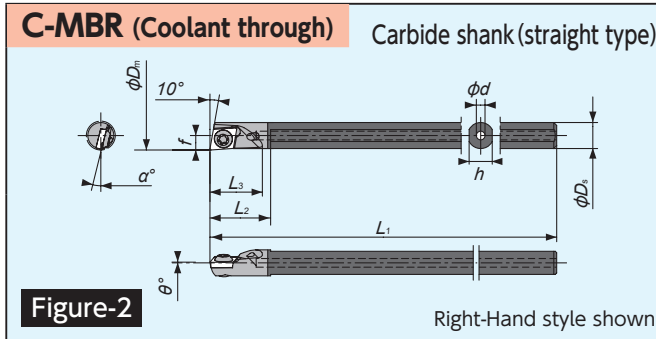
Cutting condition → V5

Mogul Bar for 75° Diamond (MBL style)





Minimum Bore Diameter .197"(5.0mm)



F1 chipbreakers evacuates chips BACKWARD (S-STUC style shown)

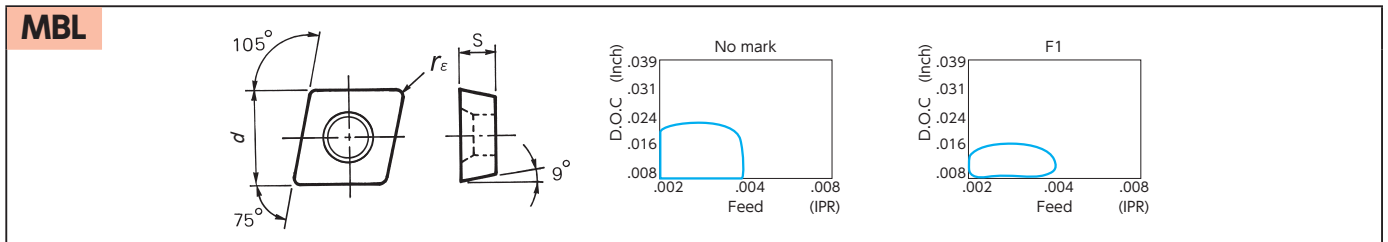



MBL style - Toolholders

Gage Insert	Item number*	Figure	Stock	ϕD_s		Min. bore Dia. ϕD_m		h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius r_e		Clamp screw	Wrench
				(inch)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(inch)	(mm)					
 MBL	S06F-MBRD05-OH 	1	●	.236	6.0	.197	5.0	5.7	80	2.5	13.5	9	-	2.5	0°	-13°	.0059	0.15	LR-S-2 × 3.5	CLR-13S
	C045F-MBRD05-OH 	2	●	.177	4.5	.197	5.0	4.0	80	2.5	10.5	9	-	1.5	0°	-13°	.0059	0.15	LR-S-2 × 3.5	CLR-13S
	C06F-MBRD05-OH 	3	●	●	.236	6.0	.197	5.0	5.7	80	2.5	18	9	-	1.5	0°	-13°	.0059	0.15	LR-S-2 × 3.5	CLR-13S

* "S" denotes steel shank, "C" denotes carbide shank

MBL style - Insert



	Item Number	d		s		r_e		Coated Carbide	
		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM4	ZM3
L-hand shown	MBL 005 FL	.142	3.6	.039	1.0	.002	0.05	●	○
	MBL 015 FL	.142	3.6	.039	1.0	.006	0.15	●	○
R-hand shown	MBL 005 FR F1	.142	3.6	.039	1.0	.002	0.05	●	○
	MBL 015 FR F1	.142	3.6	.039	1.0	.006	0.15	●	○

*For F1 chipbreaker, right-hand inserts fit to right-hand toolholder

Note: F1 chipbreaker evacuates chips BACKWARD

● : Stock ○ : 1-2 week delivery  : Coolant through

Cutting condition 

Mogul Bar for 75° Diamond (ERGP style)

Minimum Bore Diameter .236"(6.0mm)

S-SEXR (Coolant through) Steel shank (tapered type)

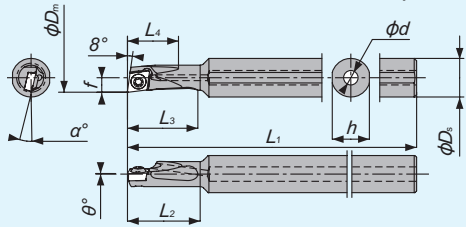
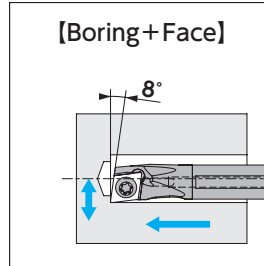


Figure-1 Right-Hand style shown



F1 chipbreakers evacuate chips BACKWARD (S-STUC style shown)

C-SEXR (Coolant through) Carbide shank (straight type)

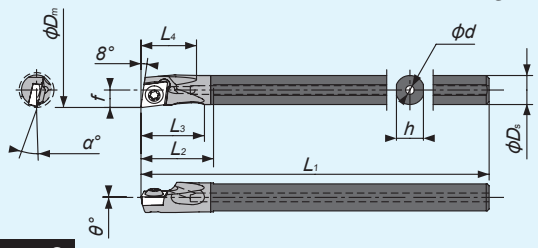


Figure-2 Right-Hand style shown

C-SEXR (Coolant through) Carbide shank (tapered type)

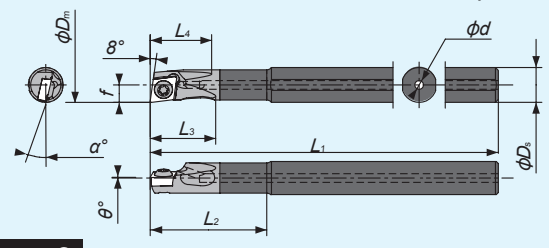


Figure-3 Right-Hand style shown

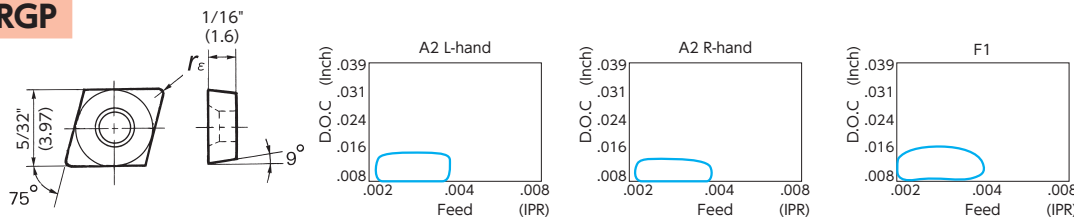
ERGP style - Toolholders

Gage Insert	Item number*	Figure	Stock		ϕD_s		Min. bore Dia. ϕD_m		h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Std. corner radius r_e		Clamp screw	Wrench
			R	L	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(inch)	(mm)					
	S08G-SEXR 5/32 3D06-OH	1	●		.315	8.0	.236	6.0	7.7	90	3.0	15	15	10	3.0	0°	-13°	.008	0.2	LR-S-2 x 3.7	CLR-13S
	C05G-SEXR 5/32 3D06-OH	2	●	○	.197	5.0	.236	6.0	4.0	90	3.0	12.5	11	10	1.5	0°	-13°	.008	0.2	LR-S-2 x 3.7	CLR-13S
	C06G-SEXR 5/32 3D06-OH	3	●	○	.236	6.0	.236	6.0	5.7	90	3.0	20	11	10	1.5	0°	-13°	.008	0.2	LR-S-2 x 3.7	CLR-13S

* "S" denotes steel shank, "C" denotes carbide shank

ERGP style - Insert

ERGP



● Right-Hand style shown

ERGP

	Item Number	ISO Item Number	IC		Thickness		r_e		Coated Carbide				Cermets					
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	TM4		VM1		ZM3		XT3		C7X	
			R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
	ERGP 52Y- F 5/32 A2	ERGHT 30102 FR A2	5/32	3.97	1/16	1.6	.008	0.2	R	L	R	L	R	L	R	L	R	L
	ERGP 521- F 5/32 A2	ERGHT 30104 FR A2	5/32	3.97	1/16	1.6	.016	0.4	R					L				
	ERGP 5204 FR-- F1	ERGHT 30101 FR F1	5/32	3.97	1/16	1.6	.004	0.1	R									
	ERGP 52Y- FR-- F1	ERGHT 30102 FR F1	5/32	3.97	1/16	1.6	.008	0.2	R									
	ERGP 521- FR-- F1	ERGHT 30104 FR F1	5/32	3.97	1/16	1.6	.016	0.4	R									

*For F1 chipbreaker, right-hand inserts fit to right-hand toolholder

● : Stock ○ : 1-2 week delivery

R : Stock (Right-hand only)

L : Stock (Left-hand only)

Ⓡ : 1-2 week delivery (Right-hand only)

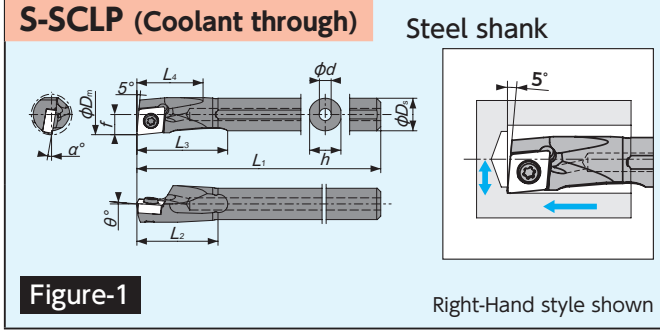
Ⓛ : 1-2 week delivery (Left-hand only)

💧 : Coolant through

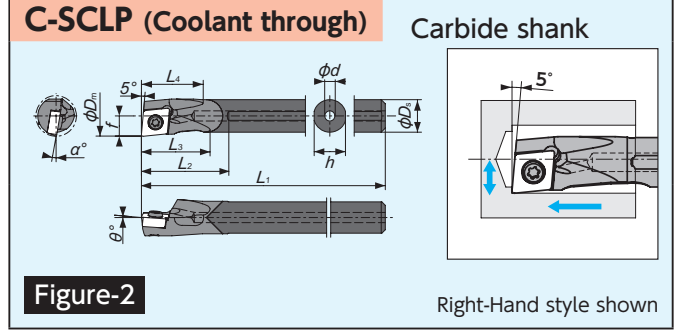
Cutting condition → V4

Note: F1 chipbreaker evacuates chips BACKWARD

Mogul Bar for 80° Diamond (CP style)



Minimum Bore Diameter .276" (7.0mm)



CP style - Toolholders



Gage Insert	Item number*	Figure	Stock		φ D _s (inch) (mm)	Min. bore Dia. φ D _m (inch) (mm)	h (mm)	L ₁ (mm)	f (mm)	L ₂ (mm)	L ₃ (mm)	L ₄ (mm)	φ d (mm)	θ	α	Std. corner radius r _ε		Clamp screw	Wrench
			R	L												(inch)	(mm)		
CP..62..	S06F-SCLP R _L 04D07-OH	1	●		.236 6.0	.276 7.0	5.75	80	3.5	14	17.0	12.0	2.5	+5°	-9°	.008	0.2	LR-5-2 × 3.7	CLR-13S
	S07G-SCLP R _L 04D08-OH	1	●		.276 7.0	.315 8.0	6.75	90	4.0	16	19.5	13.5	3.0	+5°	-7°	.008	0.2	LR-5-2 × 3.7	CLR-13S
CP..21.5..	S08H-SCLP R _L 06D10-OH	1	●		.315 8.0	.394 10.0	7.7	100	5.0	20	22.0	16.0	3.0	+5°	-10°	.016	0.4	LR-5-2.5 × 6	CLR-15S
CP..62..	C06H-SCLP R _L 04D07-OH	2	●	○	.236 6.0	.276 7.0	5.75	100	3.5	15.5	11.5	12.0	2.0	+5°	-9°	.008	0.2	LR-5-2 × 3.7	CLR-13S
	C07J-SCLP R _L 04D08-OH	2	●	○	.276 7.0	.315 8.0	6.75	110	4.0	17.5	13.0	13.5	2.0	+5°	-7°	.008	0.2	LR-5-2 × 3.7	CLR-13S
CP..21.5..	C08K-SCLP R _L 06D10-OH	2	●	○	.315 8.0	.394 10.0	7.7	125	5.0	21.5	16.5	15.0	2.5	+5°	-10°	.016	0.4	LR-5-2.5 × 6	CLR-15S

* "S" denotes steel shank, "C" denotes carbide shank

CP style - Insert - Carbide/Cermet

80 degree Diamond Positive type (CP..)

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

Shape	Item Number	ISO Item Number	IC	R	Carbide							Cermet					Depth of cut (inch)	
					PVD Coated							PVD Coated						
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z		
	CPGT 21.504 FNAM3	CPGT 060201 FNXAM3	1/4	.004														
	CPGT 21.508 FNAM3	CPGT 060202 FNXAM3	1/4	.008														
	CPGT 21.51 FNAM3	CPGT 060204 FNXAM3	1/4	.016														
	CPGH 21.504 AM5	CPGH 060201 ENBAM5	1/4	.004														
	CPGH 21.508 AM5	CPGH 060202 ENBAM5	1/4	.008														
	CPGH 21.508 FNAM5	CPGH 060202 FNAM5	1/4	.008														
	CPGH 21.51 AM5	CPGH 060204 ENBAM5	1/4	.016														
	CPGH 21.51 FNAM5	CPGH 060204 FNAM5	1/4	.016														
	CPGH 21.52 AM5	CPGH 060208 ENBAM5	1/4	.031														
	CPGP 6208 F _R A1	CPGH 040102 F _R A1	.187	.008														
	CPGP 621 F _R A1	CPGH 040104 F _R A1	.187	.016														
	CPGP 21.508 F _R A	CPGH 060202 F _R A	1/4	.008														
	CPGP 21.51 F _R A	CPGH 060204 F _R A	1/4	.016														
	CPGP 6208 T _R A1	CPGH 040102 T _R A1	.187	.008														
	CPGP 621 T _R A1	CPGH 040104 T _R A1	.187	.016														
	CPGP 21.508 R _L A	CPGH 060202 T _R A	1/4	.008														
	CPGP 21.51 R _L A	CPGH 060204 T _R A	1/4	.016														
	CPGP 6204 F _R F1	CPGH 040101 F _R F1	.187	.004														
	CPGP 6208 F _R F1	CPGH 040102 F _R F1	.187	.008														
	CPGP 621 F _R F1	CPGH 040104 F _R F1	.187	.016														
	CPGP 21.504 F _R F1	CPGH 060201 F _R F1	1/4	.004														
	CPGP 21.508 F _R F1	CPGH 060202 F _R F1	1/4	.008														
	CPGP 21.51 F _R F1	CPGH 060204 F _R F1	1/4	.016														
	CPGP 6208 R _L S	CPGH 040102 R _L S	.187	.008														
	CPGP 621 R _L S	CPGH 040104 R _L S	.187	.016														
	CPGP 21.508 R _L S	CPGH 060202 R _L S	1/4	.008														
	CPGP 21.51 R _L S	CPGH 060204 R _L S	1/4	.016														

*For F1 chipbreaker, right-hand inserts fit to right-hand toolholder
Note: F1 chipbreaker evacuates chips BACKWARD

Mogul Bar for 80° Diamond ("CC" style)

Minimum Bore Diameter .394"(10mm)

S-SCLC (Coolant through)

Steel shank

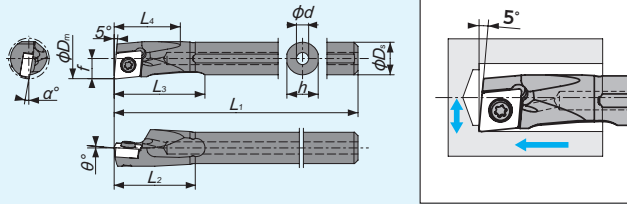


Figure-1

Right-Hand style shown

C-SCLC (Coolant through)

Carbide shank

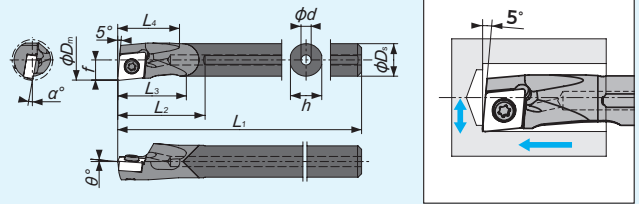


Figure-2

Right-Hand style shown

"CC" style - Toolholders

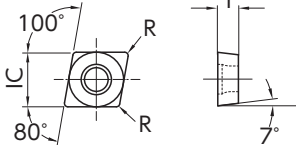


Gage Insert	Item number*	Figure	Stock		ϕD_s		Min. bore Dia. ϕD_m		h	L ₁	f	L ₂	L ₃	L ₄	ϕd	θ	α	Std. corner radius r_ϵ	Clamp screw	Wrench	
			R	L	(inch)	(mm)	(inch)	(mm)													(mm)
CC..21.5..	S08H-SCLC%{06D10-OH	1	●		.315	8.0	.394	10.0	7.7	100	5.0	20.0	22.0	16.0	3.0	0°	-13°	.016	0.4	LR15-2.5 × 5	CLR-15S
	S10K-SCLC%{06D12-OH	1	●		.394	10.0	.472	12.0	9.6	125	6.0	24.0	27.5	20.0	3.5	0°	-11°	.016	0.4	LR15-2.5 × 5	CLR-15S
	S12M-SCLC%{06D14-OH	1	●		.472	12.0	.551	14.0	11.5	150	7.0	28.0	32.5	23.0	4.0	0°	-9°	.016	0.4	LR15-2.5 × 5	CLR-15S
CC..32.5..	S16Q-SCLC%{09D18-OH	1	●		.630	16.0	.709	18.0	15.4	180	9.0	36.0	42.5	30.0	5.0	0°	-10°	.016	0.4	LR15-4 × 8	LLR-25S-20 × 65
CC..21.5..	C08K-SCLC%{06D10-OH	2	●		.315	8.0	.394	10.0	7.7	125	5.0	21.5	16.5	15.0	2.5	0°	-13°	.016	0.4	LR15-2.5 × 5	CLR-15S
	C10M-SCLC%{06D12-OH	2	●	○	.394	10.0	.472	12.0	9.6	150	6.0	25.0	20.0	19.5	2.5	0°	-11°	.016	0.4	LR15-2.5 × 5	CLR-15S
	C12M-SCLC%{06D14-OH	2	●		.472	12.0	.551	14.0	11.5	150	7.0	29.0	23.5	22.5	3.0	0°	-9°	.016	0.4	LR15-2.5 × 5	CLR-15S

* "S" denotes steel shank, "C" denotes carbide shank

CC.. inserts - CBN / PCD

80° Diamond Positive type(CC..)



Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)								PCD			
								Coated		Coated						PD1	PD2		
								B5K	B52	B6K	B36	B40	B23	B30					
	CCGW 21.51 PD	CCGW 060204 PD	S0415	1/4	.016	2	.091		●										
	CCGW 32.508 PD	CCGW 09T302 PD	S0415	3/8	.008	2	.091		●										
	CCGW 32.508 PD	CCGW 09T302 PD	S0635	3/8	.008	2	.091												
	CCGW 32.51 PD	CCGW 09T304 PD	S0415	3/8	.016	2	.091		●										
	CCGW 32.51 PD	CCGW 09T304 PD	S0635	3/8	.016	2	.091												
	CCGW 32.52 PD	CCGW 09T308 PD	S0415	3/8	.031	2	.087		●										
	CCMW 32.504	CCMW 09T301	None	3/8	.004	1	—												○
	CCMW 32.508	CCMW 09T302	None	3/8	.008	1	—												○
	CCMW 32.51	CCMW 09T304	None	3/8	.016	1	—												○
	CCMW 32.52	CCMW 09T308	None	3/8	.031	1	—												○
	CCMT 32.508 PF	CCMT 09T302PF	None	3/8	.008	1	—												●
	CCMT 32.51 PF	CCMT 09T304PF	None	3/8	.016	1	—												●

● : Stock ○ : 1-2 week delivery

R : Stock (Right-hand only)

L : Stock (Left-hand only)

Ⓡ : 1-2 week delivery (Right-hand only)

Ⓛ : 1-2 week delivery (Left-hand only)

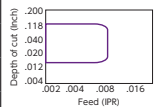
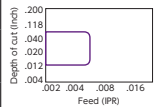
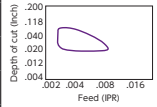
💧 : Coolant through

Cutting condition → V4

CC.. inserts - Carbide / Cermet

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

Shape	Item Number	ISO Item Number	IC	R	Carbide										Cermet					
					PVD Coated										PVD Coated					
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z				
					Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●
					Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	
					Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	
					Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	
					Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	
					Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	
					<ul style="list-style-type: none"> ● : 1st Choice ○ : Alternate choice 															
	CCGT 21.501 FNAM3	CCGT 060200 FNAM3	1/4	.001	●	●				○										
	CCGT 21.504M FNAM3	CCGT 060201M FNAM3	1/4	.003	●															
	CCGT 21.504 FNAM3	CCGT 060201 FNAM3	1/4	.004										●						
	CCGT 21.508M FNAM3	CCGT 060202M FNAM3	1/4	.007	●	●														
	CCGT 21.508 FNAM3	CCGT 060202 FNAM3	1/4	.008						○	○									
	CCGT 21.508 FNAM3	CCGT 060202 FNAM3	1/4	.008										●						
	CCGT 21.51M FNAM3	CCGT 060204M FNAM3	1/4	.015	●	●														
	CCGT 21.51 FNAM3	CCGT 060204 FNAM3	1/4	.016							○				●					
	CCGT 32.501 FNAM3	CCGT 09T300 FNAM3	3/8	.001	●	●			○	○										
	CCGT 32.504M FNAM3	CCGT 09T301M FNAM3	3/8	.003	●	●			○	○										
	CCGT 32.504 FNAM3	CCGT 09T301 FNAM3	3/8	.004											●					
	CCGT 32.508M FNAM3	CCGT 09T302M FNAM3	3/8	.007	●	●			○	○										
	CCGT 32.508 FNAM3	CCGT 09T302 FNAM3	3/8	.008	●					○	○									
	CCGT 32.508 FNAM3	CCGT 09T302 FNAM3	3/8	.008											●					
	CCGT 32.51M FNAM3	CCGT 09T304M FNAM3	3/8	.015	●	●			○	○										
	CCGT 32.51 FNAM3	CCGT 09T304 FNAM3	3/8	.016	●					○										
	CCGT 32.51 FNAM3	CCGT 09T304 FNAM3	3/8	.016											●					
	CCGT 32.52 FNAM3	CCGT 09T308 FNAM3	3/8	.031	●															
	CCGT 32.52 FNAM3	CCGT 09T308 FNAM3	3/8	.031											●					
	CCMT 21.508 FNAM3	CCMT 060202 FNAM3	1/4	.008					○											
	CCMT 21.508 AM3	CCMT 060202 ENBAM3	1/4	.008											○			○		
	CCMT 21.51 FNAM3	CCMT 060204 FNAM3	1/4	.016					○											
	CCMT 21.51 AM3	CCMT 060204 ENBAM3	1/4	.016											●			○		
	CCMT 32.508 AM3	CCMT 09T302 ENBAM3	3/8	.008											○			○		
	CCMT 32.51 FNAM3	CCMT 09T304 FNAM3	3/8	.016					○											
	CCMT 32.51 AM3	CCMT 09T304 ENBAM3	3/8	.016											●			○		
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	CCGT 32.508M YL	CCGT 09T302M YL	3/8	.007						●	○									
	CCGT 32.51M YL	CCGT 09T304M YL	3/8	.015						●	○									
	CCGT 21.504M CL	CCGT 060201M CL	1/4	.003		●	○	●												
	CCGT 21.508M CL	CCGT 060202M CL	1/4	.007	●*	●	○	●												
	CCGT 32.501 CL	CCGT 09T300 CL	3/8	.001		○														
	CCGT 32.504M CL	CCGT 09T301M CL	3/8	.003		●	○	●												
	CCGT 32.508M CL	CCGT 09T302M CL	3/8	.007		●	○	●												
CCGT 32.51M CL	CCGT 09T304M CL	3/8	.015	●*	●	○	●													



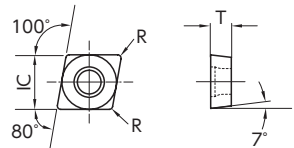




*To be released in November 2015.

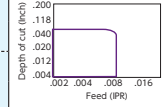
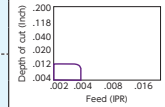
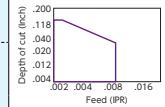
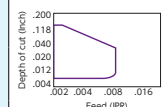
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										PVD Coated							PVD Coated																		
										QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z														
										Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●								
										Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
										Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
										Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
										Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
										Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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	CCGT 21.504M	AZ7*	CCGT 060201M	AZ7	1/4	.003	○																												
	CCGT 21.508M	AZ7*	CCGT 060202M	AZ7	1/4	.007	○																												
	CCGT 32.501	AZ7*	CCGT 09T300	AZ7	3/8	.001	●	○			○																								
	CCGT 32.504M	AZ7*	CCGT 09T301M	AZ7	3/8	.003	●	○			○																								
	CCGT 32.508M	AZ7*	CCGT 09T302M	AZ7	3/8	.007	●	○			○																								
	CCGT 32.51M	AZ7*	CCGT 09T304M	AZ7	3/8	.015	●	○			○																								
	CCGT 21.504	AF1	CCGT 060201	ENBAF1	1/4	.004																													
	CCGT 21.508	AF1	CCGT 060202	ENBAF1	1/4	.008																													
	CCGT 21.51	AF1	CCGT 060204	ENBAF1	1/4	.016																													
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	CCGT 32.508	AF1	CCGT 09T302	ENBAF1	3/8	.008																													
	CCGT 32.508	FNAF1	CCGT 09T302	FNAF1	3/8	.008																													
	CCGT 32.51	FNAF1	CCGT 09T304	FNAF1	3/8	.016																													
	CCGT 32.51	AF1	CCGT 09T304	ENBAF1	3/8	.016																													
	CCGT 32.52	FNAF1	CCGT 09T308	FNAF1	3/8	.031																													
CCGT 32.52	AF1	CCGT 09T308	ENBAF1	3/8	.031																														
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	CCMT 32.51	AM5	CCMT 09T304	ENBAM5	3/8	.016																													
	CCMT 32.52	AM5	CCMT 09T308	ENBAM5	3/8	.031																													
	CCGT 21.508	ENBFM	CCGT 060202	ENBFM	1/4	.008																													
	CCGT 21.51	ENBFM	CCGT 060204	ENBFM	1/4	.016																													
	CCMT 21.508	ENBZR	CCMT 060202	ENBZR	1/4	.008																													
	CCMT 21.51	ENBZR	CCMT 060204	ENBZR	1/4	.016																													
	CCMT 32.508	ENBZR	CCMT 09T302	ENBZR	3/8	.008																													
	CCMT 32.51	ENBZR	CCMT 09T304	ENBZR	3/8	.016																													
	CCMT 32.52	ENBZR	CCMT 09T308	ENBZR	3/8	.031																													

*To be replaced by version which has 2.0mm higher edge.

● : Stock ○ : 1-2 week delivery ■ : While stock lasts
 R : Stock (Right-hand only) L : Stock (Left-hand only)
 ® : 1-2 week delivery (Right-hand only) ℒ : 1-2 week delivery (Left-hand only) M : Mirror finish

ID boring bars → **V26**
 Cutting condition → **V4**

				<table border="1"> <tr> <td>Steel</td> <td>P</td> <td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td> </tr> <tr> <td>Stainless Steel</td> <td>M</td> <td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td> </tr> <tr> <td>Cast Iron</td> <td>K</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td><td>●</td> </tr> <tr> <td>Non-Ferrous Material</td> <td>N</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td><td>●</td> </tr> <tr> <td>Heat Resistant Alloy</td> <td>S</td> <td>●</td><td>●</td><td>●</td><td>●</td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Hardened Material</td> <td>H</td> <td>●</td><td>●</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>		Steel	P	●	●	●	●	●	●	●	●	●	Stainless Steel	M	●	●	●	●	●	●	●	●	●	Cast Iron	K								●	●	Non-Ferrous Material	N								●	●	Heat Resistant Alloy	S	●	●	●	●						Hardened Material	H	●	●	●							<p>● : 1st Choice ● : Alternate choice</p>	
Steel	P	●	●	●	●	●	●	●	●	●																																																															
Stainless Steel	M	●	●	●	●	●	●	●	●	●																																																															
Cast Iron	K								●	●																																																															
Non-Ferrous Material	N								●	●																																																															
Heat Resistant Alloy	S	●	●	●	●																																																																				
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Shape	Item Number	ISO Item Number	IC	R	Carbide						Cermet																																																														
					PVD Coated						PVD Coated																																																														
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	C7X	XN4	Q15	C7Z																																																									
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	CCGT 21.504M R $\frac{1}{2}$ S	CCGT 060201M R $\frac{1}{2}$ S	1/4	.003	R	(R)																																																																			
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	CCGT 21.508M R $\frac{1}{2}$ S	CCGT 060202M R $\frac{1}{2}$ S	1/4	.007	R						RL																																																														
	CCGT 21.508 R $\frac{1}{2}$ S	CCGT 060202 R $\frac{1}{2}$ S	1/4	.008								RL																																																													
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CCMT 21.51 T $\frac{R}{2}$ AS	CCMT 060204 T $\frac{R}{2}$ AS	1/4	.016								RL				RL																																																										
CCMT 32.504 T $\frac{R}{2}$ AS	CCMT 09T301 T $\frac{R}{2}$ AS	3/8	.004								RL				RL																																																										
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	CCGT 21.51 F $\frac{R}{2}$ F1	CCGT 060204 F $\frac{R}{2}$ F1	1/4	.016				(R)																																																																	
	CCGT 32.508 F $\frac{R}{2}$ F1	CCGT 09T302 F $\frac{R}{2}$ F1	3/8	.008				(R)																																																																	
	CCGT 32.51 F $\frac{R}{2}$ F1	CCGT 09T304 F $\frac{R}{2}$ F1	3/8	.016				(R)																																																																	
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CCGW 21.504 FN	CCGW 060201 FN	1/4	.004								○																																																														
CCGW 21.504 H	CCGW 060201 H	1/4	.004									●																																																													
CCGW 21.508 H	CCGW 060202 H	1/4	.008									●																																																													
CCGW 21.51 FN	CCGW 060204 FN	1/4	.016									○																																																													
CCGW 21.52 FN	CCGW 060208 FN	1/4	.031									■																																																													
CCGW 32.500 V	CCGW 09T30 V	3/8	0																																																																						
CCGW 32.501 FN	CCGW 09T300 FN	3/8	.001									○																																																													
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CCGW 32.504 FN	CCGW 09T301 FN	3/8	.004									○																																																													
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CCGW 32.508 P	CCGW 09T302 P	3/8	.008											○																																																											



Mogul Bar for 60° Triangle (TC/TP style)

S-STUC (P) (Coolant through)

Steel shank

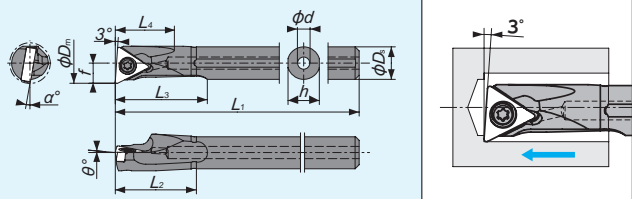


Figure-3

Right-Hand style shown

Minimum Bore Diameter .315"(8.0mm)

C-STUC (P) (Coolant through)

Carbide shank

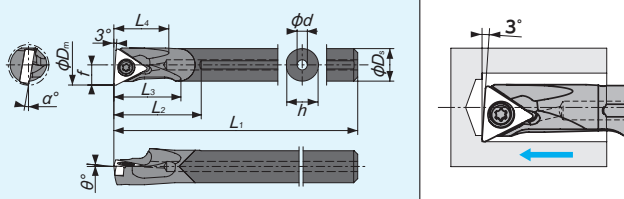


Figure-4

Right-Hand style shown

TC/TP style - Toolholders



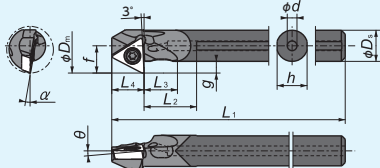
GageInsert	Item number*	Figure	Stock		φ D _s (inch) (mm)	Min. bore Dia. φ D _m (inch) (mm)	h	L ₁	f	L ₂	L ₃	L ₄	φ d	θ	α	Std. corner radius r _e		Clamp screw	Wrench
			R	L												(inch)	(mm)		
TC..52..	S07G-STUC%{06D08-OH	3	●		.276 7.0	.315 8.0	6.75	90	4.0	16	19.5	12.5	2.5	0°	-11°	.008	0.2	LR-5-2 × 4.4	CLR-13S
TP..73..	S08H-STUP%{09D10-OH	3	●		.315 8.0	.394 10.0	7.7	100	5.0	20	22.5	14.5	3.0	+5°	-10°	.016	0.4	LR-5-2.5 × 4.8	CLR-15S
TP..22..	S10K-STUP%{11D12-OH	3	●		.394 10.0	.472 12.0	9.6	125	6.0	24	27.5	18.5	3.5	+5°	-7.5°	.016	0.4	LR-5-3 × 5.8	RLR-20S
	S12M-STUP%{11D14-OH	3	●		.472 12.0	.551 14.0	11.5	150	7.0	28	32.5	22.0	4.0	+5°	-5°	.016	0.4	LR-5-3 × 5.8	RLR-20S
	S16Q-STUP%{11D18-OH	3	●		.630 16.0	.709 18.0	15.4	180	9.0	32	42.5	28.5	5.0	+5°	-3°	.016	0.4	LR-5-3 × 5.8	RLR-20S
TC..52..	C07J-STUC%{06D08-OH	4	●	○	.276 7.0	.315 8.0	6.75	110	4.0	17.5	13.0	12.5	2.0	0°	-11°	.008	0.2	LR-5-2 × 4.4	CLR-13S
TP..73..	C08K-STUP%{09D10-OH	4	●	○	.315 8.0	.394 10.0	7.7	125	5.0	21.5	16.5	14.5	2.5	+5°	-10°	.016	0.4	LR-5-2.5 × 4.8	CLR-15S
TP..22..	C10M-STUP%{11D12-OH	4	●	○	.394 10.0	.472 12.0	9.6	150	6.0	25.0	20.0	17.5	2.5	+5°	-7.5°	.016	0.4	LR-5-3 × 5.8	RLR-20S
	C12M-STUP%{11D14-OH	4	●	○	.472 12.0	.551 14.0	11.5	150	7.0	29.0	23.0	21.5	3.0	+5°	-5°	.016	0.4	LR-5-3 × 5.8	RLR-20S
	C16Q-STUP%{11D18-OH	4	●	○	.630 16.0	.709 18.0	15.4	180	9.0	37.0	29.0	28.0	4.0	+5°	-3°	.016	0.4	LR-5-3 × 5.8	RLR-20S

* "S" denotes steel shank, "C" denotes carbide shank

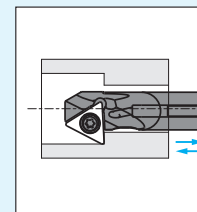
C-STZP (C) (Coolant through)

Minimum Bore Diameter .394"(10mm) Carbide shank

NEW



● Use right-hand inserts for machining backward
Use left-hand inserts for machining forward



Insert	Item number*	Stock	φ D _s (inch) (mm)	Min. bore Dia. φ D _m (inch) (mm)	Max. shoulder height g (inch) (mm)	h	L ₁	f	L ₂	L ₃	L ₄	φ d	θ	α	Std. corner radius r _e		Clamp screw	Wrench
															R	L			(inch)	(mm)
TC..52..	C06H-STZCR06D10-OH	○	.236 6	.394 10	.098 2.5	5.75	100	5.5	10.5	6	6	2.0	0°	-10°	.008	0.2	LR-5-2 × 4	CLR-13S
TP..73..	C08K-STZPR09D12-OH	○	.315 8	.472 12	.118 3	7.7	125	7	13.5	8.5	8.3	2.5	+5°	-10°	.016	0.4	LR-5-2.5 × 4.8	CLR-15S
	C10M-STZPR09D14-OH	○	.394 10	.551 14	.118 3	9.6	150	8	18.5	12	8.3	2.5	+5°	-7°	.118	0.4	LR-5-2.5 × 4.8	CLR-15S
TP..22..	C12M-STZPR11D175-OH	○	.472 12	.689 17.5	.177 4.5	11.5	150	10.5	22	14.5	9.6	3.0	+5°	-5°	.117	0.4	LR-5-3 × 5.8	RLR-20S

TPG CBN / PCD

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

Shape	Item Number	ISO Item Number	Edge Prep.	IC	R	No. of edge	Length of edge	CBN (Brazed)						PCD				
								B5K	B52	B6K	B36	B40	B23	B30	PD1	PD2		
	TPGW 2208 PT	TPGW 110302 PT	S0415	1/4	.008	3	.087											
	TPGW 221 PT	TPGW 110304 PT	S0415	1/4	.016	3	.079											
	TPGW 221 PT	TPGW 110304 PT	T0615	1/4	.016	3	.079											
	TPGW 221 PT	TPGW 110304 PT	S0635	1/4	.016	3	.079											
	TPGW 222 PT	TPGW 110308 PT	S0415	1/4	.031	3	.067											
	TPGW 222 PT	TPGW 110308 PT	S0635	1/4	.031	3	.067											
NEW	TPMT 7308 PF	TPMT 090202 PF	None	7/32	.008	1	—											
	TPMT 731 PF	TPMT 090204 PF	None	7/32	.016	1	—											
	TPMT 2208 PF	TPMT 110302 PF	None	1/4	.008	1	—											
	TPMT 221 PF	TPMT 110304 PF	None	1/4	.016	1	—											

60° Triangle Positive type Carbide / Cermet (TC..52)

						(inch)		IC	T														
						TC..52		5/32	1/16														
		Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
		Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
		Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
		Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
		Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
		Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Shape	Item Number	ISO Item Number	IC	R	Carbide						Cermet												
					PVD Coated						PVD Coated												
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	CTX	XN4	Q15	C7Z							
	TCGH 5204 T $\frac{R}{L}$ B1	TCGH 060101 T $\frac{R}{L}$ B1	5/32	.004								L											
	TCGH 5208 F $\frac{R}{L}$ B1	TCGH 060102 F $\frac{R}{L}$ B1	5/32	.008				L		L		R/L											
	TCGH 5208 T $\frac{R}{L}$ B1	TCGH 060102 T $\frac{R}{L}$ B1	5/32	.008				L		L		R/L											
	TCGH 521 F $\frac{R}{L}$ B1	TCGH 060104 F $\frac{R}{L}$ B1	5/32	.016				L		L		R/L											
	TCGH 521 T $\frac{R}{L}$ B1	TCGH 060104 T $\frac{R}{L}$ B1	5/32	.016				L		L		R/L											
	TCGP 5204 F $\frac{R}{L}$ F05	TCGH 060101 F $\frac{R}{L}$ F05	5/32	.004				R															
	TCGP 5208 F $\frac{R}{L}$ F05	TCGH 060102 F $\frac{R}{L}$ F05	5/32	.008				R	R	R/L													
	TCGP 5208 T $\frac{R}{L}$ F05	TCGH 060102 T $\frac{R}{L}$ F05	5/32	.008				R	R	R				R/L									
	TCGP 521 F $\frac{R}{L}$ F05	TCGH 060104 F $\frac{R}{L}$ F05	5/32	.016				R	R	R				R/L									
	TCGP 521 T $\frac{R}{L}$ F05	TCGH 060104 T $\frac{R}{L}$ F05	5/32	.016				R	R	R				R/L									
	TCGH 5208 F $\frac{R}{L}$ K	TCGH 060102 F $\frac{R}{L}$ K	5/32	.008				L															
	TCGH 521 F $\frac{R}{L}$ K	TCGH 060104 F $\frac{R}{L}$ K	5/32	.016				L															
	TCGD 52Y	TCGB 060102 TN	5/32	.008								○											
	TCGD 521	TCGB 060104 TN	5/32	.016								●											

60° Triangle Positive type Carbide / Cermet (TP..)

						(inch)		IC	T															
						TP..22		1/4	1/8															
						TP..73		7/32	3/32															
		Steel	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
		Stainless Steel	M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
		Cast Iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
		Non-Ferrous Material	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
		Heat Resistant Alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
		Hardened Material	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
Shape	Item Number	ISO Item Number	IC	R	Carbide						Cermet													
					PVD Coated						PVD Coated													
					QM3	DT4	DM4	TM4	VM1	ZM3	KM1	XT3	CTX	XN4	Q15	C7Z								
	TPGH 7308 F $\frac{R}{L}$ B2	TPGH 090202 F $\frac{R}{L}$ B2	7/32	.008				L		L														
	TPGH 731 F $\frac{R}{L}$ B2	TPGH 090204 F $\frac{R}{L}$ B2	7/32	.016				L		L														
	TPGH 731 T $\frac{R}{L}$ B2	TPGH 090204 T $\frac{R}{L}$ B2	7/32	.016				L		L				R/L										
	TPGH 732 F $\frac{R}{L}$ B2	TPGH 090208 F $\frac{R}{L}$ B2	7/32	.031				L		L				R/L										
	TPGH 2204 T $\frac{R}{L}$ B3	TPGH 110301 T $\frac{R}{L}$ B3	1/4	.004																				
	TPGH 221 T $\frac{R}{L}$ B3	TPGH 110304 T $\frac{R}{L}$ B3	1/4	.016																				
	TPGH 7304 F $\frac{R}{L}$ F1	TPGH 090201 F $\frac{R}{L}$ F1	7/32	.004				R																
	TPGH 7308 F $\frac{R}{L}$ F1	TPGH 090202 F $\frac{R}{L}$ F1	7/32	.008				R		R	R													
	TPGH 731 F $\frac{R}{L}$ F1	TPGH 090204 F $\frac{R}{L}$ F1	7/32	.016				R		R	R													
	TPGH 732 F $\frac{R}{L}$ F1	TPGH 090208 F $\frac{R}{L}$ F1	7/32	.031				R		R	R													
	TPGH 2208 F $\frac{R}{L}$ F1	TPGH 110302 F $\frac{R}{L}$ F1	1/4	.008				R		R	R													
	TPGH 221 F $\frac{R}{L}$ F1	TPGH 110304 F $\frac{R}{L}$ F1	1/4	.016				R		R	R													
	TPGP 7308 T $\frac{R}{L}$ F1	TPGH 090202 T $\frac{R}{L}$ F1	7/32	.008										R					R					
	TPGP 731 T $\frac{R}{L}$ F1	TPGHP 090204 T $\frac{R}{L}$ F1	7/32	.016										R					R					
	TPGP 2208 T $\frac{R}{L}$ F1	TPGH 110302 T $\frac{R}{L}$ F1	1/4	.008										R					R					
	TPGP 221 T $\frac{R}{L}$ F1	TPGH 110304 T $\frac{R}{L}$ F1	1/4	.016										R					R					
	TPGP 7308 T $\frac{R}{L}$ FG	TPGH 090202 T $\frac{R}{L}$ FG	7/32	.008				R											R					
	TPGP 731 T $\frac{R}{L}$ FG	TPGH 090204 T $\frac{R}{L}$ FG	7/32	.016				R											R					
	TPGH 2208 T $\frac{R}{L}$ FG	TPGH 110302 T $\frac{R}{L}$ FG	1/4	.008				R											R					
	TPGH 221 T $\frac{R}{L}$ FG	TPGH 110304 T $\frac{R}{L}$ FG	1/4	.016				R											R					
	TPGP 7308 F $\frac{R}{L}$ K	TPGH 090202 F $\frac{R}{L}$ K	1/4	.008				L																
	TPGP 7318 F $\frac{R}{L}$ K	TPGH 090204 F $\frac{R}{L}$ K	1/4	.016				L																
	TPGP 7328 F $\frac{R}{L}$ K	TPGH 090208 F $\frac{R}{L}$ K	1/4	.031				L																

● : Stock ○ : 1-2 week delivery
 R : Stock (Right-hand only) L : Stock (Left-hand only)
 ⊙ : 1-2 week delivery (Right-hand only) ⊖ : 1-2 week delivery (Left-hand only) ● : Coolant through

*For F05, F1 and FG chipbreaker, right-hand inserts fit to right-hand toolholder
 Note: F05, F1 and FG chipbreaker evacuates chips BACKWARD

Cutting condition **V4**

ID Tooling

Chipbreakers for Mogul Bar

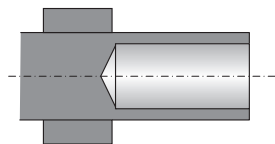
Molded Chipbreakers

Name	Chipbreaker Geometry	Features	ER Style	CC Style	CP Style	TC Style	TP Style
FG		● Evacuate chips BACKWARD at light depth of cut	—	—	—	—	
AM3		● Great combination of sharp edge and chip control	—			—	—
YL		● Great combination of sharpness and toughness ● Covers extremely wide range ● Excellent chip control	—		—	—	—
CL		● Double-positive geometry ● Sharp edge and low tool pressure ● Very wide chip control range	—		—	—	—
AZ7		● Excellent chip control at light feed and light depth of cut	—		—	—	—
ZR		● Covers a wide range of depth of cut under high-speed and low-feed conditions	—		—	—	—
AM5		● Provides both good cutting performance and chip control	—			—	—

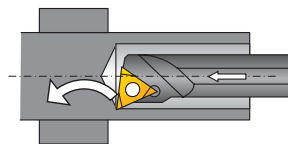
Ground Chipbreakers

Name	Chipbreaker Geometry	Features	ER Style	CC Style	CP Style	TC Style	TP Style
F05 • F1		● Exclusively designed for ID boring ● Evacuate chips BACKWARD					
S		● Sharp cutting edge with excellent chip control	—			—	—
U • U1		● Sharp cutting edge prevents work materials from work hardening	—		—	—	—
KHG		● Excellent chip control on finishing cuts ● For super high-precision machining	—		—	—	—
K		● Superb chip control on finishing applications	—	—	—		—
A • A1		● Tough cutting edge and good chip control ● General-purpose ID chipbreaker	—	—		—	—
A2		● Sharp cutting edge due to large rake angle		—	—	—	—
B1•B2•B3		● Stable cutting in boring thanks to sharp and tough cutting edge	—	—	—		

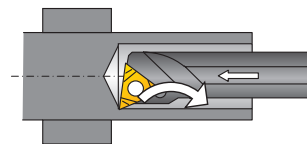
Boring on CNC Swiss-Type Lathes



Blind hole due to bar stock



Typical inserts direct chips forward
Then packed chips damage and break cutting edges



FG, F1 and F05 chipbreakers direct chips backward and prevent cutting edges from breaking

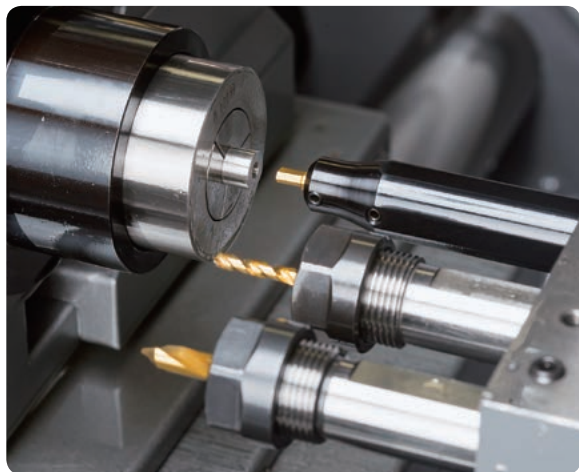
Note: Use right-hand inserts with FG, F1 and F05 chipbreakers for right-hand boring bars

W



Shaper

SHAPER DUO



Hexagon Socket



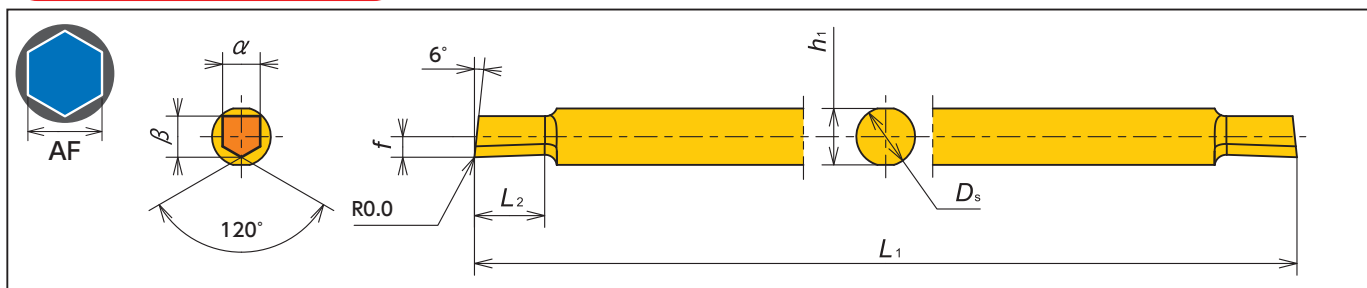
Square Socket



WATCH ON
YouTube

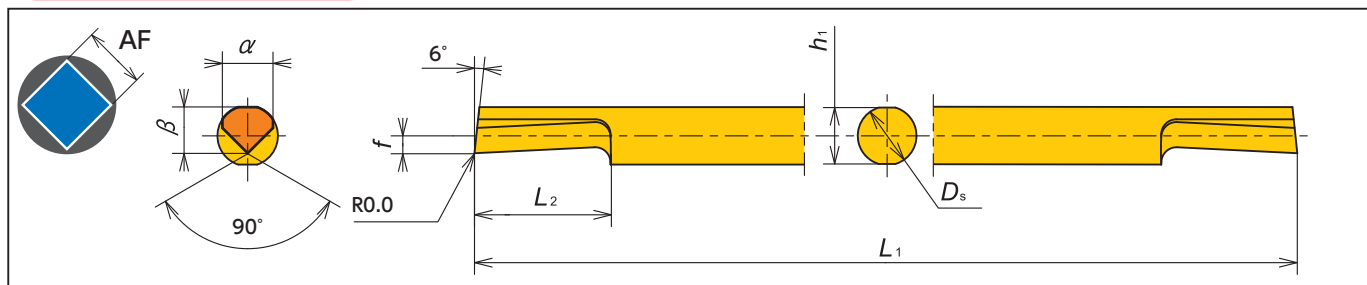
- Perfect fit for back spindle of Swiss machine
- Achieves good corner edge sharpness
- Less tool pressure than Rotary-Broaching
- Easy to adjust for correct dimension
- Economical double-ended insert bar

Insert Bar -Hexagon-



Item Number	Base AF (mm)	HEX Standard size range (mm)	AF range		D_s (mm)	L_1 (mm)	L_2 (mm)	h_1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide
			(Inch)	(mm)								TM4
SSP020N1130H	HEX 1.5	HEX 1.5 - 2.0	.055 - .078	1.4 - 2.0	ϕ 2	50	3.0	1.8	1.1	0.8	0.40	●
SSP020N1430H	HEX 2.0	HEX 2.0 - 2.5	.075 - .102	1.9 - 2.6	ϕ 2	50	3.0	1.8	1.4	1.1	0.55	●
SSP030N1940H	HEX 3.0	HEX 2.5 - 3.5	.095 - .141	2.4 - 3.6	ϕ 3	50	4.0	2.8	1.9	1.6	0.8	●
SSP040N2450H	HEX 4.0	HEX 3.5 - 4.5	.134 - .181	3.4 - 4.6	ϕ 4	60	5.0	3.8	2.4	2.6	1.3	●
SSP050N3260H	HEX 5.0	HEX 4.5 - 6.0	.174 - .244	4.4 - 6.2	ϕ 5	70	6.0	4.8	3.2	3.4	1.70	●
SSP060N42120H	HEX 6.0	HEX 6.0 - 8.0	.233 - .322	5.9 - 8.2	ϕ 6	80	12.0	5.6	4.2	4.0	2.00	●
SSP080N62160H	HEX 8.0	HEX 8.0 - 12.0	.311 - .480	7.9 - 12.2	ϕ 8	80	16.0	7.6	6.2	4.7	2.35	●

Insert Bar -Square-




Item Number	Base AF (mm)	AF range		D_s (mm)	L_1 (mm)	L_2 (mm)	h_1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide
		(Inch)	(mm)								TM4
SSP020N1740S	2.0	.075 - .090	1.9 - 2.3	ϕ 2.0	50	4.0	1.8	1.70	1.60	0.70	●
SSP025N1940S	2.5	.087 - .102	2.2 - 2.6	ϕ 2.5	50	4.0	2.3	1.95	1.80	0.65	●
SSP030N2260S	3.0	.099 - .118	2.5 - 3.0	ϕ 3.0	50	6.0	2.8	2.20	2.05	0.65	●
SSP035N2760S	3.5	.115 - .145	2.9 - 3.7	ϕ 3.5	60	6.0	3.3	2.70	2.25	0.60	●
SSP040N3380S	4.0	.142 - .181	3.6 - 4.6	ϕ 4.0	60	8.0	3.8	3.35	3.05	1.15	●
SSP050N39100S	5.0	.178 - .212	4.5 - 5.4	ϕ 5.0	70	10.0	4.8	3.90	3.95	1.55	●
SSP060N47120S	6.0	.209 - .259	5.3 - 6.6	ϕ 6.0	80	12.0	5.6	4.75	4.50	1.70	●
SSP080N58160S	8.0	.256 - .318	6.5 - 8.1	ϕ 8.0	80	16.0	7.6	5.80	5.50	1.70	●

● : Stock

○ : 1-2 week delivery

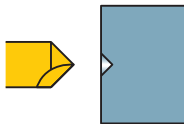
Sleeves → W7-10

Comparison Chart of HEX Socket Machining

	Tool Pressure	Cycle Time	Pliability	Tool Cost	
Shaper Duo 	◎	△ * Can be off-set by over-wrapping operation	○	◎	<ul style="list-style-type: none"> ● Less tool pressure-especially on small diameter parts ● One size can cover several socket sizes
Broach Tool	△	○	×	△	<ul style="list-style-type: none"> ● Need to have tools for each socket size

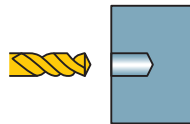
Process Chart

① Center drilling



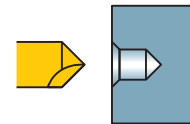
Select a pilot hole drill which is bigger dia. than AF.

② Drilling (Pilot hole)



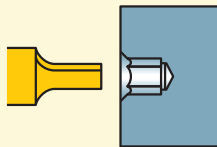
Select a drill with same dia. as AF and machine a bit deeper because burrs may cause chipping on shaper insert

③ Chamfering



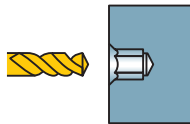
Chamfer with the same pilot hole drill as ① (Chamfer can be done at same time as ①).

④ Shaper tool



Machine HEX portion rotating 60 degrees 6 times

⑤ Deburring



Finish and deburr with the same drill as in process②
 ☆Reduce cutting conditions due to heavy interruption

SHAPER DUO Process Chart

HEX Standard	Tool	Pilot bore Dia. (mm)	Total DOC /side (mm)	Number of passes			Estimated cycle time *		
				Total pass /side	Roughing pass 0.025mm	Finishing pass 0.010mm	ISO 2936 standard depth of Hex hole (mm)	Whole process ①-⑤	Process④ Shaper
HEX 1.5	SSP020N1130H	1.5	0.116	6	5	1	2	39 sec	14 sec
HEX 2.0	SSP020N1430H	2.0	0.155	7	6	1	2.5	44 sec	16 sec
HEX 2.5	SSP030N1940H	2.5	0.193	9	8	1	3	50 sec	20 sec
HEX 3.0	SSP030N1940H	3.0	0.232	10	9	1	3.5	55 sec	23 sec
HEX 4.0	SSP040N2450H	4.0	0.309	13	12	1	5	73 sec	33 sec
HEX 5.0	SSP050N3260H	5.0	0.387	17	16	1	6	90 sec	46 sec
HEX 6.0	SSP060N42120H	6.0	0.464	20	19	1	8	117 sec	63 sec
HEX 8.0	SSP080N62160H	8.0	0.619	26	25	1	10	155 sec	92 sec

*Pilot bore diameter is same as AF
 *Using Carbide drill

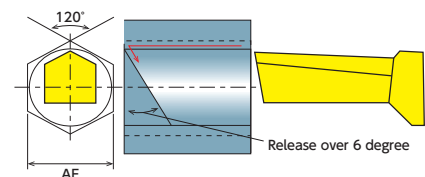
*Shaper cutting conditions

Feed : 3000 mm/min
 DOC : 0.025 mm (Roughing), 0.010 mm (Finishing)

Recommended Cutting Conditions

Feed : 3000 mm/min (120 IPM)
 DOC : Roughing ... 0.025 mm (.0010") + Finishing ... 0.010 mm (.0004")

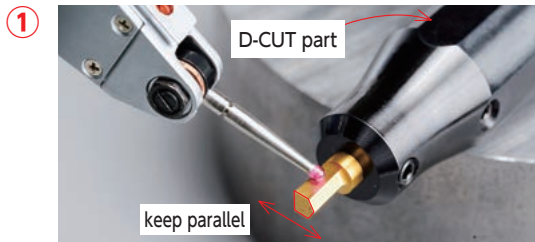
Program Example → W5



Shaper

SHAPER DUO Set-up Instruction - Hexagonal

Outside machine

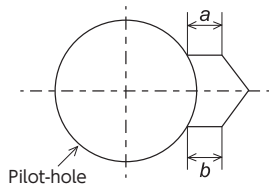
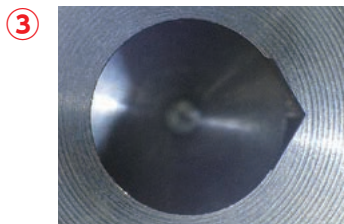


- Set the insert bar in the sleeve and check the parallelism of the flat portion of the sleeve and the insert bar.
- Minimize the overhang of the insert.

Inside machine



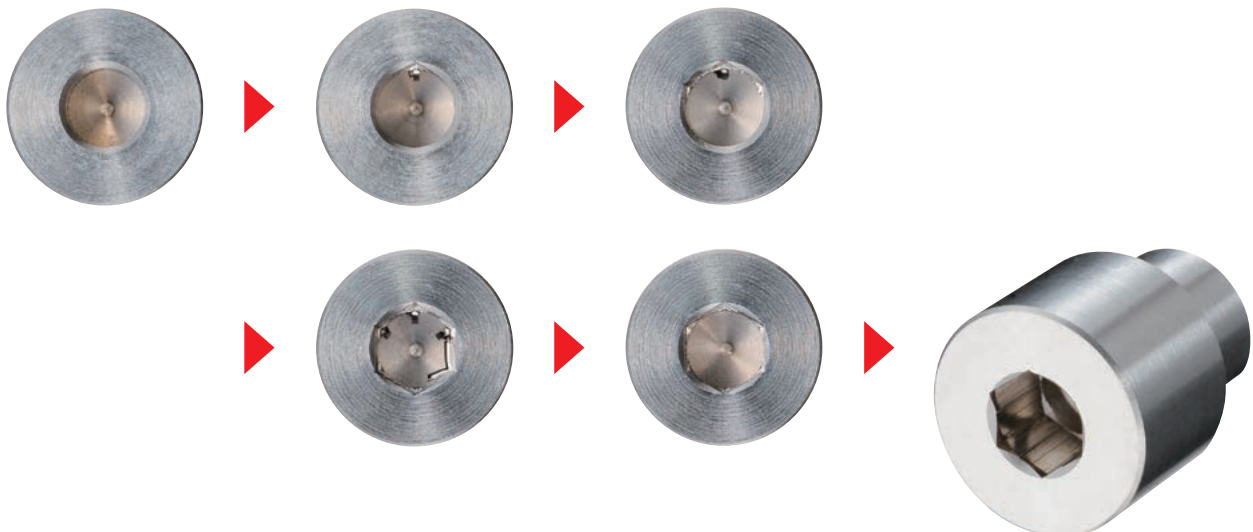
- Set the sleeve into the tool post and make sure the sleeve is set parallel.
- Minimize sleeve overhang.



- Machine one angle a bit wider than the drilled hole.
*Increase the number of machining passes because the insert may get chipped with increased depth of cut. (0.025mm×5pass is recommended)
No chamfering process is required for measuring purpose.
- Measure the length of both [a] and [b] with comparator or magnifier.
- Adjust centerline height by rotating the sleeve until you get the same length for [a] and [b].(The difference should be less than .0008")
*If the straight is not seen with increased passes, please reset the insert and the sleeve.
Please make sure both the insert and the sleeve are set up correctly.

4 Machine Hexagonal shape

- Run full HEX machining program.



SHAPER DUO Programming Code Examples from Machine Builders in Metric

Note : The codes and numbers may vary by machine type. Please contact the machine builder for details.
 Programming code example for HEX 3.0mm. **AF : 3.0mm, Depth : 2.7mm, Pilot drill diameter : 3.0mm**

CITIZEN

Main Program Sequence

```
M25
M78 S0 .....I
Shaper T****
G50 U1.6 .....II
G0 X2.9 Z-2.0 T** .....III
M98 P2100 L14 .....IV
M98 P2200 .....V
```

```
M78 S60 .....I
G0 X2.9 Z-2.0
M98 P2100 L14
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-10.0
G50 U-2.0
G0 U0 W0 T0
M1
```

STAR

Main Program Sequence

```
M25
Shaper T****
G50 U1.6 .....II
M8
G0 X2.9 Z-2.0 C0 T** .....I, III
M98 P2100 L14 .....IV
M98 P2200 .....V
```

```
G0 C60.0 .....I
G0 X2.9 Z-2.0
M98 P2100 L14
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-2.0
G0 T0
G28 W0
M1
```

TSUGAMI

Main Program Sequence

```
M105
M150
G28 H0 .....I
M182
Shaper T****
G50 U1.6 .....II
G0 X2.9 Z2.0 T** .....III
M98 P2100 L14 .....IV
M98 P2200 .....V
M183
```

```
G0 C60 .....I
M182
G0 X2.9 Z2.0
M98 P2100 L14
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 Z10.0
G50 U2.0
G0 U0 W0 T0
M1
```

Sub-Program Sequence #1 for Roughing

```
N2100
G4 U0.02 .....A
G98 G1 Z2.7 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z2.7 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z-2.7 F3000 .....B
G4 U0.02
U-0.2 W0.018 .....C
G4 U0.02
G0 Z2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #2 for Finishing

```
N2200
G98 G1 X3.61 Z-2.0 F1000 .....E
G4 U0.02
Z2.7 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

```
O2200
G98 G1 X3.61 Z-2.0 F1000 .....E
G4 U0.02
Z2.7 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

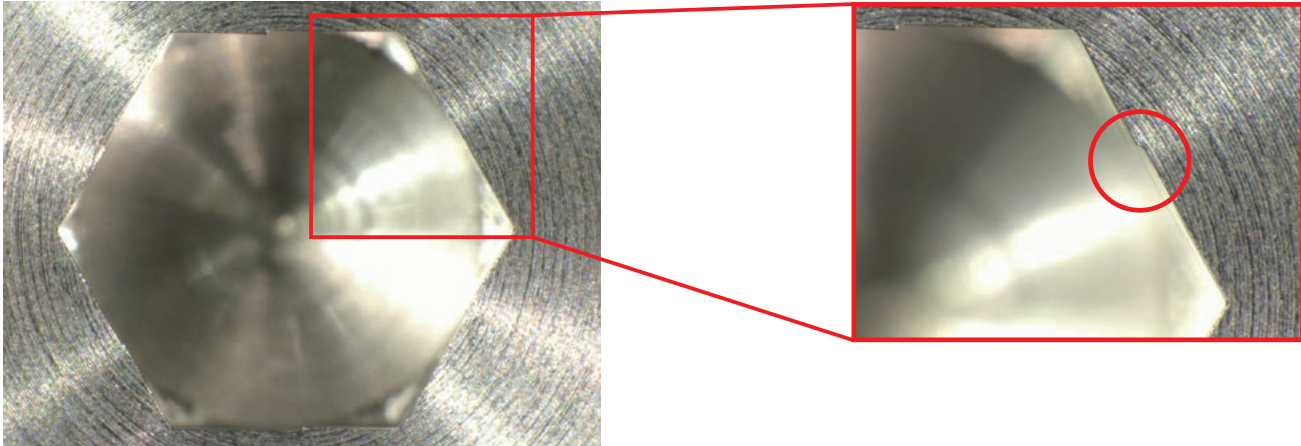
```
O2200
G98 G1 X3.61 Z2.0 F1000 .....E
G4 U0.02
Z-2.7 F3000
G4 U0.02
U-0.2 W0.018
G4 U0.02
G0 Z2.0
M99
```

- 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 0.1 mm less than pilot drill diameter.
 - Z position should be off-set 2.0 mm from material to achieve program feed rate.
- IV. Go to the Sub-Program #1.
 - Sequence runs 14 times. First cutting point X2.9 and final cutting point X3.6, with 0.05 DOC (for diameter) each time. (3.6 - 2.9 / 0.05 = 14 times)

- A. Specify dwell time. This allows the program and machine to stay synchronized.
- B. Cut into part 2.7mm. 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).
- D. Return the X position + 0.05mm (the DOC for diameter).
- V. Go to the Sub-Program #2, for finishing sequence.
 - E. Finishing operation with 0.01mm DOC (X 3.61) is recommended for better surface finish.

SHAPER DUO Trouble Shooting

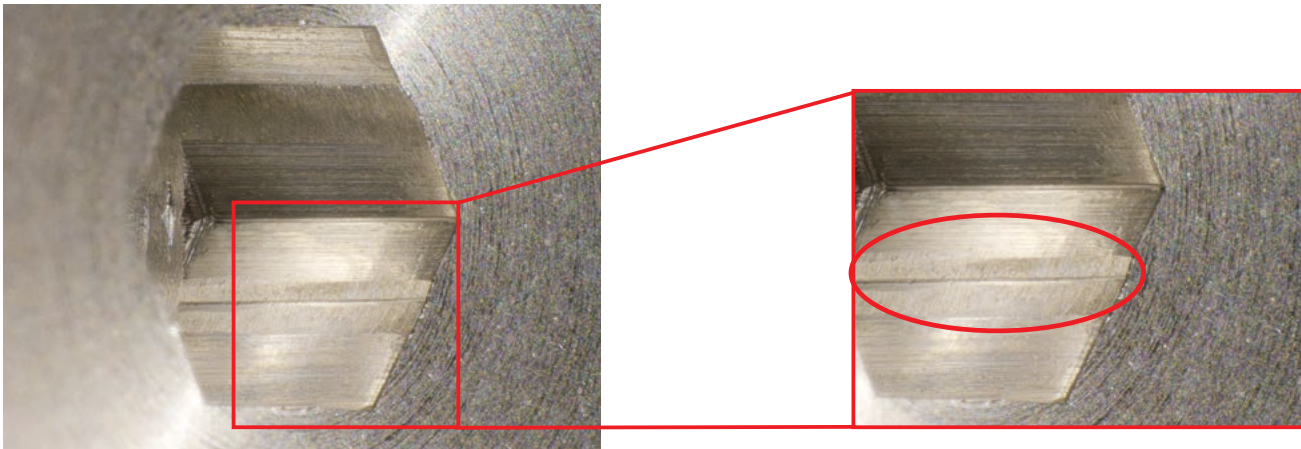
■ Problem: Step on sides



Cause: Incorrect tool set-up
(Center-line shift)

Solution: Machine one angle and make sure both [a] and [b] lengths are identical, rotating the sleeve if necessary

■ Problem: Wall dented



Cause: Pilot hole remaining

Solution: Need pilot hole tool's offset

■ Problem: Wall tapered

Solution: ● Smaller depth of cut
● Less tool overhang

■ Problem: Chuck is slipping / Insert Chipped

Solution: ● Run at 3000 mm/min (120 IPM) feed rate
● Smaller depth of cut

- 3000 mm/min (120 IPM) feed rate can cover most materials including Titanium alloy and Stainless steel.
- Too slow or too fast of a feed rate may cause excessive tool pressure for the Work piece and Tool.

SPLASH DUO - Stick Duo Hyper with Coolant through -

HY-NBH-OH (Coolant through)

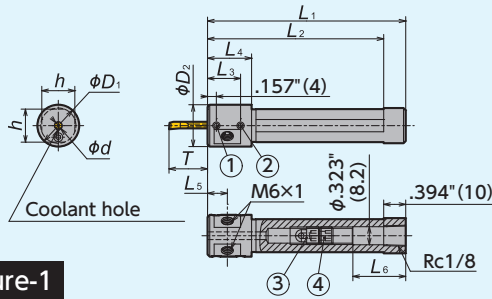


Figure-1

HY-NBH-OH (Coolant through)

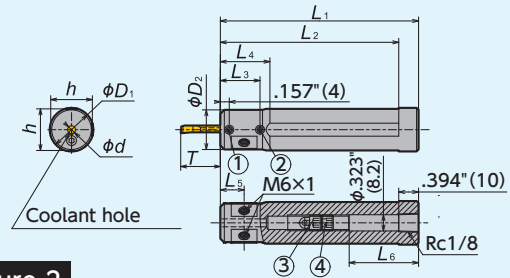


Figure-2

Item Number	Stock	Figure	ϕd		ϕD_1		ϕD_2	h	L_1	L_2	L_3	L_4	L_5	L_6	Overhang Length of Bar T			
			(Inch)	(mm)	(Inch)	(mm)									(mm)	(mm)	(Inch)	(mm)	(Inch)	(mm)
HY-NBH02016G-OH	●	1	.079	2	.630	16	19	15	90	80	15	19	9.5	29	.197	5.0	.709	18.0
HY-NBH02516G-OH	●	1	.098	2.5	.630	16	19	15	90	80	15	19	9.5	30	.248	6.3	.768	19.5
HY-NBH03016G-OH	●	1	.118	3	.630	16	19	15	90	80	15	19	9.5	31	.295	7.5	.827	21.0
HY-NBH03516G-OH	●	1	.138	3.5	.630	16	19	15	90	80	15	19	9.5	23	.346	8.8	.965	24.5
HY-NBH04016G-OH	●	1	.157	4	.630	16	19	15	90	80	20	24	12	23	.394	10.0	1.102	28.0
HY-NBH05016G-OH	●	1	.197	5	.630	16	19	15	90	80	20	24	12	16	.492	12.5	1.378	35.0
HY-NBH02019J-OH	●	2	.079	2	3/4	19.05	19.05	18	110	100	15	—	9.5	49	.197	5.0	.709	18.0
HY-NBH02519J-OH	●	2	.098	2.5	3/4	19.05	19.05	18	110	100	15	—	9.5	50	.248	6.3	.768	19.5
HY-NBH03019J-OH	●	2	.118	3	3/4	19.05	19.05	18	110	100	15	—	9.5	51	.295	7.5	.827	21.0
HY-NBH03519J-OH	●	2	.138	3.5	3/4	19.05	19.05	18	110	100	15	—	9.5	43	.346	8.8	.965	24.5
HY-NBH04019J-OH	●	2	.157	4	3/4	19.05	19.05	18	110	100	20	—	12	43	.394	10.0	1.102	28.0
HY-NBH05019J-OH	●	2	.197	5	3/4	19.05	19.05	18	110	100	20	—	12	36	.492	12.5	1.378	35.0
HY-NBH02020J-OH	●	2	.079	2	.787	20	20	19	110	100	15	—	9.5	49	.197	5.0	.709	18.0
HY-NBH02520J-OH	●	2	.098	2.5	.787	20	20	19	110	100	15	—	9.5	50	.248	6.3	.768	19.5
HY-NBH03020J-OH	●	2	.118	3	.787	20	20	19	110	100	15	—	9.5	51	.295	7.5	.827	21.0
HY-NBH03520J-OH	●	2	.138	3.5	.787	20	20	19	110	100	15	—	9.5	43	.346	8.8	.965	24.5
HY-NBH04020J-OH	●	2	.157	4	.787	20	20	19	110	100	20	—	12	43	.394	10.0	1.102	28.0
HY-NBH05020J-OH	●	2	.197	5	.787	20	20	19	110	100	20	—	12	36	.492	12.5	1.378	35.0
HY-NBH02022X-OH	●	2	.079	2	.866	22	20	21	120	110	15	25	9.5	59	.197	5.0	.709	18.0
HY-NBH02522X-OH	●	2	.098	2.5	.866	22	20	21	120	110	15	25	9.5	60	.248	6.3	.768	19.5
HY-NBH03022X-OH	●	2	.118	3	.866	22	20	21	120	110	15	25	9.5	61	.295	7.5	.827	21.0
HY-NBH03522X-OH	●	2	.138	3.5	.866	22	20	21	120	110	15	25	9.5	53	.346	8.8	.965	24.5
HY-NBH04022X-OH	●	2	.157	4	.866	22	20	21	120	110	20	25	12	53	.394	10.0	1.102	28.0
HY-NBH05022X-OH	●	2	.197	5	.866	22	20	21	120	110	20	25	12	46	.492	12.5	1.378	35.0
HY-NBH02025.0K-OH	●	2	.079	2	.984	25.0	20	24	125	115	15	25	9.5	64	.197	5.0	.709	18.0
HY-NBH02525.0K-OH	●	2	.098	2.5	.984	25.0	20	24	125	115	15	25	9.5	65	.248	6.3	.768	19.5
HY-NBH03025.0K-OH	●	2	.118	3	.984	25.0	20	24	125	115	15	25	9.5	66	.295	7.5	.827	21.0
HY-NBH03525.0K-OH	●	2	.138	3.5	.984	25.0	20	24	125	115	15	25	9.5	58	.346	8.8	.965	24.5
HY-NBH04025.0K-OH	●	2	.157	4	.984	25.0	20	24	125	115	20	25	12	58	.394	10.0	1.102	28.0
HY-NBH05025.0K-OH	●	2	.197	5	.984	25.0	20	24	125	115	20	25	12	51	.492	12.5	1.378	35.0
HY-NBH02025.4K-OH	●	2	.079	2	1	25.4	20	24	125	115	15	25	9.5	64	.197	5.0	.709	18.0
HY-NBH02525.4K-OH	●	2	.098	2.5	1	25.4	20	24	125	115	15	25	9.5	65	.248	6.3	.768	19.5
HY-NBH03025.4K-OH	●	2	.118	3	1	25.4	20	24	125	115	15	25	9.5	66	.295	7.5	.827	21.0
HY-NBH03525.4K-OH	●	2	.138	3.5	1	25.4	20	24	125	115	15	25	9.5	58	.346	8.8	.965	24.5
HY-NBH04025.4K-OH	●	2	.157	4	1	25.4	20	24	125	115	20	25	12	58	.394	10.0	1.102	28.0
HY-NBH05025.4K-OH	●	2	.197	5	1	25.4	20	24	125	115	20	25	12	51	.492	12.5	1.378	35.0

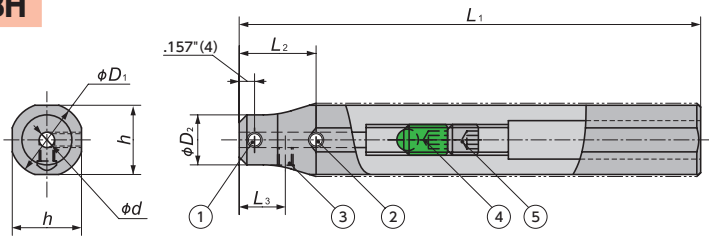
Parts for SPLASH DUO

Item Number	Clamp Screw		Overhang Adjustment		
	①	②	③	④	⑤
HY-NBH ... -OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F
	M6 Screw		Wrench		
	⑥		for ①②	for ③④⑤	for ⑥
	SS0605SC	LW-2	LW-4×104	LW-3	

● : Stock ● : Coolant through

STICK DUO HYPER

HY-NBH



Spare Parts

Item Number	Overhang Adjustment		Wrench	
	④	⑤	for ①②③	for ④⑤
HY-NBH ... K	SS0812R	SS0808F	LW-2	LW-4×104

Please refer to ϕd to find correct-size inserts (bars)

Item Number	Stock	ϕd		ϕD_1		ϕD_2	h	L_1	L_2	L_3	Clamp Screws		
		(Inch)	(mm)	(Inch)	(mm)						①	②	③
HY-NBH02016H	○	.079	2.0	.630	16	11	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02516H	○	.098	2.5	.630	16	11.5	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03016H	○	.118	3.0	.630	16	12	15	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03516H	○	.138	3.5	.630	16	12.5	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH04016H	○	.157	4.0	.630	16	13	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH05016H	○	.197	5.0	.630	16	14	15	100	20	12	SS04045FS	SS0404F	SS0404F
HY-NBH02019K	●	.079	2.0	3/4	19.05	11	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02519K	●	.098	2.5	3/4	19.05	11.5	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03019K	●	.118	3.0	3/4	19.05	12	18	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03519K	●	.138	3.5	3/4	19.05	12.5	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04019K	●	.157	4.0	3/4	19.05	13	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05019K	●	.197	5.0	3/4	19.05	14	18	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02020K	○	.079	2.0	.787	20	11	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02520K	○	.098	2.5	.787	20	11.5	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03020K	○	.118	3.0	.787	20	12	19	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03520K	○	.138	3.5	.787	20	12.5	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04020K	○	.157	4.0	.787	20	13	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05020K	○	.197	5.0	.787	20	14	19	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02022K	●	.079	2.0	.866	22	11	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02522K	●	.098	2.5	.866	22	11.5	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03022K	●	.118	3.0	.866	22	12	21	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03522K	●	.138	3.5	.866	22	12.5	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04022K	●	.157	4.0	.866	22	13	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05022K	●	.197	5.0	.866	22	14	21	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K-MET	○	.079	2.0	.984	25	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K-MET	○	.098	2.5	.984	25	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K-MET	○	.118	3.0	.984	25	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K-MET	○	.138	3.5	.984	25	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K-MET	○	.157	4.0	.984	25	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K-MET	○	.197	5.0	.984	25	14	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH02025K	●	.079	2.0	1	25.4	11	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K	●	.098	2.5	1	25.4	11.5	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03025K	●	.118	3.0	1	25.4	12	24	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH03525K	●	.138	3.5	1	25.4	12.5	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH04025K	●	.157	4.0	1	25.4	13	24	125	20	12	SS04045FS	SS0406F	SS0404F
HY-NBH05025K	●	.197	5.0	1	25.4	14	24	125	20	12	SS04045FS	SS0406F	SS0404F

Precaution for Shaper duo with STICK DUO HYPER sleeve

● Set insert in this position



Hexagon



Square

● To avoid insert chipping don't set insert in this position



Hexagon



Square

● : Stock

○ : 1-2 week delivery

💧 : Coolant through

Insert bars \rightarrow W2

Cutting condition \rightarrow W3

STICK DUO - Sleeves for ID machining -

NBH

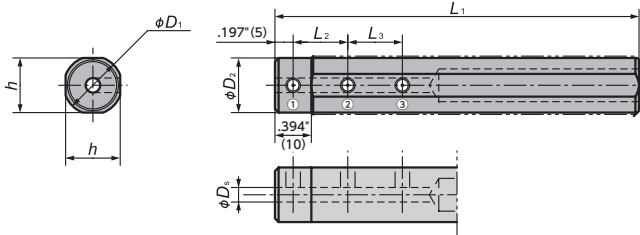


Figure-1

NBH

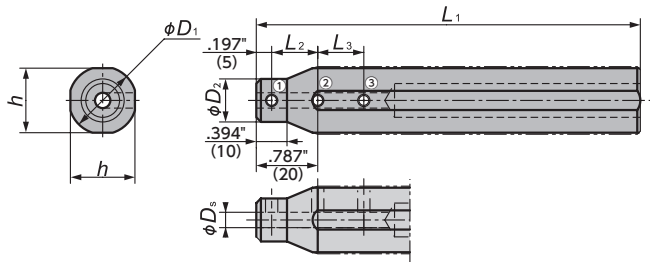


Figure-2

Item number	Figure	Stock	ϕD_s		ϕD_1	ϕD_2	h	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)							①	②	③	
NBH02015H	1	○	.079	2.0	5/8	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02515H	1	○	.098	2.5	5/8	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03015H	1	○	.118	3.0	5/8	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03515H	1	○	.138	3.5	5/8	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04015H	1	○	.157	4.0	5/8	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04515H	1	○	.177	4.5	5/8	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05015H	1	○	.197	5.0	5/8	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06015H	1	○	.236	6.0	5/8	15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08015H	1	○	.315	8.0	5/8	15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02016H	1	○	.079	2.0	.630 16	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02516H	1	○	.098	2.5	.630 16	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH03016H	1	○	.118	3.0	.630 16	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH03516H	1	○	.138	3.5	.630 16	15	15	100	10	10	SS0404F	SS0404F	SS0404F	LW-2
NBH04016H	1	○	.157	4.0	.630 16	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH04516H	1	○	.177	4.5	.630 16	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH05016H	1	○	.197	5.0	.630 16	15	15	100	15	15	SS0404F	SS0404F	SS0404F	LW-2
NBH06016H	1	●	.236	6.0	.630 16	15	15	100	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH07016H	1	○	.276	7.0	.630 16	15	15	100	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH08016H	1	●	.315	8.0	.630 16	15	15	100	20	20	SS0403F	SS0403F	SS0403F	LW-2
NBH02019K	1	○	.079	2.0	3/4	18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH02519K	1	○	.098	2.5	3/4	18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH03019K	1	○	.118	3.0	3/4	18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH03519K	1	○	.138	3.5	3/4	18	18	125	10	10	SS0406F	SS0406F	SS0406F	LW-2
NBH04019K	1	○	.157	4.0	3/4	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH04519K	1	○	.177	4.5	3/4	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH05019K	1	○	.197	5.0	3/4	18	18	125	15	15	SS0406F	SS0406F	SS0406F	LW-2
NBH06019K	1	●	.236	6.0	3/4	18	18	125	20	20	SS0406F	SS0406F	SS0406F	LW-2
NBH07019K	1	○	.276	7.0	3/4	18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH08019K	1	●	.315	8.0	3/4	18	18	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10019K	1	○	.394	10.0	3/4	18	18	125	20	20	SS0403F	SS0404F	SS0404F	LW-2
NBH02020K	2	○	.079	2.0	.787 20	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH02520K	2	○	.098	2.5	.787 20	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH03020K	2	○	.118	3.0	.787 20	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH03520K	2	○	.138	3.5	.787 20	12	19	125	10	10	SS0404F	SS0404F	SS0406F	LW-2
NBH04020K	2	○	.157	4.0	.787 20	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04520K	2	○	.177	4.5	.787 20	13	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05020K	2	○	.197	5.0	.787 20	14	19	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06020K	2	●	.236	6.0	.787 20	15	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07020K	2	○	.276	7.0	.787 20	16	19	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08020K	2	●	.315	8.0	.787 20	17	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH10020K	2	○	.394	10.0	.787 20	19	19	125	20	20	SS0404F	SS0404F	SS0404F	LW-2

Item number	Figure	Stock	ϕD_s		ϕD_1		ϕD_2	h_1	L_1	L_2	L_3	Clamp screw			Wrench
			(Inch)	(mm)	(Inch)	(mm)						①	②	③	
NBH02022K	2	○	.079	2.0	.866	22	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02522K	2	○	.098	2.5	.866	22	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03022K	2	○	.118	3.0	.866	22	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03522K	2	○	.138	3.5	.866	22	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04022K	2	○	.157	4.0	.866	22	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04522K	2	○	.177	4.5	.866	22	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05022K	2	○	.197	5.0	.866	22	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06022K	2	●	.236	6.0	.866	22	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH07022K	2	○	.276	7.0	.866	22	16	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08022K	2	●	.315	8.0	.866	22	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10022K	2	○	.394	10.0	.866	22	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12022K	2	○	.472	12.0	.866	22	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02023K	2	○	.079	2.0	.906	23	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02523K	2	○	.098	2.5	.906	23	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03023K	2	○	.118	3.0	.906	23	12	21	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03523K	2	○	.138	3.5	.906	23	12	21	125	10	10	SS0404F	SS0406F	SS0406F	LW-2
NBH04023K	2	○	.157	4.0	.906	23	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH04523K	2	○	.177	4.5	.906	23	13	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH05023K	2	○	.197	5.0	.906	23	14	21	125	15	15	SS0404F	SS0406F	SS0406F	LW-2
NBH06023K	2	○	.236	6.0	.906	23	15	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH08023K	2	○	.315	8.0	.906	23	17	21	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10023K	2	○	.394	10.0	.906	23	19	21	125	20	20	SS0404F	SS0404F	SS0404F	LW-2
NBH12023K	2	○	.472	12.0	.906	23	21	21	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K-MET	2	○	.079	2.0	.984	25	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K-MET	2	○	.098	2.5	.984	25	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K-MET	2	○	.118	3.0	.984	25	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K-MET	2	○	.138	3.5	.984	25	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K-MET	2	○	.157	4.0	.984	25	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K-MET	2	○	.177	4.5	.984	25	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K-MET	2	○	.197	5.0	.984	25	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K-MET	2	●	.236	6.0	.984	25	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K-MET	2	○	.276	7.0	.984	25	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K-MET	2	●	.315	8.0	.984	25	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K-MET	2	○	.394	10.0	.984	25	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K-MET	2	○	.472	12.0	.984	25	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH02025K	2	○	.079	2.0	1	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K	2	○	.098	2.5	1	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH03025K	2	○	.118	3.0	1	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K	2	○	.138	3.5	1	25.4	12	24	125	10	10	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K	2	○	.157	4.0	1	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH04525K	2	○	.177	4.5	1	25.4	13	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K	2	○	.197	5.0	1	25.4	14	24	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K	2	●	.236	6.0	1	25.4	15	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07025K	2	○	.276	7.0	1	25.4	16	24	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08025K	2	●	.315	8.0	1	25.4	17	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH10025K	2	○	.394	10.0	1	25.4	19	24	125	20	20	SS0404F	SS0406F	SS0406F	LW-2
NBH12025K	2	○	.472	12.0	1	25.4	21	24	125	25	25	SS0404F	SS0404F	SS0404F	LW-2
NBH04532K	2	○	.177	4.5	1.260	32	13	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH05032K	2	○	.197	5.0	1.260	32	14	30	125	15	15	SS0404F	SS0408F	SS0408F	LW-2
NBH06032K	2	○	.236	6.0	1.260	32	15	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH07032K	2	○	.276	7.0	1.260	32	16	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH08032K	2	○	.315	8.0	1.260	32	17	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH10032K	2	○	.394	10.0	1.260	32	19	30	125	20	20	SS0404F	SS0408F	SS0408F	LW-2
NBH12032K	2	○	.472	12.0	1.260	32	21	30	125	25	25	SS0404F	SS0406F	SS0406F	LW-2
NBH14032K	2	○	.551	14.0	1.260	32	23	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5
NBH16032K	2	○	.630	16.0	1.260	32	25	30	125	25	25	SS0504	SS0506	SS0506	LW-2.5

● : Stock ○ : 1-2 week delivery

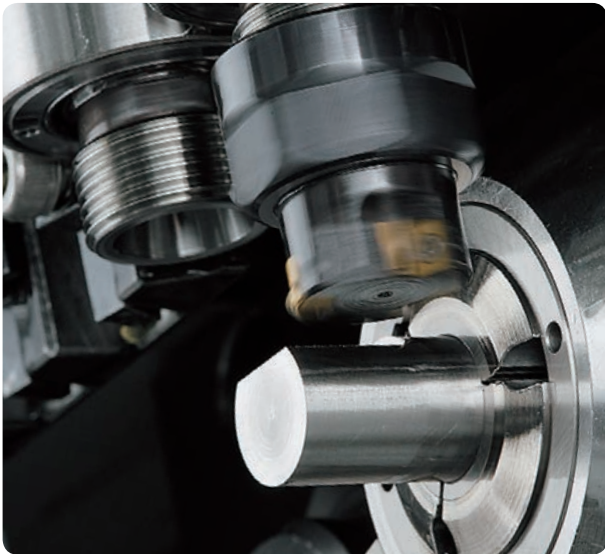
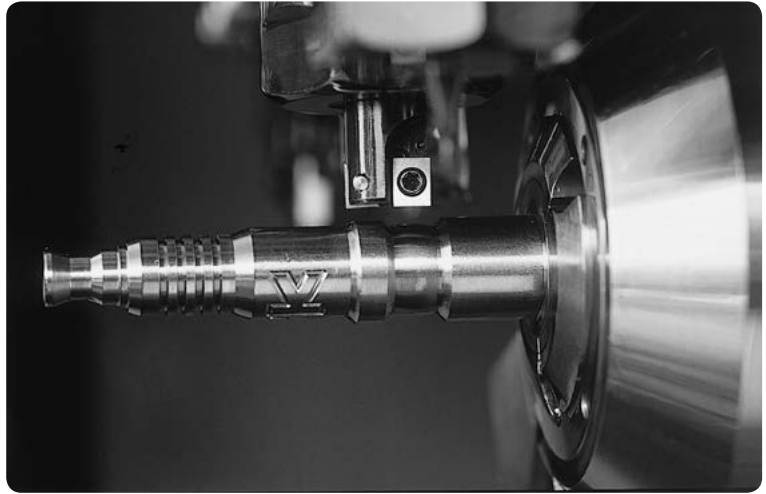
Insert bars **W2** Cutting condition **W3**

X



Indexable End Mills

Small Diameter Indexable End Mills



Features

- Attach .787"(20mm) end mills in ER16 collet
- Just change inserts to index. No need to make any adjustments
- High quality surface finish, as low as 1um (Rz) when wiper inserts are used
- Corner radius as small as .002"
- In addition to D cut, ramp machining can be performed*

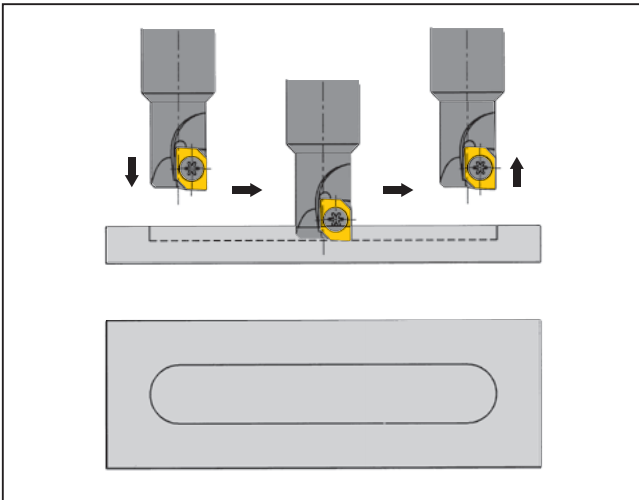
*A combination of single-blade type endmills and inserts with center blade is required

[Recommended Cutting Conditions]

Work Material	Speed SFM	Axial feed IPR	Traverse feed IPR	Depth of cut Inch	Width of cut
Steel	260 - 400	~.001	~.002	~.118	~50% of cutter diameter
Stainless Steel	130 - 200	~.0008	~.0015	~.079	~50% of cutter diameter

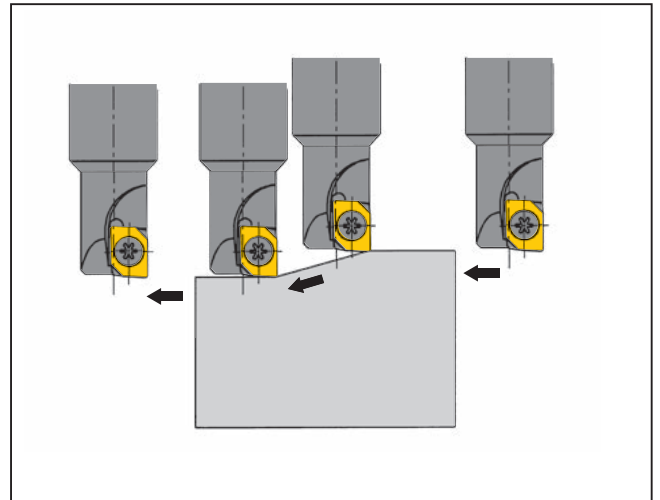
Application Example

Application Example-1



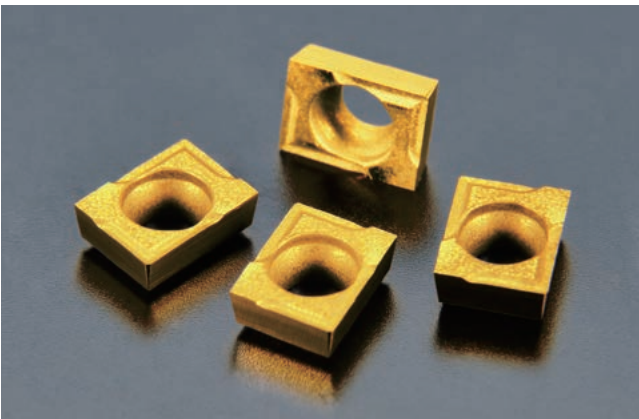
- A single tooth endmill equipped with a center cutting edge insert can be used for both plunge and side cut operations.

Application Example-2



- A single tooth endmill equipped with a center cutting edge insert can be used for slope milling operations.

Insert



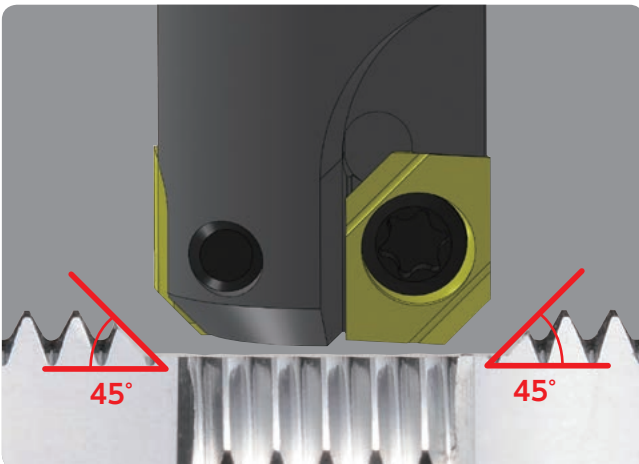
Wiper

- Excellent surface finish obtained with new wiper insert

Chipbreaker

- Less tool pressure with chipbreaker

45°



Chamfered surface finish insert	
S45C	
310 SFM	
.0056 IPR	
.039 DOC	
WET	
NTK : QM3 C45 type	700 pcs
Competitor's solid endmill	500 pcs

REZ Series

REZ

<D cutting = lead angle 90 type end milling tool>

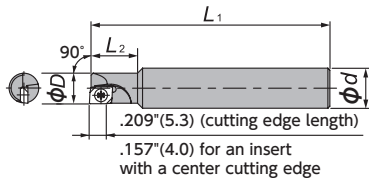


Figure-1

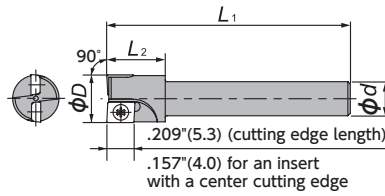


Figure-2

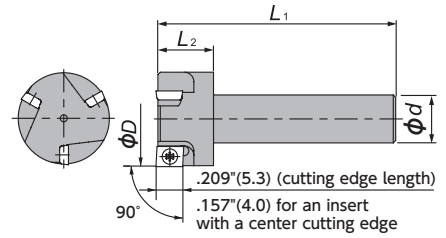


Figure-3

<D cutting = lead angle 45 type end milling tool>

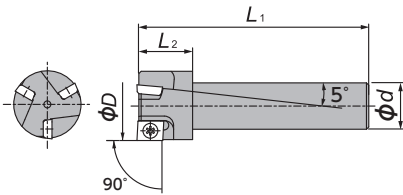


Figure-4 Right-Hand style shown

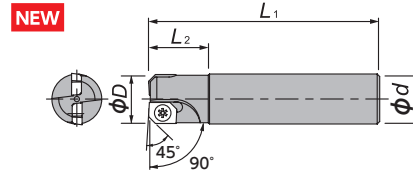


Figure-5

REZ Series - Toolholders



REZ

Gage Insert	Item Number	Figure	Stock		No. of teeth	ϕD		ϕd		L_1		L_2		Clamp Screw	Wrench
			R	L		(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		
CZH04..CFR...	REZ080C1R212	1	○		1	.315	8	.394	10	2.362	60	.472	12	FS102-2.2 × 4.0	T-07
CZH05..CFR...	REZ100C1R218	1	○		1	.394	10	.394	10	2.953	75	.472	12	FS102-2.2 × 4.3	T-07
CZH04..CFR...	REZ100B2R329	2	○		2	.394	10	.197	5	1.575	40	.394	10	FS102-2.2 × 4.3	T-07
	REZ100C2R133	2	○		2	.394	10	.236	6	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ100C2R132	2	○		2	.394	10	.276	7	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ100C2R141	2	●		2	.394	10	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ120C2R141	2	○		2	.472	12	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ140C2R141	2	○		2	.551	14	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ150B3R330	3	○		3	.591	15	.197	5	1.575	40	.394	10	FS102-2.2 × 4.3	T-07
	REZ200M3R319	3	○		3	.787	20	.276	7	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ200M3R320	3	●		3	.787	20	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
	REZ200C3R403	4	●		3	.787	20	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
CZH0400CFR-C45	REZ100C2R466	5	○		2	.394	10	.276	7	1.969	50	.472	12	FS102-2.2 × 4.3	T-07
CZH04..CFR...	REZ100C2R461	5	●		2	.394	10	.394	10	1.969	50	.472	12	FS102-2.2 × 4.3	T-07

CZH Series - Inserts

NEW

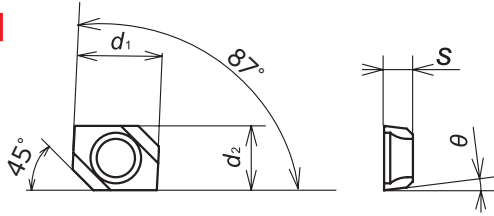


Figure-1 Chipbreaker with wiper

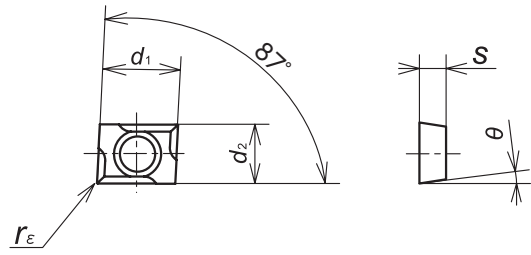


Figure-2 Chipbreaker

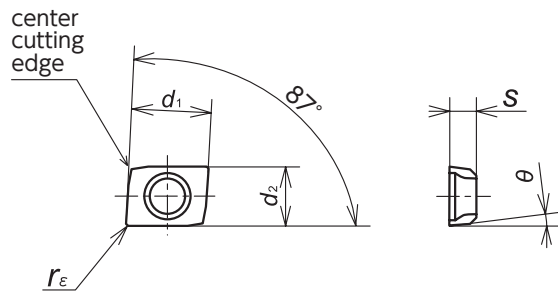


Figure-3 Center cutting edge without wiper

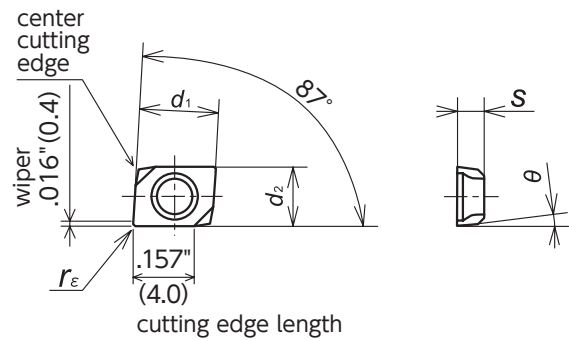


Figure-4 Center cutting edge with wiper

CZH

Item Number	Figure	Chip-breaker	Center Blade	Wiper	d_1		d_2		s		θ	C or r_ϵ		Coated Carbide				
					(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)		(Inch)	(mm)	QM3	DT4	DM4	TM4	ZM3
CZH0400CFR-C45*	1	Yes	No	Yes	.219	5.56	.165	4.20	.074	1.88	7°	C.053	C1.35	○	●			
CZH04005CFR-BL	2	Yes	No	No	.219	5.56	.165	4.20	.074	1.88	7°	.002	0.05			●	○	
CZH0402CFR-BL	2	Yes	No	No	.219	5.56	.165	4.20	.074	1.88	7°	.008	0.2			●	○	
CZH04005CFR-070	3	No	Yes	No	.219	5.56	.165	4.20	.074	1.88	7°	.002	0.05		●			●
CZH0402CFR-070	3	No	Yes	No	.219	5.56	.165	4.20	.074	1.88	7°	.008	0.2		●			○
CZH04005CFR-140	4	No	Yes	Yes	.219	5.56	.165	4.20	.074	1.88	7°	.002	0.05		●			●
CZH0402CFR-140	4	No	Yes	Yes	.219	5.56	.165	4.20	.074	1.88	7°	.008	0.2		●			●
CZH05005CFR-141	4	No	Yes	Yes	.208	5.28	.219	5.56	.086	2.18	10°	.002	0.05					○
CZH0502CFR-141	4	No	Yes	Yes	.208	5.28	.219	5.56	.086	2.18	10°	.008	0.2					○

*Must be used with REZ100C2R461/466Cutters

● : Stock ○ : 1-2 week delivery

Cutting condition → X2

MEMO

Y



Information

- **Grade Comparison Chart** Y2
- **Turning Tool Terminology** Y4
- **Milling Cutter Terminology** Y5
- **Calculation Formula for Turning** Y6
- **Troubleshooting for Turning** Y8
- **Calculation Formula for Milling Processes**... Y10
- **Troubleshooting for Milling** Y12
- **Surface Roughness Standards** Y14
- **Spare Parts - Wrenches** Y16
- **Clamp Screws and Wrenches** Y17
- **Material Cross Reference Chart** Y18
- **Ni-based Heat Resistant Alloys** Y20
- **Co-based Heat Resistant Alloys** Y24
- **Swiss Machine List** Y26
- **Hardness Comparison Chart** Y30

Grade Comparison Chart

* Italic type = Coated insert

● BIDE MICS / 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		KA30	NP5200	CC10			SZ200 SZ300		AW20 AB120			
	HC2 HC5 HC6	GEM7	MC2	I100	IN22 IN23	K090 KY1615	A65 A66N PT600M	NP5000	CC20 CC30	CC620 CC650	SH2	ST100 ST300 ST500 SD200 TC300 TA300	NB90S	AB30	LX11 LX21 CX710	Q32	
	SX6 SP9	CSN100 CSN200		MW30 MW43	IS8 IS80	KYK25 KYK35 KY3000 KY3400 KY3500	CS7050 KS6000 KS6050		CC510 CC513 CC514 CC514SC CC516 CC516SC	CC6190 CC1690	SL506 SL508 SL554C SL808 SL550C SL654 SL854C	SN26 SN300 SN400 SN600 SN500 SN600 SN700 SN800	SN2000K SN2100K NS260 NS260C	AS10 SC10 AS500	FX105	VPQ130 VPQ135	
Heat resistant alloy [S]	JX1																
	WA1	WG300 WG600			IW7	KY4300			CC600	CC670		SW400 SW500 SW700	WX2000	TC430			
	SX5 SX7 SX9	XSYTIN-1		MW37		KYS25 KYS30 KY2100 KY1525 KY1540	CF1		CC5477	CC6060 CC6065		SN900		AS20			
Hardened material [H]	HC4 ZC4 HC5 HC7 ZC7	GEN7		I100	IN22	KY4400	A65 KT66 A66N PT600M		CC30SC	CC6050				NB90S	AB20	LX11	Q35 VPZ215 VPZ205
	WA1	WG300 WG600			IW7	KYS25 KY4300				CC670		SW400 SW500 SW700					

● Cermet

	NTK	DIJET	HITACHI	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	SANDVIK	SECO	SSANGYONG	SUMIOTOMO	TAEGUTECH	TUNGALOY
Steel [P]	XT3 Q15 C7X C7Z XN4	LN10 CX50 CX75 CX90 CX99 NIT NAT SUZ	CH350 CZ25 CH550 CH7030 CZ1025	IC20N IC520N IC530N IC75T IC30N	KT315 KTP10	TN30 PV30 TN6010 PV7010 TN60 TN6020 PV7020 PV7025 TN90	AP25N NX2525 NX3035 VP45N	CT5015 GC1525	CM C15M	TX510 TX515 TX520 TX530	T110A T1200A T2000Z T3000Z	PV3010 PV3030 CT3000 CT5000	NS520 G7530 G7730 NS730 NS740
Stainless steel [M]	XT3 Q15 C7X C7Z XN4	LN10 CX50 CX75 CX90 CX99 NIT NAT SUZ	CH350 CH550 CH7030 CZ1025	IC20N IC520N IC530N IC30N	KT315 KTP10	TN60 TN6020 PV7020 PV7025 TN90	NX2525 AP25N NX3035	GC1525	CM C15M	TX510 TX515 TX520 TX530	T2000Z	PV3010 PV3030 CT3000 CT5000	NS520 NS530 G7730 NS740
Cast iron [K]	T15 Q15	LN10 NIT	CH350		KT315 KTP10	TN30 PV30 PV7005 TN60 TN6010 PV7005 PV7010	AP25N NX2525	CT5015		TX510 TX515 TX520 TX530	T110A T1200A	PV3010 PV3030 CT3000 CT5000	NS520 NS530 NS730 G7730

● Non coated carbide

	NTK	DIJET	GREENLEAF	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	ROMAY	SANDVIK	SECO	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Steel [P]	KM1	SRT DX30 DX35 SR30	G60 G20M	WS10 EX35 EX40 EX45	C19 C17 C16 C15	IC70 IC50M IC54	KU10	PW30	UTi20T			S10M S25M S60M	ST10P ST20E ST30E A30	CT3000	UX30 TX40	
Cast iron [K]	KM1	KG03 KG1 KG10 KT9 CR1 KG20 KG30 LF12	G02	WH02 WH05 WH10 WH20D	Cl65 Cl2 Cl3 Cl1 Cl4	IC04 IC20 IC10 IC28	K68 K313	KW10 GW15 GW25	HTi05T HTi10T UTi20T	R600	H10 H13A	890 883 HX	G10E	UF1	TH03 KS05F G1F TH10 G2 G2F KS15F KS20 G3	WSN10 WK1

● 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 JC5030 JC5015 JC5040	G915 G920 G925	CY15 CY150 IP2000 CY250 CY9020 HC844 IP3000	CI29 CI25A	IC507 IC807 IC907 IC908 IC328 IC928 IC3028	KC5510 KC5010 KCU10 KCU25 KC5025 KC5525	PR915 PR1005 PR930 PR1025 PR1115 PR1215 PR1225	VP10MF VP10RT VP15TF VP20MF VP20RT	GC1125 GC1525	CP200 CP250 CP500	ACZ150 ACZ310 AC520U ACZ330 ACZ350 AC530U	TT1040 TT7220 TT8010 TT8020 TT9030 TT9080	AH710 AH725 AH730 SH730 GH330 AH120 AH740 AH130 GH130 AH140	WSM30 WXP43 WXM33 WXP20
Stainless steel M	VM1 ZM3 QM3 TM4 DT4 DM4	JC5003 JC5015 JC5030 JC5040	G915 G920 G925	IP050S IP100S CY250 CY9020	CI29 CI24 CI23	IC507 IC520 IC907 IC308 IC908 IC3028 IC1008 IC1028 IC3028 IC928	KCU10 KCU25 KC5010 KC5025 KC5510 KC5525	PR915 PR1025 PR1215 PR1225 PR930 PR1125	VP10MF VP10RT VP15TF VP20MF VP20RT	GC15 GC1005 GC1105 GC1115 GC1525 GC2035	TS2000 CP200 TS2500 CP500	EH510Z ACZ150 AC510U EH520Z ACZ310 AC520U ACZ330 ACZ350 AC530U	TT1040 TT5080 TT7010 TT7080 TT7220 TT8010 TT8020	AH710 AH725 AH730 GH330 SH730 GH730 AH120 AH130 GH130 AH140	WXN10 WXP43 WXM33 WXP20 WXM20
Cast iron K	QM3 DM4	JC5003 JC5015		CY100H CY10H CY9020		IC910 IC507 IC908 IC508	KCU10 KCU25 KC5010 KC5025 KC5510 KC5525	PR905 PR1215	VP10RT VP15TF VP20RT		TS2000 CP200 DTS2500 CP250 CP500	EH10Z EH510Z AC510U EH20Z ACZ310 AC520U AC530U	TT1040 TT6080 TT7010 TT7080	AH110 GH110 AH120 GH130	

● CVD coated carbide

	NTK	DIJET	GREENLEAF	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	ROMAY	SANDVIK	SECO	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Cast iron K	CP1	JC105V JC605X JC605W JC050W JC110V JC610 JC215V	GA5022 GA5023	HG3305 HG3315 HX3505 HX3515 GM8015 HG8010 GM8020 GM8025 GM25	CIN2 CIT3 CIT6 CINX CIX	IC428 IC9007 IC9150 IC418 IC428 IC9015 IC9007	KCP05 KCK05 KCP10 KCK15 KCP25 KCK20 KCP30	CA4010 CA4505 CA5505 CA4115 CA4515 CA4120	UC5105 UC5115 UC6110 UE6110	R100 R200 R500	GC3005 GC3205 GC3210 GC3215 GC4215	TK1000 TH1000 TK2000 MK1500 TX150 TP200 TP2500	AC300G AC410K AC700G ACK200 DAC820P AC420K ACK200	TT6300 TT6800 TT7005 TT7015	T5105 T5115 T1115 T5125	WPP01 WPP10 WPP20

● BIDEKICS/CBN

	NTK	DIJET	HITACHI	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	SANDVIK	SECO	SPK	SSANGYONG	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Cast iron K	B23 B30 B99	JBN795 JBN330	BH200 BH250	CBN90 CBN95 CBN100	IB50 IB85 IB55	KB5630 KB1630 KB1345 KB9610 KB9640	<i>KBN60M KBN900</i>	MB710 MB5015 MB730 MB5140 BC5030	CB7525 CB7925	<i>CBN050C CBN300P</i> CBN20 CBN200 CBN300 CBN350	WBN115 WBN105 WBN100 WBN120 WBN750	SBN1600	BN700 BNS800 BN600 BN500	TB730 TB650 KB90 KB90A TB670	BX930 BX90S BX870 BX470 BX480 BX950 BXC90	
Heat resistant alloy S	JP2			CBN80		KB5630 KB1630 KB1340		MB730		CBN170			BN700	TB730 KB90	BX950	
Hardened material H	B52 B36 B40 B5K B6K	JBN300 JBN245	BH200 BH250	CBN45 CBN50 CBN60 CBN70	IB50 IB55	KB1610 KBN525 KB1625 KB5610 KB1340 KB5625 KB9610 KB9640	<i>KBN510 KBN525 KBN10C KBN25C KBN05M KBN10M KBN25M KBN30M KBN35N KBN900</i>	<i>MBC010 MB810 BC8020 MB8025 MB825 MB835</i>	CB7015 CB20 CB50 CB7025 CB7525	<i>CBN050C</i> CBN10 CBN100 CBN150 CBN170 CBN200 <i>CBN160P</i> CBN350 <i>CBN300P</i>	SBN2000	BNX10 BNX20 BN250 BNX25 BN300 <i>BNC150 BNC80 DBNC200 BNC300</i>	KB50 TB650 TB610 TB670	BX310 <i>BXM10</i> BX330 BX360 <i>BXC50</i> BX380 BX380 <i>BXM20</i>	WLB30 WLB50	

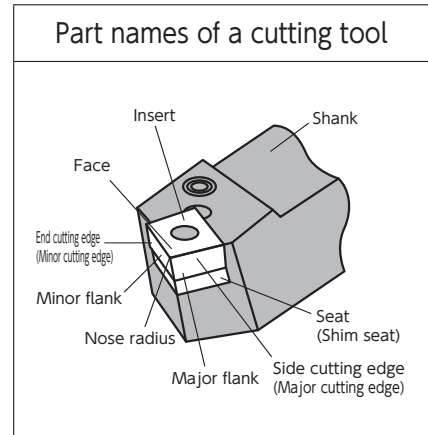
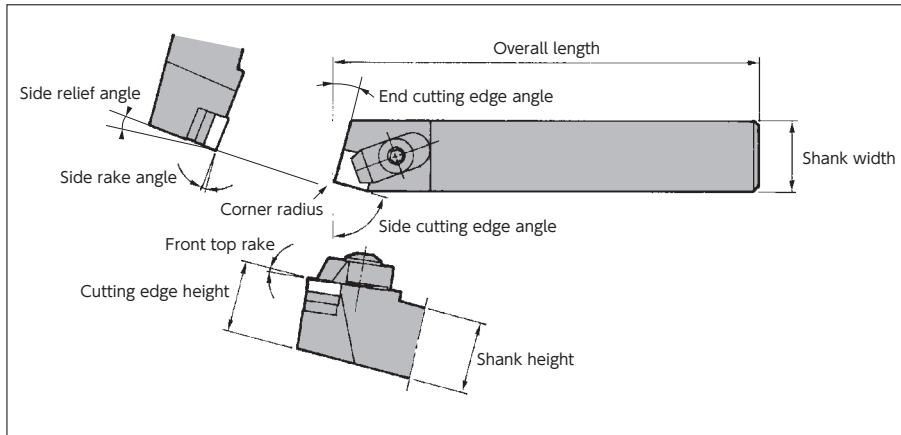
● PCD

	NTK	DIJET	INDEXABLE	ISCAR	KENNAMETAL	KYOCERA	mitsubishi	SANDVIK	SECO	SSANGYONG	SUMIOTOMO	TAEGUTECH	TUNGALOY	WALTER
Non-ferrous material N	PD1 PD2	JDA30 JDA735 JDA40 JDA745 JDA10 JDA715	PCD3 PCD-F PCD-UF	ID5	KD1400 KD1405 KD1425	KPD001 KPD010 KPD230	MD205 MD220 MD230	CD10	PD10 PD20 PD30	SPD100 SPD200 SPD300	DA1000 DA2200 DA150 DA200 DA90	KP100 KP300 KP500	DX180 DX160 DX140 DX110 DX120	WCD10

(Note) This chart is based on published data and not authorized by each manufacturer

Turning Tool Terminology

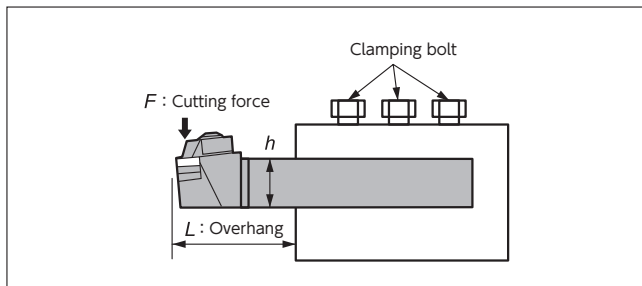
Toolholder part names



Holder rigidity

Toolholder deflection

$$\delta = \frac{4 \times F \times L^3}{E \times b \times h^3} = \frac{4 \times k_c \times f \times L^3}{E \times b \times h^3}$$

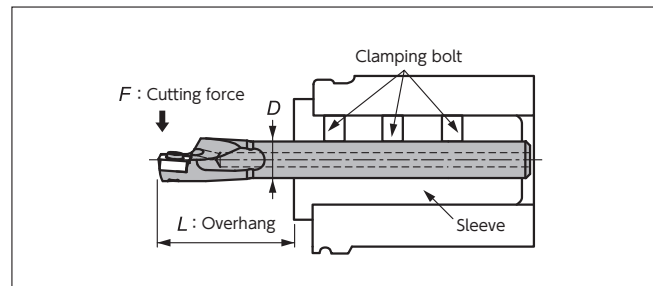


Symbol	Term	Unit
δ	Deflection amount	mm
b	Shank width	mm
h	Shank height	mm
E	Young's modulus	N/mm ²
a_p	Depth of cut	mm
f	Feed amount	mm/rev
k_c	Specific cutting force	N/mm ²
L	Overhang	mm
F	Cutting force	N

$$(F = k_c \times a_p \times f)$$

Boring bar deflection

$$\delta = \frac{64 \times F \times L^3}{3 \times E \times \pi \times D^4} = \frac{64 \times k_c \times a_p \times f \times L^3}{3 \times E \times \pi \times D^4}$$



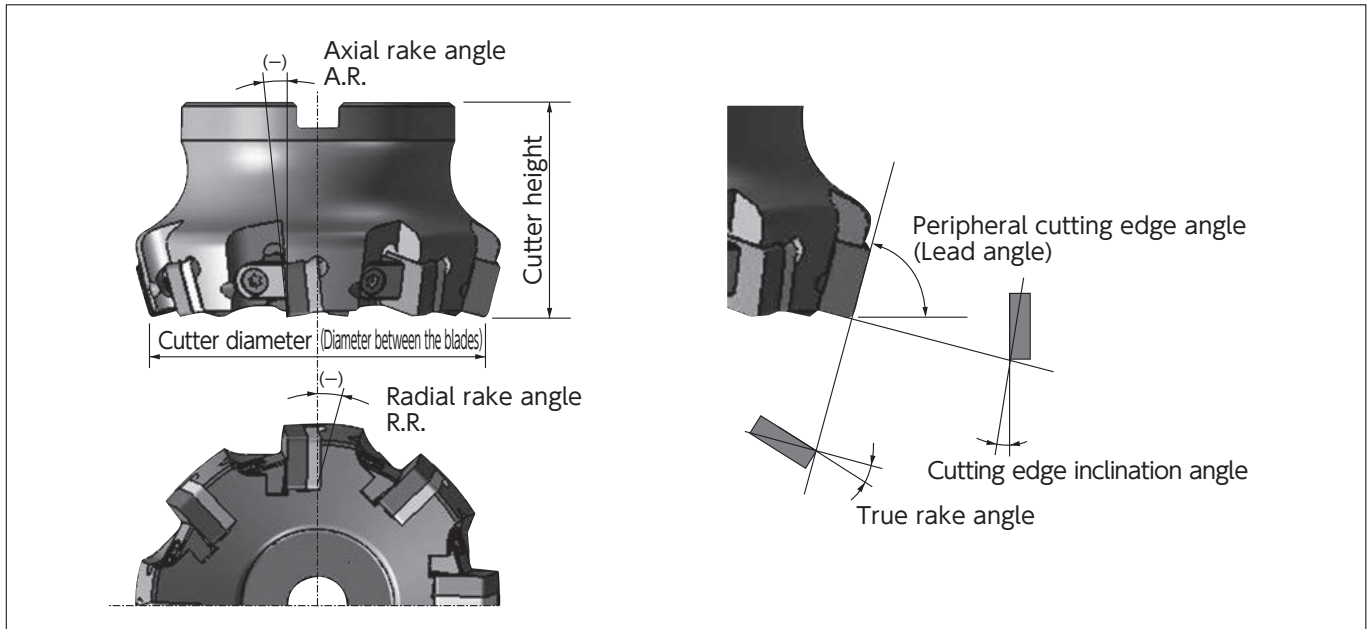
Symbol	Term	Unit
δ	Deflection amount	mm
D	Shank width	mm
E	Young's modulus	N/mm ²
a_p	Depth of cut	mm
f	Feed amount	mm/rev
k_c	Specific cutting force	N/mm ²
L	Overhang	mm
F	Cutting force	N

$$(F = k_c \times a_p \times f)$$

An important factor in improving the rigidity of a toolholder is to ensure the overhang of the tool shank is as short as possible.

■ Milling Cutter Terminology

● Milling cutter terminology



● Functions of each cutting edge angle

Name	Function	Effects
Radial rake angle: R.R.	Controls the direction of chip evacuation and cutting force	Negative (-): Excels in chip control performance
Axial rake angle: A.R.	Controls the direction of chip evacuation and cutting force	Positive (+): Excels in cutting performance and BUE resistance
Lead angle	Controls the thickness and evacuation direction of chips	Larger lead angles decrease the thickness of chips and relieves cutting load
True rake angle	Actual rake angle	Larger angles excel in cutting performance and BUE resistance, but lower the cutting edge strength Smaller angles increase the cutting edge strength but lower the BUE resistance
Cutting edge tilt angle	Controls the direction of chip evacuation	Larger angles excel in chip control performance and relieve cutting load, but lower the strength of the insert corner

● Functions of each angle

《Lead angle》: Relationship of this angle and chip thickness

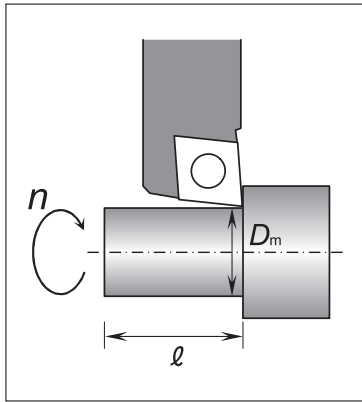
Lead angle : 45 degrees	
Lead angle : 75 degrees	
Lead angle : 90 degrees	

《Rake angle》: Combinations and characteristics

Combinations of the angles for basic cutting edge shapes	(+) Axial rake angle : positive	(-) Axial rake angle : negative	(+) Axial rake angle : positive
Radial rake angle (R.R.)	Positive (+)	Negative (-)	Negative (-)
Axial rake angle (A.R.)	Positive (+)	Negative (-)	Positive (+)
Insert specification	Positive (single side used)	Negative (both sides used)	Positive (single side used)
Work material	Steel	●	●
	Cast iron	—	●
	Aluminum alloy	●	—

Calculation Formula for Turning

Calculating the cutting speed



Calculating the cutting speed from the rotation speed

$$v_c = \frac{\pi \times D_m \times n}{12}$$

(SFM)

v_c : Cutting speed (SFM)
 D_m : Machining diameter (inch)
 n : Spindle speed (rpm)
 π : Pi (3.14)

Calculating the revolution speed from the cutting speed

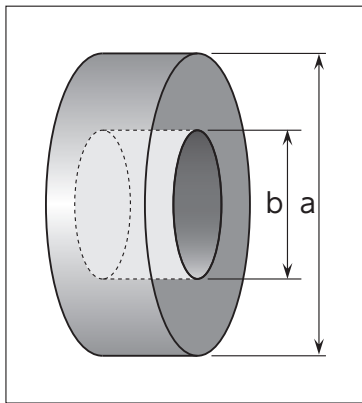
$$n = \frac{12 \times v_c}{\pi \times D_m}$$

(rpm)

Example : Obtaining a cutting speed for machining a work piece of 2" diameter at the spindle speed of 1,000 min⁻¹:

$$v_c = \frac{\pi \times 2 \times 1000}{12} = \underline{523 \text{ (SFM)}}$$

Calculating the cutting time



Calculating the cutting time for OD (ID) machining

$$T = \frac{l}{f \times n}$$

(min)

T : Cutting time (min)
 l : Cutting length (inch)
 f : Feed rate (IPR)
 n : Spindle speed (rpm)

Calculating the cutting time for facing

$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times v_c \times f}$$

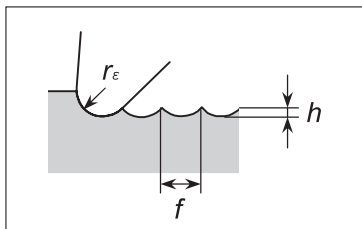
(min)

T : Cutting time (min)
 v_c : Cutting speed (m/min)
 f : Feed amount (mm/rev)
 π : Pi (3.14)

Example : Obtaining a cutting time for machining of work to be cut 4" long at the spindle speed of 1,000 rpm and at a feed rate of .004IPR:

$$T = \frac{4}{.004 \times 1000} = \underline{1 \text{ (min)}}$$

Calculating the theoretical surface roughness



$$h = \frac{f^2}{8 r_\epsilon} \times 1000^2$$

(μinch)

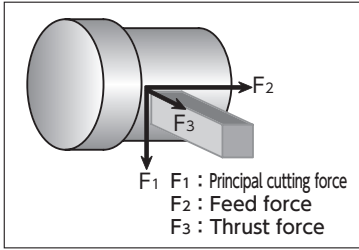
h : Theoretical surface roughness (μinch)
 f : Feed amount (IPR)
 r_ϵ : Corner radius (inch)

Example : Obtaining the theoretical surface roughness when machining with an insert having .031 corner nose radius at a feed rate of 0.004 IPR:

$$h = \frac{.004^2}{8 \times .031} \times 1000^2 = \underline{64.51 \text{ (μinch)}}$$

[Guidelines for actually finished surface roughness]
 Steel type work: Theoretical surface roughness × 1.5 to 3
 Cast iron type work: Theoretical surface roughness × 3 to 5

● Calculating the cutting force



$$F = k_c \times a_p \times f$$

(N)

F : Cutting force (N)
 k_c : Specific cutting force (N/mm²) *See the table below.
 a_p : Depth of cut (mm)
 f : Feed amount (mm/rev)

Example : Calculating the cutting force for grey cast iron cut at the feed rate of 0.2 mm/rev and with a depth of cut of 3 mm:

$$F = 1800 \times 3 \times 0.2 = \underline{1080 \text{ (N)}}$$

● Calculating the power required

$$P_c = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times \eta}$$

(kW)

P_c : Required power (kW)
 v_c : Cutting speed (m/min)
 f : Feed amount (mm/rev)
 a_p : Depth of cut (mm)
 k_c : Specific cutting force (N/mm²) *See the table below.
 η : Mechanical efficiency (0.7~0.8)

Example : Calculating the cutting power for the machining of grey cast iron at a cutting speed of 700 m/min, feed rate of 0.4 mm/rev, and with a depth of cut of 2 mm (with 0.8 set as the mechanical efficiency):

$$P_c = \frac{700 \times 0.4 \times 2 \times 1400}{60 \times 10^3 \times 0.8} = \underline{16.33 \text{ (kW)}}$$

● Specific cutting force

Work material	Tensile strength or hardness	Specific cutting force (N/mm ²) "k _c " to cutting feed rate (mm/rev)					
		0.1mm/rev	0.2mm/rev	0.3mm/rev	0.4mm/rev	0.6mm/rev	
Soft steel	520	3,610	3,100	2,720	2,500	2,280	
Medium steel	620	3,080	2,700	2,570	2,450	2,300	
Hard steel	720	4,500	3,600	6,250	2,950	2,640	
Tool steel	SKD	670	3,040	2,800	2,630	2,500	2,400
		770	3,150	2,850	2,620	2,450	2,340
Cr-Mo steel	SCM	600	3,610	3,200	2,880	2,700	2,500
		730	4,500	3,900	3,400	3,150	2,850
Alloy steel	SNCM	900	3,070	2,650	2,350	2,200	1,980
		HB350	3,310	2,900	2,580	2,400	2,200
Gray cast iron	FC	HB200	2,110	1,800	1,600	1,400	1,330

● Calculating the volume of chips produced

$$Q = v_c \times f \times a_p$$

(cm³/min)

Q : Volume of evacuated chips (cm³/min)
 v_c : Cutting speed (m/min)
 a_p : Depth of cut (mm)
 f : Feed amount (mm/rev)

Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed of 0.4 mm/rev, and a depth of cut of 2mm

$$Q = 700 \times 0.4 \times 2 = \underline{560 \text{ (cm}^3\text{/min)}}$$

Troubleshooting for Turning

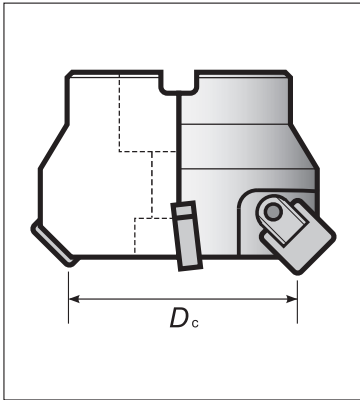
Type of problem		Possible cause	Material/grade selection				Cutting conditions				Tool shape				Machine/installation			
			Change to a harder material/grade	Change to a tougher material/grade	Change to a material/grade more resistant to thermal shock	Change to a material/grade more resistant to deposition	Cutting speed	Feed rate	Depth of cut	Coolant		Review the type of chipbreaker	Rake angle	Nose radius of the insert	Side cutting edge angle	Cutting edge strength, honing	Improve the accuracy of insert	Improve the rigidity of the holder
										Use non-water-soluble type	Review dry or wet operation								Decrease	Increase
Short tool life	Excessive insert wear	Unsuitable tool material/grade	●															
		Unsuitable cutting edge shape									●	→	→	→	→			
		Improper cutting conditions					↘	↗			Wet							
	Fracture/chipping of the cutting edge	Unsuitable tool material/grade		●														
		Improper cutting conditions						↘	↘									
		Insufficient cutting edge strength										●	→		→			
		Thermal shock			●		↘	↘	↘	●	Dry							
		Built-up edge				●	↗	↗		●	Wet							
Insufficient toughness														●	●	●	●	
Poor dimensional accuracy	Variation in dimensions during cutting	Improper accuracy of insert													●			
		Clearance/relief of the work/tool									●	→	→	→	→	●	●	●
	Need for offsetting during cutting	Increased flank wear	●										→					
		Built-up edge			●		↗											
		Improper cutting conditions					↘	↗										
Poor surface finish	Poor surface roughness	Deposition					↗			●	Wet							
		Unsuitable cutting edge shape									●	→						
		Chatter					↘	↘	↘						●	●	●	●
Heat	Deterioration in tool life/accuracy due to excessive heat generation	Improper cutting conditions					↘	↘	↘									
		Unsuitable cutting edge shape									●	→		→				
Burring, chipping, scuffing	Burring	Boundary wear	●															
		Improper cutting conditions					↘	↕			Wet							
		Unsuitable cutting edge shape									●	→	→	→	→			
	Chipping	Improper cutting conditions						↘	↘									
		Unsuitable cutting edge shape									●	→	→	→	→			
		Vibration													●	●	●	●
	Scuffing	Unsuitable tool material/grade			●													
		Improper cutting conditions					↗			●	Wet							
Unsuitable cutting edge shape										●	→		→					
Vibration														●	●	●	●	
Chip control	Elongated chips	Improper cutting conditions					↘	↗	↗		Wet							
		Chipbreaker's effective chip control range									●							
		Unsuitable cutting edge shape										→	→					

Troubleshooting Case Studies: Turning

	Case/Symptom	Possible causes	Corrective measures
Insert	VB wear	<ul style="list-style-type: none"> ●The material / grade is too soft ●Cutting speed is too high ●Relief angle is too small 	<ul style="list-style-type: none"> ●Use a coated grade ●Choose a material/grade highly resistant to wear ●Decrease the cutting speed
	Wear on face	<ul style="list-style-type: none"> ●High temperature causes chemical reactions between the insert material and chips 	<ul style="list-style-type: none"> ●Use a coated grade ●Decrease both of the cutting speed and feed rate ●Widen the rake angle
	Notching wear	<ul style="list-style-type: none"> ●The work surface is too hard ●Boundary area has been oxidized ●Burr, caused by chips in the sheared form, have been cut 	<ul style="list-style-type: none"> ●Widen the side cutting edge angle ●Make the nose radius larger so that cutting is performed within the radius ●Use a round insert
	Chipping/ fracture	<ul style="list-style-type: none"> ●Feed rate is too high ●Chips have become trapped ●Chatter resulting in vibration 	<ul style="list-style-type: none"> ●Enlarge the honed edge ●Make the nose radius larger ●Narrow the rake angle to secure the cutting edge strength
	Flaking	<ul style="list-style-type: none"> ●This is due to compressive forces being applied to the cutting edge from elastic deformation in the area being cut ●This occurs when deposited/adhered material is peeled off 	<ul style="list-style-type: none"> ●Change the cutting conditions by checking the cutting edge ●Choose a material/grade highly resistant to fracture ●Increase the coolant rate and pressure ●Improve the run-out of the main spindle of the machine
	Plastic deformation	<ul style="list-style-type: none"> ●High cutting force and excessive heat is applied to the cutting edge 	<ul style="list-style-type: none"> ●Choose a material/grade highly resistant to wear ●Decrease both of the cutting speed and feed rate ●Make the nose radius larger ●Use coolant
	Built-up edge	<ul style="list-style-type: none"> ●This occurs because the cutting temperature is lower than the recrystallization temperature of the work material 	<ul style="list-style-type: none"> ●Increase the cutting speed ●Use coolant with excellent lubrication performance ●Change to a grade with less affinity to the work material
	Deposition	<ul style="list-style-type: none"> ●The deposition is caused to the face by a chemical reactions of the work material due to heat generation 	<ul style="list-style-type: none"> ●Increase the cutting speed ●Widen the relief angle ●Hone the face with a mirror-like-surface finish ●Change to a grade with less affinity to the work material
	Clamping crack	<ul style="list-style-type: none"> ●The insert was clamped under improper seating conditions 	<ul style="list-style-type: none"> ●Clean the clamping areas and install the insert in the recommended way ●Tighten to the specified torque
Work piece	Chipping	<ul style="list-style-type: none"> ●The feed rate is too high ●An unsuitable insert was selected 	<ul style="list-style-type: none"> ●Decrease the feed rate ●Use a smaller edge preparation ●Change to a grade highly resistant to boundary wear ●Change the cutting edge angle of the holder
	Burring	<ul style="list-style-type: none"> ●The feed rate is incorrect ●The shape of insert is not suitable 	<ul style="list-style-type: none"> ●Decrease the feed rate ●Use a smaller edge preparation
	Chatter mark	<ul style="list-style-type: none"> ●The cutting force is too great ●The rigidity of the work piece and cutting tool is insufficient 	<ul style="list-style-type: none"> ●Decrease the feed rate ●Use a smaller edge preparation ●Ensure tool overhang is minimised ●Change the cutting edge angle of the holder
	Gouging	<ul style="list-style-type: none"> ●Vibration of the cutting edge due to deposition/built-up edge 	<ul style="list-style-type: none"> ●Increase the cutting speed ●Use cutting oil excellent in lubrication performance ●Change to a grade with less affinity to the work material

Calculation Formula for Milling Processes

Calculating the cutting speed



Calculating the cutting speed from the rotation speed

$$v_c = \frac{\pi \times D_c \times n}{12}$$

(SFM)

v_c : Cutting speed (SFM)
 D_c : Cutter diameter (inch)
 n : Spindle speed (rpm)
 π : Pi (3.14)

Calculating the revolution speed from the cutting speed

$$n = \frac{12 \times v_c}{\pi \times D_c}$$

(rpm)

Example : Obtaining the cutting speed for machining with an 8" diameter cutter at the Spindle speed of 1,000 rpm:

$$v_c = \frac{\pi \times 8 \times 1000}{12} = \underline{2093 \text{ (SFM)}}$$

Calculating the feeding speed and feed rate

Calculating the feed rate per blade

$$f_z = \frac{v_f}{z \times n}$$

(IPT)

f_z : Inch amount per tooth (IPT)
 v_f : Table feed (inch/min)
 z : Number of tooth
 n : Spindle speed (rpm)

Calculating the feeding speed per minute

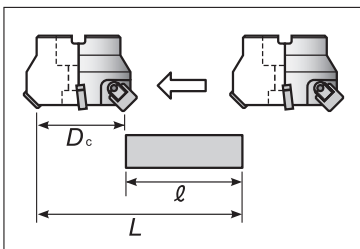
$$v_f = f_z \times z \times n$$

(inch/min)

Example : Obtaining the feed rate for milling with a 10-teeth cutter at the .008IPT and the revolution speed of 1,000 rpm

$$v_f = .008 \times 10 \times 1000 = \underline{80 \text{ (inch/min)}}$$

Calculating the machining time



$$T = \frac{L}{v_f}$$

(min)

T : Cutting time (min)
 L : Total length of table feed
 ($l + D_c$)
 v_f : Table feed (inch/min)

Example : Obtaining the machining time for milling 8" on a work piece fed at the rate of 40 inch/min:

$$T = \frac{8}{40} = \underline{0.2 \text{ (min)}}$$

● Calculating the cutting power

$$P_c = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times \eta}$$

(kW)

- P_c : Required power (kW)
- a_e : Cutting length (mm)
- a_p : Depth of cut (mm)
- v_f : Feed rate (mm/min)
- k_c : Specific cutting force (N/mm³) *See the table below.
- η : Mechanical efficiency (0.7~0.8)

Example : Calculating the power required to machine gray cast iron for a length of 150 mm, at a feed rate of 1,100 mm/min, and with a depth of cut of 3 mm (with 0.8 set as the mechanical efficiency and 0.2 mm as the feed par tooth/blade)

$$P_c = \frac{150 \times 3 \times 1100 \times 1400}{60 \times 10^6 \times 0.8} = \underline{14.44 \text{ (kW)}}$$

● Specific cutting force

Work material		Tensile strength or hardness	Specific cutting force (N/mm ³) “ k_c ” to cutting feed amount (mm/rev)				
			0.1mm/t	0.2mm/t	0.3mm/t	0.4mm/t	0.6mm/t
Soft steel		520	2,200	1,950	1,820	1,700	1,580
Medium steel		620	1,980	1,800	1,730	1,600	1,570
Hard steel		720	2,520	2,200	2,040	1,850	1,740
Tool steel	SKD	670	1,980	1,800	1,730	1,700	1,600
		770	2,030	2,030	1,800	1,750	1,700
Cr-Mo steel	SCM	600	2,180	2,000	1,860	1,800	1,670
		730	2,540	2,250	2,140	2,000	1,800
Alloy steel	SNCM	900	2,000	1,800	1,680	1,600	1,500
		HB350	2,100	1,900	1,760	1,700	1,530
Gray cast iron	FC	HB200	1,750	1,400	1,240	1,050	970
Aluminum alloy	AC,ADC	160	580	480	400	350	320

※For power required for NTK HCC, please refer to page P31.

● Calculating the volume of evacuated chips

$$Q = a_e \times a_p \times v_f$$

(cm³/min)

- Q : Volume of evacuated chips (cm³/min)
- a_e : Cutting length (mm)
- a_p : Depth of cut (mm)
- v_f : Feed rate (mm/min)

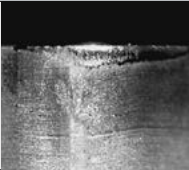

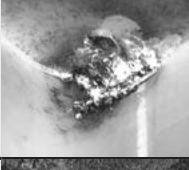
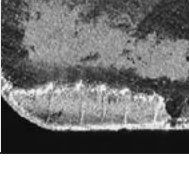
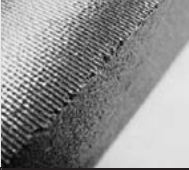
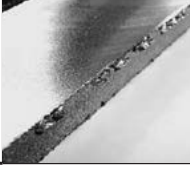
Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed rate of 0.4 mm/rev, and with a 2 mm depth of cut:

$$Q = 150 \times 3 \times 1100 = \underline{495 \text{ (cm}^3\text{/min)}}$$

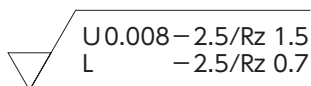
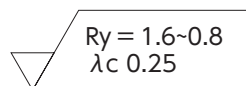
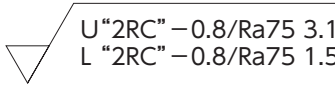
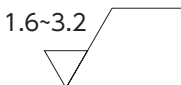
Troubleshooting for Milling

Type of problem		Corrective measures	Material/grade selection				Cutting conditions						Tool shape								
			Change to a harder material/grade	Change to a tougher material/grade	Change to a material/grade more resistant to thermal shock	Change to a material/grade more resistant to deposition	Cutting speed Decrease ↙ Increase ↘	Feed rate Increase ↘	Depth of cut Increase ↘	Review cutter diameter and cutting width	Review tool path	Coolant		Relief angle of insert Decrease ↙ Increase ↘	Nose radius of cutting edge Increase ↘	Cutting edge strength, honing Increase ↘	Number of teeth/blades	Enlarge the chip pocket	Check the wiper shape	Improve accuracy of cutting edge run-out	Improve rigidity of tool
												Wet	Dry								
Damaged or broken cutting edge of the insert	Increased flank wear	Improper cutting conditions					↘						●								
		Unsuitable cutting edge shape	●											↘	↘			●			
	Increased wear on face	Improper cutting conditions					↘	↘	↘				●								
		Unsuitable cutting edge shape	●											↘	↘	↘					
	Fracture/chipping on cutting edge	Improper cutting conditions						↘	↘		●								●	●	
		Unsuitable cutting edge shape		●										↘	↘	↘			●	●	
	Thermal shock	Improper cutting conditions					↘	↘	↘								●				
		Unsuitable cutting edge shape			●									↘	↘						
Built-up edge	Improper cutting conditions					↘	↘									●					
	Unsuitable cutting edge shape				●								↘	↘							
Machining accuracy	Poor surface finish	Improper cutting conditions					↘	↘	↘				●								
		Unsuitable cutting edge shape	●			●									↘	↘		●	●		
	Burring	Improper cutting conditions						↕	↘	●	●										
		Unsuitable cutting edge shape												↘	↘	↘		●			
	Chipping	Improper cutting conditions						↘	↘		●										
		Unsuitable cutting edge shape												↘	↘	↘	↘		●		
Poor flatness and parallelism	Improper cutting conditions						↘	↘				●		↘	↘	↘		●	●		
Others	Increased chatter/vibration	Improper cutting conditions					↘	↘	↘	●	●				↘	↘	↘				
		Improper cutting conditions					↘	↘		●			●								
	Poor chip evacuation	Unsuitable tool/blade edge shape												↘			↘	●			

Troubleshooting Case Studies: Milling

	Case/Symptom	Possible causes	Corrective measures
Insert	VB wear 	<ul style="list-style-type: none"> ●Cutting speed is too high. ●Feed rate is too low. ●The shape of the insert is not suitable. ●The material / grade of the insert is not suitable. 	<ul style="list-style-type: none"> ●Decrease the cutting speed. ●Increase the feed rate. ●Make the nose radius larger. ●Change to a grade highly resistant to boundary wear.
	Notching wear 	<ul style="list-style-type: none"> ●The material / grade of the inserts is not suitable. ●The shape of the cutter is not suitable ●The shape of insert is not suitable. 	<ul style="list-style-type: none"> ●Change to a grade highly resistant to boundary wear. ●Widen the rake angle. ●Change the Insert shape to a different one.
	Chipping / fracture 	<ul style="list-style-type: none"> ●The cutting speed is incorrect. ●The shape of the cutter is not suitable ●The shape of insert is not suitable. 	<ul style="list-style-type: none"> ●Decrease the feed rate and depth of cut in order to reduce the cutting force. ●Use a smaller edge preparation. ●Prepare the cutting edge to give it a round honing. ●Change to a grade highly resistant to fracture.
	Thermal crack 	<ul style="list-style-type: none"> ●The cutting conditions are incorrect ●The material / grade of insert is not suitable 	<ul style="list-style-type: none"> ●Decrease the cutting speed. ●Change to dry cutting from wet cutting. ●Use a material / grade highly resistant to thermal shock
Work piece	Chipping 	<ul style="list-style-type: none"> ●The feed rate is too high. ●An unsuitable insert is selected. ●The shape of the cutter is not suitable. 	<ul style="list-style-type: none"> ●Decrease the feed rate. ●Use a smaller edge preparation ●Change to a grade highly resistant to boundary wear. ●Set the lead angle at 45 degrees.
	Burring 	<ul style="list-style-type: none"> ●The feed rate is incorrect. ●The shape of insert is not suitable. ●The shape of the cutter is not suitable. 	<ul style="list-style-type: none"> ●Adjust the feed rate. ●Use a smaller edge preparation. ●Make the lead angle narrower.

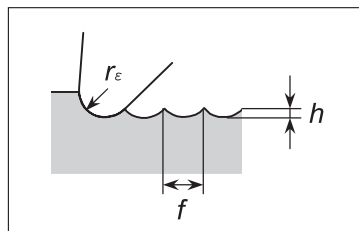
Surface Roughness Standards

		JIS B0601 (2001) ISO 4287 (1997) / ISO 1302 (2002)	JIS B0601 (1994) JIS B0031 (1982)	
Cross-section curve		No filter, digital signal	No filter, digital signal	
	Evaluation length	Shape length	—	
	Maximum height	Pt	—	
	10-point average roughness	—	—	
Roughness curve		Phase correction, band λ_s - λ_c	Phase correction, short wavelength λ_c	
	Evaluation length	Determine individually for each standard length λ_c .	Average for λ_n , calculated for each standard length λ_c	
	Maximum height	Maximum height Rz	Maximum height Ry	
	Set standard length based on height parameters Rz, Rmax, and Ry.	0.25mm	0.1~0.5 μ m	0.1~0.5 μ m
		0.8mm	0.5~10 μ m	0.5~10 μ m
		2.5mm	10~50 μ m	10~50 μ m
	Dimension indicated in drawing			
	10-point average roughness		Rz_{JIS}	Rz
	Center line average roughness		Ra₇₅	Ra75
	Arithmetic average roughness		Arithmetic average roughness Ra	Arithmetic average roughness Ra
	Set standard length based on height parameters Rz, Rmax, and Ry.	0.25mm	0.1~0.5 μ m	0.1~0.5 μ m
0.8mm		0.5~10 μ m	0.5~10 μ m	
2.5mm		10~50 μ m	10~50 μ m	
Dimension indicated in drawing				

Theoretical surface roughness

The theoretical surface roughness for lathe machining is the minimum value which can be obtained under the set machining conditions, and can be expressed by the following formula.

$$h_{(\mu\text{m})} = \frac{f^2}{8 r_\epsilon} \times 1000$$



h : Theoretical surface roughness (μm)

f : Feed amount (mm/rev)

r_ϵ : Nose radius (mm)

Actual surface roughness

- When machining steel: Theoretical surface roughness x 1.5-3
- When machining cast iron: Theoretical surface roughness x 3-5

Surface finish improvement measures

- Increase the nose radius.
- Use a wiper insert.
- Adjust the cutting speed and/or feed amount.
- Change the material and/or shape of the insert

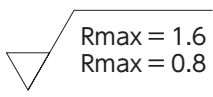
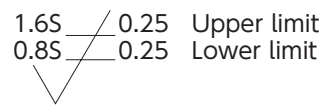




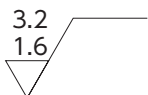




Relationship with triangle symbols

Arithmetic average roughness Ra (μm)	Maximum height Rz (μm)	10-point average roughness Rz _{JIS} (μm)	※ (Triangle symbol)
0.025	0.1	0.1	
0.05	0.2	0.2	
0.1	0.4	0.4	
0.2	0.8	0.8	
0.4	1.6	1.6	▽▽▽
0.8	3.2	3.2	
1.6	6.3	6.3	
3.2	12.5	12.5	▽▽
6.3	25	25	
12.5	50	50	▽
25	100	100	

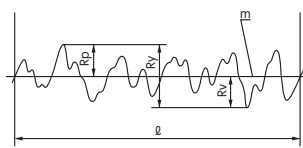
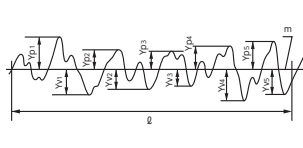
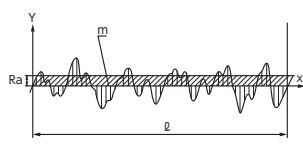
• Examples of reading

- When Ra = 1.6 μm → 1.6 μm Ra
- When Rz = 6.3 μm → 6.3 μm Rz
- When Rz_{JIS} = 6.3 μm → 6.3 μm Rz_{JIS}

※ The finishing symbols (triangle symbol ▽ and symbol ~) are no longer used in JIS pursuant to the 1994 revision.

JIS B0601 (1982) JIS B0031 (1982)	JIS B0601 (1970) JIS B0031 (1970)	JIS B0601 (1970)
No filter, analog signal	No filter, analog signal	No filter, analog signal
One standard length	One standard length	One standard length
Rmax	Rmax (S indication)	Hmax (S)
Rz	Rz (Z indication)	—
2RC, short wavelength cut-off λc	2RC, short wavelength cut-off λc	—
One measured length $\geq 3\lambda c$	One measured length $\geq 3\lambda c$	—
—	—	—
0.8 μ m or less	0.8 μ m or less	Select from 0.3, 1, 3, 5 and 10mm
0.8~6.3 μ m	0.8~6.3 μ m	Select from 0.3, 1, 3, 5 and 10mm
6.3~25 μ m	6.3~25 μ m	Select from 0.3, 1, 3, 5 and 10mm
	Surface symbol or triangle symbol	Triangle symbol
		0.8S or less 
		1.5S~6S 
		12S~25S 
		35S or higher 
—	—	—
Ra	Ra ("a" indication)	—
—	—	—
—	—	—
Ra shall be 12.5 μ m or less.	λc shall be 0.8 mm.	—
12.5~100 μ m	—	—
	Surface symbol or triangle symbol	—
	0.2a or less 	
	0.4a~1.6a 	
	3.2a~6.3a 	
	12.5a to 25a or more 	

● Obtaining the surface roughness







Type	New symbol	Old symbol	Calculation	Obtaining method (example)
	JIS B0601:01	JIS B0601:94		
Max. height (Peak)	Rz	Ry	<p>The addition of the max. value for the depth R_v and the max. height R_p on the roughness curve for the reference length:</p> $Rz = R_p + R_v$	
Average roughness of 10 points	Rz _{JIS}	Rz	<p>The addition of the average of the maximum to fifth highest vales and the average of the deepest to the fifth deepest values on the roughness curve for the reference length:</p> $Rz_{JIS} = \frac{(Yp1 + Yp2 + Yp3 + Yp4 + Yp5) + (Yv1 + Yv2 + Yv3 + Yv4 + Yv5)}{5}$	
Arithmetic average of roughness	Ra	Ra	<p>The average of absolute values on the roughness curve $f(x)$ for the reference length:</p> $Ra = \frac{1}{l} \int_0^l \{f(x)\}$	

● Conditions for measuring R parameters

Non-cyclic wave form (random wave form)		Settings for measuring	
Range of Ra (μ m)	Range of Rz (μ m)	Reference length λr (mm)=cut-off λc (mm)	Evaluated length λn (mm) = $\lambda r \times 5$
0.006 < Ra \leq 0.2	0.025 < Rz \leq 0.1	0.08	0.4
0.02 < Ra \leq 0.1	0.1 < Rz \leq 0.5	0.25	1.25
0.1 < Ra \leq 2	0.5 < Rz \leq 10	0.8	4
2 < Ra \leq 10	10 < Rz \leq 50	2.5	12.5
10 < Ra \leq 80	50 < Rz \leq 200	8	40

Spare Parts - Wrenches

Standard Items


Item Number	Appearance
CLR-13S (Formerly RLR-13S)	
CLR-15S (Formerly RLR-15S)	
RLR-20S	
LLR-25S	
LLR-25S-20*65	
LLR-28S	

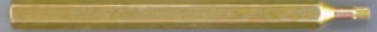



Optional Items

<LLR Type>

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

<Driver type wrench for increased adaptability>

Item Number	Magnetic Driver Handle
XX2815-04	

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

<Driver type wrench kits>

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

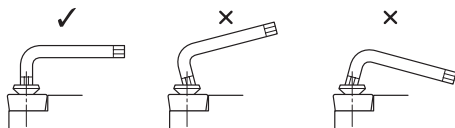


Clamp Screws and Wrenches

Clamp Screw			Dimension (mm)				Standard Wrench			
Appearance	Order Code	Item Number	a	b	c	θ (°)	Order Code	Item Number		
	5704739	LR-S-2×3.5	M2×P0.4	3.1	3.5	82	5681994	CLR-13S		
	5907704	LR-S-2×3.7	M2×P0.4	3.1	3.7	82				
	5907712	LR-S-2×4.4	M2×P0.4	3.1	4.4	82				
	5907720	LR-S-2×5.5	M2×P0.4	3.0	5.5	90				
	5907738	LR-S-2.5×4.8	M2.5×P0.45	3.6	4.8	82				
	5704747	LR-S-2.5×5.5	M2.5×P0.45	3.6	5.5	82	5681978	CLR-15S		
	5907746	LR-S-2.5×6	M2.5×P0.45	3.5	6.0	90				
	5907753	LR-S-2.5×6.8	M2.5×P0.45	3.5	6.8	90				
	5773619	LR-S-3×5.8	M3×P0.5	4.1	5.8	90				
	5907761	LR-S-3×6.2	M3×P0.5	5.2	6.2	82				
	5907779	LR-S-3×7.8	M3×P0.5	4.0	7.8	90	5485164	RLR-20S		
	5907787	LR-S-4×5.8	M4×P0.7	5.8	6.0	82				
	5907795	LR-S-4×9	M4×P0.7	5.8	9.0	82				
	5116991	LR-S-4×10PW	M4×P0.7	5.8	10.0	90			5681978	CLR-15S
		5534029	LRIS-2×6	M2×P0.4	2.6	6.0			60	5681994	CLR-13S
5907803		LRIS-2.2×6	M2.2×P0.45	3.15	6.0	60				
5989181		LRIS-2.5×5	M2.5×P0.45	3.6	5.0	60	5681978	CLR-15S		
5907811		LRIS-2.5×7	M2.5×P0.45	3.6	7.0	60				
5907829		LRIS-3×6	M3×P0.5	4.0	6.0	60	5485164	RLR-20S		
5428156		LRIS-3×8	M3×P0.5	4.2	8.0	60				
5477328		LRIS-4×5	M4×P0.7	5.85	5.0	60	5364930 5794698	LLR-25S LLR-25S-20*65		
5907837		LRIS-4×6	M4×P0.7	5.85	6.0	60				
5977566		LRIS-4×8	M4×P0.7	5.85	8.0	60				
5907845		LRIS-4×10	M4×P0.7	5.85	10.0	60				
5684105	LRIS-4×12	M4×P0.7	5.85	12.0	60	5364948	LLR-28S			
5907852	LRIS-5×10	M5×P0.8	7.0	9.5	60					
5116983	LRIS-4×10PW	M4×P0.7	5.7	10.0	60	5681978	CLR-15S			
5090576	LRIS-4×12PW	M4×P0.7	5.7	12.0	60					

Attention: When tightening screws

- Make sure the wrench tip and wrench hole are neither deformed nor stripped
- Engage the wrench straight to screw hole



- Do not apply more torque than the recommended amount (as shown to the right)

Note: Wrenches and bits come in a pack of five
Clamp screws come in a pack of ten

Recommended Tightening Torque

Item Number	Recommended Tightening Torque (lbs.in)
CLR LLR HLR 13S	6.2 (0.7N·m)
CLR LLR HLR 15S	12.4 (1.4N·m)
RLR LLR HLR 20S	26.6 (3.0N·m)
LLR HLR 25S	44.3 (5.0N·m)
LLR HLR 28S	62.0 (7.0N·m)

Material Cross Reference Chart

ISO	Country	U.S.A.	Japan	Germany	ISO	Country	U.S.A.	Japan	Germany
	Standard	AISI / SAE	JIS	DIN		Standard	AISI / SAE	JIS	DIN
Stainless steel [M]	Stainless Steel (Ferrite/Martensitic)				Cast iron [K]	Malleable cast iron			
	403		SUS403	X6Cr13 X7Cr14		—		FCMB310	—
	416		SUS416	X12CrS13		32510		FCMW330	EN-GJMB350-10
	430		SUS430	X6Cr17		40010		FCMW370	EN-GJMB450-6
	410		SUS410	X10Cr13		50005		FCMW490	EN-GJMB550-4
			SUS420J2	X46Cr13		70003		FCMP540	
	405			X6CrAL13		A220-70003		FCMP590	EN-GJMB650-2
	420			X20Cr13		A220-80002		FCMP690	EN-GJMB700-2
	431		SUS431	X19CrNi17-2		Gray cast iron			
	430F		SUS430F	X14CrMoS17		No 20 B		FC100	EN-GJL-100
	434		SUS434	X6CrMoS17-2		No 25 B		FC150	EN-GJL-150
	CA6-		SCS5	X3CrNiMo13-4		No 30 B		FC200	EN-GJL-200
	405		SUS405	X10CrAL13		No 35 B		FD250	EN-GJL-250
	HNV6		SUH4	X85CrMoV18-2		No 40 B		—	—
	446		SUH446	X10CrAL2-4		No 45 B		FC300	EN-GJL-300
	EV8		SUH35,SUH36	X53CrMnNiN21-9		No 50 B		FC350	EN-GJL-350
	S44400			X1CrMoTi18-2 X20CrMoV12-1 X5CrNiCuNb16-4		No 55 B		—	EN-JLZ
						A436 Type 2		—	GGL-NiCr20-2
	630					Ductile cast iron			
	Stainless Steel (Austenitic)					60-40-18		FCD400	EN-GJL-400-15
	304L			X2CrNi19-11		—		—	EN-GJL-400-18-LT
	304		SUS304	X5CrNi18-10		80-55-06		FCD500	EN-GJL-500-7
	303		SUS303	X8CrNiS18-9		A43D2		—	EN-GJSA-500
			SUS304L			—		FCD600	EN-GJS-600-3
	304L		SCS19	X2CrNi19-11		100-70-03		FCD700	EN-GJS-700-2
	301		SUS301	X9CrNi18-8		Nonferrous material [N]			
	304LN		SUS304LN	X2CrNi18-10		SC64D		C4BS	G-AISI9MGWA
	316		SUS316	X5CrNiMo17-2-2		GD-AISI12		AC4A	G-ALMG5
	316LN		SUS316LN	X2CrNiMoN17-13-3		356.1		A5052	
	316L			X2CrNiMoN17-12-2		A413.0		A6061	GD-AISI12
	316L		SCS16	X2CrNiMo18-14-3		A380.1		A7075	GD-AISI8Cu3
			SUS316L			A413.1		ADC12	G-AISI12(Cu)
	317L		SUS317L	X2CrNiMo18-15-4		A413.2			G-AISI12
	UNS			X1NiCrMoCu25-20-5		A360.2			G-AISI10Mg(Cu)
	V 0890A					Heat-resistant alloy			
	321		SUS321	X6CrNiTi18-10		330		SUH330	X12NiCrSi36 16
	347		SUS347	X10CrNiNb18-10		5390A		SCH15	G-X40NiCrSi36-18
	316Ti			X6CrNiMoTi17-12-2		5666			NiCr22Mo9Nb
	318			X10CrNiMoNb 18-12					NiCr20Ti
	309		SUH309	X15CrNiSi20-12		5660			NiFe35Cr14MoTi
310S		SUH310	X8CrNi25-21	5391			S-NiCr13A16MoNb		
308		SCS17	X2CrNiMoN17-11-2	5383			NiCr19Fe19NbMo		
17-7PH			X7CrNiAL 17-7	4676			NiCu30AL3Ti		
N08028			X1NiCrMoCu31-27-4				NiCr20TiAk		
Stainless Steel (Austenitic/Ferrite)				AMS 5399			NiCr19Co11MoTi		
S31500			X2CrNiN23-4	AMS 5544			NiCr19Fe19NbMo		
S32900			X8CrNiMo27-5	AMS 5397			NiCo15Cr10MoAl		
S32304			X2CrNiN23-4	5537C			CoCr20W15Ni		
S31803			X2CrNiMoN22-53	AMS 5772			CoCr22W14Ni		
Hardened material [H]				Titanium alloy					
5130H		SCr430H	34Cr4	AMS R54520			TiAl5Sn2.5		
5135H		SCr435H	37Cr4	AMS R56400			TiAl6V4		
4135H		SCM435H	34CrMo4	AMS R56401			TiAl6V4ELI		
4140H		SCM440H	42CrMo4				TiAl4Mo4Sn4Si0.5		

ISO	Country	U.S.A.	Japan	Germany	ISO	Country	U.S.A.	Japan	Germany
	Standard	AISI/SAE	JIS	DIN		Standard	AISI/SAE	JIS	DIN
Steel P	Carbon steel				Steel P	A573-81	SM400A;B;C	S275J2G3	
	A570.36	STKM12A;C	S235JRG2	5120		SM490A;B;C;YA;YB	S355J2G3+C2		
	1115		GC16E	9255			DS355J2G3		
	A573-8165		S235J2G3	9262			55Si7		
	1015		C15	9262			S340MGC		
	1020		C22	52100		SUJ2	100Cr6		
	1213	SUM22	11SMn30	ASTM			16Mo3		
	12L13	SUM22L	11SMnPb30	4520			16Mo5		
			10SPb20	ASTM			14Ni6		
	1215		11SMn37	8620		SNM220(H)	21NiCrMo2		
	12L14		11SMnPb37	8740		SNM240	40NiCrMo22		
	1015	S15C	Ck15E				17CrNiMo6		
	1025	S25C	Ck25E	5015		SCr415(H)	15Cr3		
	A572-60		S380N	5140		SCr440	42Cr4		
	A572-60		17MnV7	5155		SUP9(A)	55Cr3		
	1035		C35			SCM415(H)	15CrMo5		
	1045		C45			SNM240	40NiCrMo8-4		
	1040		35S20	8740		SCr415(H)	15Cr3		
	1039		40Mn4	ASTMA182			13CrMo5		
	1335	SMn438(H)	36Mn5	ASTMA182			13CrMo4-5		
	1330	SCMn1	28Mn6				14MoV63		
	1035	S35C	C35G				31CrMo12		
	1045	S45C	C45E				39CrMoV13		
	1050	S50C	C53G			L1	41CrS4		
	1055		C55			8620	22Mo4		
	1060		C60E				50CoMo4		
	1055	S55C	C55E				16MnCr5		
	1060	S58C	C60E				31NiCrMo14		
	1095		C101E			L6	50NiCr13		
	W1	SK3	C101u			3135	SNC236	36NiCr6	
	W210	SUP4	C105W1			3415	SNC415(H)	14NiCr10	
	Alloy steel						3415;3310	SNC815(H)	14NiCr14
	ASTMA353		X8Ni9			9255			
	2515		12Ni19			9840			36CrNiMo4
			14NiCrMo13			4340			34CrNiMo6
	D3	SKD1	X210Cr12			5132	SCr430(H)		34Cr4
						5140	SCr440(H)		41Cr4
	H13	SKD61	X40CrMo134			5115			16MnCr5
						4130	SCM420;SCM430		25CrMo4
	A2	SKD12	X100CrMoV51			4137;4135	SCM432;SCCRM3		34CrMo4
		SKD2	X210CrW12			4140;4142	SCM440		41CrMo4
	S1		45WCrV7			4140	SCM440(H)		42CrMo4
H21	SKD5	X30WCrV93					32CrMo12		
		X30WCrV9		6150	SUP10		51CrV4		
		X165CrMoV12					41CrMo7		
HW3	SUH1	X45GrSi93		L3	SKS31		100Cr6		
D3	SUH3	S6-5-2			SKS2,SKS3		105WCr6		
M2	SKH51	S6-5-2		L6	SKT4		55NiCrMoV6		
M35	SKH55	S6-5-2-5		Cast steel					
M7		S6-9-2			SEMnH1				
HNV3		X210Cr12G			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
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 C*	200	—	54.1	16.0	1.25	5.75	17.0	0.07	0.8	0.7	—	—	4.0
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 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 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 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
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 625*	180	—	61.0	21.5	—	2.5	9.0	0.04	0.5	0.5	0.4	0.4	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 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 X-750*	—	390	73.0	15.5	—	7.0	—	0.04	0.35	0.35	0.7	2.5	—
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-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 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
—	—	—	—	—	—	—
—	5666	—	NC22FeDNB	2.4856	NiCr22Mo9Nb	N06625
—	—	—	NK27CADT	—	NiCo29Cr15MoAlTi	—
—	5550	—	—	—	—	N07702
—	5702	—	—	—	—	N09707
—	5391	3146-3	NC12AD	LW2.4670	S-NiCr13Al6MoNb	—
5383	5589	HR8	NC19FeNB	LW24668	NiCr19Fe19NbMo	N07713
—	5541	—	NC16FeTi	—	NiCr16FeTi	N07722
—	—	—	—	—	—	N07751
—	—	—	—	—	—	—
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
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 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 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 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
Udimet 500*	—	—	51.7	19.0	19.0	—	4.0	0.1	0.1	0.1	3.0	3.0	—
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
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	—
—	—	—	—	—	—	—
—	—	—	Z6NKCDDT38	—	—	—
—	5399	—	NC19KDT	2.4973	NiCr19Co11MoTi	N07041
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	NC14K8	—	—	—
—	—	—	—	—	NiCo15Cr10MoAlTi	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	NiTa9Co8W6CrAl	—
—	5751	—	NCK19DAT	2.4983	NiCr18Co18MoTi	N07500
—	—	—	—	2.4668	NiCr19NbMo	—
—	—	—	NCKD20AT	2.4636	NiCo15CrMoAlTi	—
—	—	—	NC18TDA	—	—	—
5383	5589	HR8	NC19FeN	LW2.4668	NiCr19Fe19NbMo	N07718
—	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
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
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
Refractaloy 70	—	—	20.0	21.0	46.0	0.5	8.0	4.0	—	—	—	—	0.08
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	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	CoCr19Fe16NiMoVNb	—
—	—	—	—	—	CoCr19Fe20NiMoVNb	—
—	—	—	—	—	CoCr25NiW	—
—	—	—	—	—	CoCr21W11Nb	—
—	—	—	—	—	CoCr20W15Ni	—
—	5382	3156-2	—	LW2.4670	CoCr25NiW	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	5759	—	—	2.4964	CoCr20W15Ni	R30605
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	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
	Inch		Metric		Number of tools	Inch		Metric		Number of tools		Inch	Metric		
	h×b	L	h×b	L		h×b	L	h×b	L	Turret	Station	"	mm		mm
A12	□3/8	4.75	□10	100	5			—	—	—	—	φ3/4	φ20	R	φ12
A16	□3/8	4.75	□10	100	5			—	—	—	—	φ3/4	φ20	R	φ16
A20	□1/2	4	□12(□13)	120	5-7			—	—	—	—	φ1		R	φ20
A25	□1/2	4	□12(□13)	120	5/6			—	—	—	—	φ1		R	φ25
A32	□5/8	4.75	□16	150	6			—	—	—	—	φ1		R	φ32
B12, B12E	□3/8	4.75	□10	100	5			—	—	—	—	φ3/4	φ20	R	φ12
B16E	□3/8	4.75	□10	10	5			—	—	—	—	φ3/4	φ20	R	φ16
B20	□1/2	4.75	□12(□13)	120	6			—	—	—	—	φ3/4	φ20	R	φ20
BL12	□3/8	4.75	□10	60-120	5			—	—	—	—	φ3/4	φ20	R	φ12
BL20			□12(□13)	120	7			—	—	—	—	φ3/4	φ20	R	φ20
BL25			□12(□13)	120	7			—	—	—	—	φ3/4	φ20	R	φ25
C12	□3/8	4.75	□10	120	6			—	—	—	—	φ3/4		R	φ12
C16	□3/8	4.75	□10	120	6			—	—	—	—	φ3/4		R	φ16
C32	□5/8	4.75	□16	130	5			—	—	—	—	φ1		R	φ32
E32			—	—	—			□16(19×13)	90	2	10/Turret	φ1		R	φ32
F10			—	—	—			□10	60	1	10	φ3/4		R	φ10
F12			—	—	—			□10	60	1	10	φ3/4		R	φ12
F16			—	—	—			□10	60	1	10	φ3/4		R	φ16
F20			—	—	—			□16(19×13)	90	1	10	φ1		R	φ20
F25			—	—	—			□16(19×13)	90	1	10	φ1		R	φ25
FL25			—	—	—			□16	90	1	12		φ16	R	φ25
FL42			—	—	—			□16	90	1	12		φ16	R	φ42
G10			—	—	—			□10	60	1	8	—	—	R	φ10
G16			—	—	—			□10	60	1	8	—	—	R	φ16
G32			—	—	—			□16(19×13)	90	1	10	—	—	R	φ32
K12, K12E	□3/8		□10	100	7			—	—	—	—		φ20	R	φ12
K16, K16E	□3/8		□12	100	6			—	—	—	—		φ20	R	φ16
L10			□8	100-130	5			—	—	—	—	φ5/8		R	φ10
L12	□3/8	4	□10	100	6			—	—	—	—	φ3/4	φ20	R	φ12
L16, L16E			□12(□10)	130	7			—	—	—	—	φ3/4		R	φ16
L20, L20E	□1/2	4.75	□12	130	7			—	—	—	—	φ3/4		R	φ20
L25	□5/8	4.75	□16	130	5			—	—	—	—	φ1		R	φ25
L32	□5/8	4.75	□16	130	5			—	—	—	—	φ1		R	φ32
M ₂ 12, M ₃ 12	□3/8		□10	120	5			□10	60	1	10	φ3/4		R	φ12
M ₂ 16, M ₃ 16, M ₄ 16	□3/8		□10	120	5			□10	60	1	10	φ3/4		R	φ16
M ₂ 20, M ₃ 20	□5/8	4.75	□12	130	5	□3/4		□16	90	1	10	φ1		R	φ20
M ₂ 32, M ₃ 32, M ₄ 32	□5/8	4.75	□16	130	5	□3/4		□16	90	1	10	φ1		R	φ32
M20	□1/2	4	□13(□12)	150	5	□1/2		□10	60	1	10	φ3/4		R	φ20
MSL12			□10	120	—			—	—	—	—	—	—	R	φ12
R04			□8	120	7			—	—	—	—	φ5/8		R	φ4
R07			□8	120	5			—	—	—	—	φ5/8		R	φ7
RL02			□16	60-150	Max 6			—	—	—	—		φ16/φ20	L	φ20
RL21			□10(□12)	90	—			—	—	—	—	φ3/4		R	φ20

STAR

Machine Model	Gang Station					Turret Station						Sleeve Station		Hand	DS-Sleeve item number	Max cutting dia
	Inch		Metric		Number of tools	Inch		Metric		Number of tools		Inch	Metric			
	h×b	L	h×b	L		h×b	L	h×b	L	Turret	Station	"	mm			mm
ECAS-12			□10	95-150	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ13
ECAS-20			□12(16)	80-144	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
ECAS-20T								□12(16)	80	3	8/Turret		φ22	R	SS-DSU-B8D34	φ20
ECAS-32T			□16	80-120	4			□16	60-78	2	10/Turret		φ22/32	R	SS-DSU-SK	φ32
JNC-10								□8	65	1	6		-	L	—	φ10
JNC-16								□10	80	1	6		-	L	—	φ16
JNC-25/32								□16	78-120	1	10		φ22	R	—	φ25/φ32
KJR-16B/25B								□16	78	1	12/16		φ22	R	—	φ16/φ25
KNC-16/20								□16	68	1	16		φ22	R	—	φ16/φ20
KNC-25II/32II								□16	78	1	20		φ22/32	R	—	φ25/φ32
RNC-10/16			□10	80-120	5								φ22	R	—	φ10/φ16
RNC-16II/16BII			□10	80-120	5								φ22	R	—	φ16
SA-16R			□10	95-120	6								φ22	R	—	φ16
SB-12II/12R/16II	□1/2 (3/8)		□12(10)	95-130	6(7)								φ22	R	SS-DSU-L23 SS-DSU-SK	φ12/φ13/φ16
SB-16/16R	□1/2 (3/8)		□12(10)	95-130	6(7)								φ22	R	SS-DSU-L23 SS-DSU-SK	φ16
SB-20/20R	□1/2 (3/8)		□12(10)	95-130	6(7)								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
SC-20			□12	95-130	6								φ22	R	—	φ20
SE-12/12B, 16/16B			□10	95-120	5								φ22	R	—	φ13/φ16
SF-25								□16	73-98	1	10		φ22/32	R	—	φ25
SG-42								□16(20)	84-88	1	10		φ22/32	R	—	φ42
SH-12/16			□10	95-120	5								φ22	R	—	φ13/φ16
SH-7			□8	95-120	5								φ22	R	—	φ7
SI-12/12C			□10	80-130	6								φ22	R	—	φ13
SR-10J	□5/16		□8	67-110	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ10
SR-16/20			□12	95-120	5								φ22	R	—	φ16/φ20
SR-20J	□1/2		□12	100-135	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
SR-20R/20RII/20RIII			□12	100-135	6								φ22	R	SS-DSU-L23 SS-DSU-SK	φ20
SR-20RIV	□1/2		□12	100-130	7								φ22	R	SS-DSU-B8L23	φ20
SR-25J/32J	□5/8		□16	95-155	6								φ22/32	R	SS-DSU-L23 SS-DSU-SK	φ25/φ32
SR-32			□16	100-135	6								φ22	R	—	φ32
SST-16			□12	95-115	5								φ22	R	—	φ16
ST-20								□12(16)	70-78	3	8/Turret		φ22	R	—	φ20
ST-38								□16(20)	85	3	10/Turret		φ22/32	R	—	φ38
SV-12/20			□12	95-135	4			□12	70-78	1	8		φ22	R	—	φ13/φ20
	□1/2		□12/□16	95-135	5			□16	65-70	1	8					
SV-32			□16	95-135	4			□16	80-88	1	10		φ22/32	R	—	φ32
SV-32J/32JII			□16	95-135	4			□16	65-70	1	8		φ22/32	R	—	φ32
SV-38R			□16+□20 (Cut off)	95-135	5			□16(20)	84-88	1	10		φ22/32	R	SS-DSU-B8D34	φ38
SW-12RII			□10	80-115	6								φ16	R	SS-DSU-B8L23	φ13
SW-20	□1/2 (5/8)		□12(16)	80-144	6								φ22	R	SS-DSU-B8L23	φ20
SW-7			□8	80-120	4								—	R	—	φ7

Machine Model	Gang Station					Turret Station						Sleeve Station		Hand	Max cutting dia
	Inch		Metric		Number of tools	Inch		Metric		Number of tools		Inch	Metric		
	h×b	L	h×b	L		h×b	L	h x b	L	Turret	Station	"	mm		mm
P013H/P014H			□8	100-120	6			—	—	—	—		φ16	R	φ1
P033H/P034H			□8	100-120	6			—	—	—	—		φ16	R	φ3
B007-III	—	—	□7(□8/□10)	85	8			—	—	—	—		φ25	R	φ7
B073-II	—	—	□8	85	9			—	—	—	—		φ20	R	φ7
B074/B07-V	—	—	□8	85	9			—	—	—	—		φ20	R	φ7
B0123/B0124/B0125/B0126	—	—	□12	85	9			—	—	—	—		φ20	R	φ12
B012F/B012-V/BE12-V	—	—	□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
B020F/B020-V/BE20-V	—	—	□12	85	9			—	—	—	—		φ20	R	φ20
B026-V	—	—	□12(□16)	85	6			—	—	—	—		φ25	R	φ26
B0265-II/B0266-II	—	—	□16	100	12			—	—	—	—		φ25	R	φ26
B0325-II/B0326-II	—	—	□16	100	12			—	—	—	—		φ25	R	φ32
B0385/B0385L	—	—	□16	125	8			—	—	—	—		φ32	R	φ38
B038T	—	—	□16	125	3			□20	125	1	8		φ25/φ32	R	φ38
BA20-III			□12	85	6			—	—	—	—		φ25	R	φ20
BA26-III			□12(□16)	85	6			—	—	—	—		φ25	R	φ26
BC18	□1/2		□12	85	10			—	—	—	—		φ25	R	φ18
BC25	□1/2		□12	85	10			—	—	—	—		φ10/φ25	R	φ25
BE18	□1/2		□12	85	9			—	—	—	—		φ20	R	φ18
BH20/BH20Z	□1/2		□12	85	4			□12	85	1	12		φ25/φ32	R	φ20
BH38	□5/8		□16	125	7			□20	125	1	12		φ25/φ32	R	φ38
BM07			□8	85	9			—	—	—	—		φ20	R	φ7
BM163/BM164/BM165	□1/2		□12	85	9			—	—	—	—		φ20	R	φ16
BM20-V	□1/2		□12	85	9			—	—	—	—		φ20	R	φ20
BN12-III			□12	85	7			—	—	—	—		φ20	R	φ12
BN20-III			□12(□16)	85	7			—	—	—	—		φ20	R	φ20
BS12-V	□1/2		□12	85	8(12)			—	—	—	—		φ20/φ25	R	φ12
BS18-III	□1/2		□12	85	7(10)			—	—	—	—		φ14/φ25	R	φ18
BS20-V	□1/2		□12	85	8(12)			—	—	—	—		φ20/φ25	R	φ20
BS26(ABC)-V	□5/8		□16	100	7(10)			—	—	—	—		φ16/φ25	R	φ26
BS32C-V	□5/8		□16	100	6			—	—	—	—		φ16/φ25	R	φ32
BU12			□12	85	4			□12	80	1	8		φ20	R	φ51
BU20			□12	85	4			□12	80	1	8		φ20	R	φ20
BU26			□16	100	7			□20	80	1	8		φ20/φ32	R	φ26
BU38	□1/2		□16	100	7			□20	80	1	8		φ20/φ32	R	φ38
BW07-III	□1/2		□12	85	7			—	—	—	—		φ20	R	φ7
BW12-III	□1/2		□12	85	7			—	—	—	—		φ20	R	φ12
BW20-III	□1/2		□12(□16)	85	7			—	—	—	—		φ20	R	φ20
C004-III			□13	60-100	6-8			—	—	—	—		-φ10	R/L	φ120
C150	—	—	□10	60-100	4-6			—	—	—	—		-φ8	R/L	φ80
C180	—	—	□12	60-100	4-6			—	—	—	—		-φ10	R/L	φ120
C220	—	—	□13	60-100	6-8			—	—	—	—		-φ10	R/L	φ120
C300-III	—	—	□16	100-130	6-10			—	—	—	—		-φ14	R/L	φ170
CH154			□12	60-100	-16			—	—	—	—		-φ10	R/L	φ15
M34J			—	—	—			□20	125	1	12		φ20/φ32	R	φ34
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	□1/2		□12(□16)	100	8			—	—	—	—		φ20/φ22	R	φ20
SS20	□1/2		□16	100	8			—	—	—	—		φ20/φ22	R	φ20
SS207/SS207-5AX	□1/2		□12(□16)	100	8			—	—	—	—		φ20/φ22	R	φ20
SS26	□5/8		□16	100	7			—	—	—	—		φ20/φ22	R	φ26
SS267/SS267-5AX	□5/8		□16	100	8			—	—	—	—		φ25	R	φ26
SS32/SS32L	□5/8		□16	100	7			—	—	—	—		φ20/φ22	R	φ32
SS327/SS327-5AX	□5/8		□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

● TORNOS

Machine Model	Gang Station				Number of tools	Sleeve Station		Hand	Max cutting dia
	Inch		Metric			Inch	Metric		mm
	h×b	L	h×b	L		"	mm		
EvoDECO 10/10	□5/16		□8		8		φ 20/ φ 25	R	φ 10
EvoDECO 10/8	□5/16		□8		8		φ 20/ φ 25	R	φ 10
EvoDECO 16/10	□1/2		□12		10		φ 20/ φ 25	R	φ 16
EvoDECO 16/8	□1/2		□12		10		φ 20/ φ 25	R	φ 16
EvoDECO 20	□5/8		□16		10		φ 20/ φ 25	R	φ 25.4
EvoDECO 32	□5/8		□16		10		φ 20/ φ 25	R	φ 32
Swiss ST 26	□1/2		□12		17		φ 20/ φ 22/ φ 25	R	φ 25.4
Sigma 20/6	□5/8		□16		14	φ 1	φ 20	R	φ 25.4
Sigma 32/6	□5/8		□16		14	φ 1.26	φ 32	R	φ 32
SwissNano	□5/16		□8		7		φ 12/ φ 16	R	φ 4
Delta 12/4	□1/2*		□12	85	5		φ 20	R	φ 12
Delta 12/5	□1/2*		□12	85	5		φ 20	R	φ 12
Delta 20/4	□1/2*		□12	85	5		φ 20	R	φ 20
Delta 20/5	□1/2*		□12	85	5		φ 20	R	φ 20
Delta 38/5B			□20	125	8		φ 25/ φ 32	R	φ 38
Delta 38/5BL			□20	125	8		φ 25/ φ 32	R	φ 38
Gamma 20/5			□16	100	8		φ 20/ φ 22	R	φ 20
Gamma 20/6			□16	100	8		φ 20/ φ 22	R	φ 20
CT20	□1/2		□12	100	5			R	φ 20

*Except cut off must be 12mm

● NOMURA

Machine Model	Gang Station				Number of tools	Sleeve Station		Hand	Max cutting dia
	Inch		Metric			Inch	Metric		mm
	h×b	L	h×b	L		"	mm		
NS-P1053A			□9.5	130	5	—	—	R	φ 10
NN-10C			□10	130	6		φ 17	R	φ 10
NN-10E			□10	130	6		φ 16	R	φ 10
NN-10C2			□10	130	6		φ 17	R	φ 10
NN-10CS			□10	130	6		φ 17	R	φ 10
NN-10CS(No live tools)			□10	130	5		φ 17	R	φ 10
NN-10SII			□10	130	5		φ 23	R	φ 10
NN-10T			□10	130	7		φ 23	R	φ 10
NN-10SB5			□10	130	5		φ 23	R	φ 16
NN-16SB5			□10	130	5		φ 23	R	φ 16
NN-16SB6 Type1	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16SB6 Type2	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16SB6 Type2.5	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16SB6 Type3	□1/2	5.12	□12.7	130	5		φ 17(φ 22)	R	φ 16
NN-16HIII			□12	130	6		φ 23	R	φ 16
NN-20HIII			□12	130	6		φ 23	R	φ 20
NN-16UIII			□12	130	5		φ 23	R	φ 16
NN-20UIII			□12	130	5		φ 23	R	φ 20
NN-20CS	□1/2	5.12	□12.7	130	5(6)		φ 22	R	φ 20(φ 25)
NN-20U5	□1/2	5.12	□12.7	130	5(6)		φ 22	R	φ 20(φ 25)
NN-16UB5			□12	130	5		φ 23	R	φ 16
NN-20UB5			□12	130	5		φ 23	R	φ 20
NN-20UB7			□12	130	6		φ 23	R	φ 20
NN-20UB8	□1/2	5.12	□12.7	130	5(6)		φ 22	R	φ 20(φ 25)
NN-20YB			□12	130	8		φ 23	R	φ 20
NN-25YB/32YB			□16	130	8		φ 23/ φ 32	R	φ 25
NN-32YB2			□16	130	5		φ 22/ φ 32	R	φ 32
NN-16J	□1/2	5.12	□12.7	130	6		φ 23	R	φ 16
NN-20J	□1/2	5.12	□12.7	130	6		φ 23	R	φ 20
NN-20J2	□1/2	5.12	□12.7	130	6		φ 22	R	φ 20

Hardness Comparison Chart

Vickers Hardness (HV)	Rockwell hardness			Brinell hardness, 10 mm balls, 3000 kgf load	Tungsten carbide ball	Shore hardness	Tensile strength Kgf/mm ² [N/m ²] Approximate value MPa (1)
	Scale A Load: 60 kgf brale indenter (HRA)	Scale C Load: 150 kgf brale indenter (HRC)	Scale B Load: 100 kgf Diameter 1/16" indenter (HRB)				
2200	(95.1)	—	—	—	—	—	
2100	(94.6)	—	—	—	—	—	
2000	94.2	—	—	—	—	—	
1900	93.7	(80.5)	—	—	—	—	
1800	93.2	(79.2)	—	—	—	—	
1700	92.7	(77.9)	—	—	—	—	
1600	91.8	(76.6)	—	—	—	—	
1500	91.0	(75.3)	—	—	—	—	
1450	90.4	(74.6)	—	—	—	—	
1400	90.0	74.0	—	—	—	—	
1350	89.6	73.4	—	—	—	—	
1300	89.1	72.7	—	—	—	—	
1250	88.6	72.1	—	—	—	—	
1200	88.1	71.5	—	—	—	—	
1150	87.6	70.9	—	—	—	—	
1100	87.1	70.3	—	—	—	—	
1050	86.6	69.6	—	—	—	—	
1000	86.2	68.9	—	—	—	—	
940	85.6	68.0	—	—	97	—	
920	85.3	67.5	—	—	96	—	
900	85.0	67.0	—	—	95	—	
880	84.7	66.4	—	(767)	93	—	
860	84.4	65.9	—	(757)	92	—	
840	84.1	65.3	—	(745)	91	—	
820	83.8	64.7	—	(733)	90	—	
800	83.4	64.0	—	(722)	88	—	
780	83.0	63.3	—	(710)	87	—	
760	82.6	62.5	—	(698)	86	—	
740	82.2	61.8	—	(684)	84	—	
720	81.8	61.0	—	(670)	83	—	
700	81.3	60.1	—	(656)	81	—	
690	81.1	59.7	—	(647)	—	—	
680	80.8	59.2	—	(638)	80	—	
670	80.6	58.8	—	630	—	—	
660	80.3	58.3	—	620	79	—	
650	80.0	57.8	—	611	—	—	
640	79.8	57.3	—	601	77	—	
630	79.5	56.8	—	591	—	—	
620	79.2	56.3	—	582	75	—	
610	78.9	55.7	—	573	—	—	
600	78.6	55.2	—	564	74	—	
590	78.4	54.7	—	554	—	—	
580	78.0	54.1	—	545	72	—	
570	77.8	53.6	—	535	—	—	
560	77.4	53.0	—	525	71	—	
550	77.0	52.3	—	517	—	—	
540	76.7	51.7	—	507	69	—	
530	76.4	51.1	—	497	—	—	
520	76.1	50.5	—	488	67	—	
510	75.7	49.8	—	479	—	—	
500	75.3	49.1	—	471	66	—	

Vickers Hardness (HV)	Rockwell hardness			Brinell hardness, 10 mm balls, 3000 kgf load	Tungsten carbide ball	Shore hardness	Tensile strength Kgf/mm ² [N/m ²] Approximate value MPa (1)
	Scale A Load: 60 kgf brale indenter (HRA)	Scale C Load: 150 kgf brale indenter (HRC)	Scale B Load: 100 kgf Diameter 1/16" indenter (HRB)				
490	74.9	48.4	—	460	—	—	
480	74.5	47.7	—	452	64	—	
470	74.1	46.9	—	442	—	—	
460	73.6	46.1	—	433	62	—	
450	73.3	45.3	—	425	—	—	
440	72.8	44.5	—	415	59	—	
430	72.3	43.6	—	405	—	—	
420	71.8	42.7	—	397	57	—	
410	71.4	41.8	—	388	—	—	
400	70.8	40.8	—	379	55	—	
390	70.3	39.8	—	369	—	—	
380	69.8	38.8	(110.0)	360	52	—	
370	69.2	37.7	—	350	—	—	
360	68.7	36.6	(109.0)	341	50	—	
350	68.1	35.5	—	331	—	—	
340	67.6	34.4	(108.0)	322	47	—	
330	67.0	33.3	—	313	—	—	
320	66.4	32.2	(107.0)	303	45	—	
310	65.8	31.0	—	294	—	—	
300	65.2	29.8	(105.5)	284	42	—	
295	64.8	29.2	—	280	—	—	
290	64.5	28.5	104.5	275	41	—	
285	64.2	27.8	—	270	—	—	
280	63.8	27.0	103.5	265	40	—	
275	63.5	26.4	—	261	—	—	
270	63.1	25.6	102.0	256	38	—	
265	62.7	24.8	—	252	—	—	
260	62.4	24.0	101.0	247	37	825	
255	62.0	23.1	—	243	—	805	
250	61.6	22.2	99.5	238	36	795	
245	61.2	21.3	—	233	—	780	
240	60.7	20.3	98.1	228	34	765	
230	—	18.0	96.7	219	33	730	
220	—	15.7	95.0	209	32	695	
210	—	13.4	93.4	200	30	670	
200	—	(11.0)	91.5	190	29	635	
190	—	(8.5)	89.5	181	28	605	
180	—	(6.0)	87.1	171	26	580	
170	—	(3.0)	85.0	162	25	545	
160	—	(0.0)	81.7	152	24	515	
150	—	—	78.7	143	22	490	
140	—	—	75.0	133	21	455	
130	—	—	71.2	124	20	425	
120	—	—	66.7	114	—	390	
110	—	—	52.3	105	—	—	
100	—	—	56.2	95	—	—	
95	—	—	52.0	90	—	—	
90	—	—	48.0	86	—	—	
85	—	—	41.0	81	—	—	

(1) 1 MPa = 1 N/mm²

(2) This table is an excerpt from the JIS Iron and Steel Handbook

(3) Values in parentheses in the above table are not usually used

Z

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DC6DN	Parts	F8, F9, G5
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DCET	Insert	E35, Q22
DCGT	Insert	E33, E34, E35, O33, Q20, Q21, Q22, Q23
DCGW	Insert	E24, E35, O33, Q23
DCMT	Insert	E24, E33, E34, Q20, Q21, Q22, Q23
DCMW	Insert	E24, Q23
DNG	Insert	E6
DNGA	Insert	E7, E24, E37, Q38
DNGG	Insert	E7, E36, E37, Q38
DNGX	Insert	E8
DNMA	Insert	E24, Q38
DNMG	Insert	E36, E37
DNMX	Insert	E24, Q38

Item number	Description	Page number
DPGT	Insert	E38
DS-CSVL	Toolholder	O25, O28, Q8, R6, T6, U6
DS-FGV	Toolholder	O23, T22
DS-GTT	Toolholder	O23, R18, T10
DS-LBMB	Toolholder	O25, V6
DS-PTX	Toolholder	O22, Q34
DS-SCL	Toolholder	O4, O19, Q10
DS-SDU	Toolholder	O19, Q19
DS-SDX	Toolholder	O4, O19, Q19
DS-STT	Toolholder	O24, U14
DS-SVVP	Toolholder	O21, Q31
DS-SVX	Toolholder	O21, Q28
DS-SVXP	Toolholder	O21, Q30
DS-TBP	Toolholder	O22, R9
DS-TTP	Toolholder	O24, U10
E250R	Cutter	I17
E300R	Cutter	I17
E400R	Cutter	I17
E500R	Cutter	I17
ERGP	Insert	E38, V24
FBV	Insert	T23
FDX	Insert	I11, I13, I15
FGV	Toolholder	T22
FGV	Insert	T22
FSI0306A	Parts	I23
FSI0307A	Parts	I23
FSI035104A	Parts	I23
FSI15-3.0*12	Parts	F6, F7, F8, F9, F11, F12, F13, F14, F15
FSI16-3.0*8	Parts	G5, G6
FSI21-5.0*12.45	Parts	I17, I18, I19
FSI22-4.0*11	Parts	I20
FSI23-4.0*7	Parts	I20
FSI28-6.0*18	Parts	H12
GBWP	Parts	H13
GBWPF	Parts	H13
GKN	Insert	H11
GKP	Insert	H11
GKWP	Toolholder	H16, K111
GKWP-H	Holder Shank	H12
GTG	Insert	V19
GTM	Insert	T16, T19
GTMMA	Insert	T19
GTMH	Insert	T12, T13, T14, T15, T16
GTMMA	Insert	T19
GTMX	Insert	T13, T15
GTPA	Toolholder	T24
GTPA	Insert	T24
GTPS	Insert	O32, T8
GTT	Toolholder	O7, R18, T10
GTWP	Toolholder	T9
GTWP-H	Holder Shank	H12
GWFPG	Insert	H15
GWPG	Insert	H15, H17, T9
GWPM	Insert	H15, H17, T9

Item number	Description	Page number
HACDH	Parts	F20
HAD	Insert	I23
HAL	Insert	I23
HAN	Insert	I23
HAT	Insert	I23
HC6CN	Parts	F6, G5, G6
HC6DN	Parts	F8, F9, G5
HC6SN	Parts	F11
HC6VN	Parts	F12, F13
HLA	Insert	I23
HLR-25S	Wrench	Y16
HLW175	Parts	I10, I12, I14
HN59Z	Toolholder	V22
HOSE-AN-M8*1	Hose	J19
HOSE-ST-M8*1	Hose	J19
HRCD	Toolholder	F20
HRL	Insert	I23
HRT	Insert	I23
HY-NBH	Toolholder	O9, V9, V11, W7, W8
ICSN	Parts	F6
IRSN	Parts	F16, G4
ISSN	Parts	F10, F11
JFDX	Cutter	I10, I12, I14
JQTE	Cutter	I20
JQTS	Cutter	I20
JRNMW	Cutter	I7
JRPMW	Cutter	I6
JSDW	Cutter	I17
JWNXM	Cutter	I16
JXTM	Cutter	I8
K3-C	Parts	H20
K4-C	Parts	H21
K5-C	Parts	H22
K6-C	Parts	H23
L1E	Parts	H8
L2E	Parts	H8
LBM	Insert	V7
LBMA	Toolholder	V6
LBMC	Insert	V7
LBMD	Insert	V7
LBME	Insert	V7
LCS33	Parts	J31
LLR-25S	Wrench	I8, Y16
LLR-25S-20*65	Parts	Y16
LLR-T10	Wrench	F6, F7, F8, F9, F11, F12, F13, F14, F15, G5, G6
LLR-T15	Wrench	F14
LLR-T20	Wrench	F6, F7, F8, F9, F11, F12, F13, G5, G6
LNJ	Insert	E8
LNM	Insert	E8
LNX	Insert	I9
LRIS-2.5*7	Parts	L17
LRIS-4*10	Parts	L17
LRIS-4*10PW	Parts	L17
LRIS-4*12	Parts	L17

Item number	Description	Page number
LRIS-4*12PW	Parts	L17
LRIS-4*8	Parts	L17
LR-S-4*10PW	Parts	L17
LR-S-4*12PW	Parts	L17
LR-S-4*9	Parts	L17
LW-2	Wrench	J18, J31, K157, K159, K186
LW-2.5	Wrench	F20
LW-3	Wrench	J18, K157, K186
LW-3S	Wrench	H17
LW-4	Wrench	F6, F10, F11, F16, H12, H16, H18
LW-4*104	Wrench	J18, K157, K159, K186
LW-5	Wrench	F20, H16
LWU-4	Wrench	F20
LWU-5	Wrench	F20
M3*8	Parts	I6, I10, I12, I14
MBC	Parts	I23
MBL	Insert	V23
NBH	Toolholder	V14, V15, W9, W10
NGTB	Toolholder	T18
NGTN	Toolholder	T18
NSR	Toolholder	H11
NTTB	Toolholder	U14
PCLN	Toolholder	Q37
PDJN	Toolholder	Q38
POLY-V	Toolholder	H20, H21, H22, H23
PTAN	Toolholder	Q34
PTLN	Toolholder	Q34
PTM	Insert	H20, H21, H22, H23
PTXN	Toolholder	Q34
R1E	Parts	H8
R2E	Parts	H8
RA	Cutter	I22
RA06P03NC	Parts	I23
RCGX	Insert	E9
RCMX	Insert	E39
RD	Cutter	I22
REZ	Cutter	X4
RKN	Insert	H11
RLR-20S	Wrench	Y16
RNG	Insert	E10
RNIW	Cutter	I7
RNM	Insert	E25
RNMG	Insert	E39
RPG	Insert	E11
RPGS	Insert	E47
RPGX	Insert	E11
RPIW	Cutter	I6
RPMX	Insert	E39
S06F-MBR	Toolholder	V23
S06F-SCLP	Toolholder	V25
S07G-SCLP	Toolholder	V25
S07G-STUC	Toolholder	V30
S08G-SEXR	Toolholder	V24
S08H-BG	Toolholder	V19

Item number	Description	Page number
S08H-SCLC	Toolholder	V26
S08H-SCLP	Toolholder	V25
S08H-STUP	Toolholder	V30
S10K-BG	Toolholder	V19
S10K-SCLC	Toolholder	V26
S10K-STUP	Toolholder	V30
S12-CRGP	Toolholder	G4
S12M-SCLC	Toolholder	V26
S12M-STUP	Toolholder	V30
S16Q-SCLC	Toolholder	V26
S16Q-STUP	Toolholder	V30
S25R-WCLN	Toolholder	G5
S25R-WWLN	Toolholder	G6
S32S-WCLN	Toolholder	G5
S32S-WWLN	Toolholder	G6
S32T-WDUN	Toolholder	G5
S40T-WCLN	Toolholder	G5
S40T-WDUN	Toolholder	G5
S40T-WSKN	Toolholder	G6
S40T-WWLN	Toolholder	G6
S-412	Parts	H11
S50-CRGN	Toolholder	G4
S50U-WCLN	Toolholder	G5
SBB	Insert	V17
SBFB	Insert	V16
SBFS	Insert	V16, V17
SBG	Insert	V18
SBT	Insert	V20
SC02C	Parts	F18, F19
SC05C	Parts	F18, F19
SC06C	Parts	F18, F19
SC08C	Parts	F19
SC10C	Parts	F19
SC10F	Parts	F18, F19
SC40C	Parts	F19
SC40F	Parts	F18, F19, H8, H9
SC50F	Parts	F19
SC60F	Parts	F19
SCAC	Toolholder	Q10
SCGW	Insert	E12
SCJ	Parts	N5, O10
SCLC	Toolholder	O4, Q10
SCMT	Insert	E39
SDCW	Insert	E12, E39, I17, I18, I19
SDJC	Toolholder	O4, Q16
SDKN	Insert	E39
SDNCN	Toolholder	Q16
SDQC	Toolholder	Q16
SDW	Insert	I17, I18, I19
SDXC	Toolholder	Q16
SECN	Insert	E39
SEK	Insert	E39
SFG	Insert	V18
SHFB	Insert	V12

Item number	Description	Page number
SHFS	Insert	V12, V13
SM2RV	Parts	F18, F19
SM2RVS	Parts	F18, F19
SM3RV	Parts	F18, F19
SM4RV	Parts	F18, F19
SM5RV	Parts	F19
SM6RV	Parts	F19
SM8RV	Parts	F19
SNG	Insert	E13, E14, E40, I11, I13, I15
SNGA	Insert	E14, E25
SNGF	Insert	I11, I13, I15
SNGG	Insert	E40
SNGX	Insert	E15
SNMA	Insert	E25
SNMG	Insert	E40
SPC	Insert	E41
SPCE	Insert	E41
SPEB	Insert	E41
SPG	Insert	E15, E25, E41
SPGR	Insert	E41
SPKN	Insert	E41
SPM	Insert	E41
SPME	Insert	E41
SPMH	Insert	E41
SPMR	Insert	E41
SS04	Parts	V9, V11, V14, V15, W7, W8, W9, W10
SS05	Parts	V14, V15, W7, W10
SS06	Parts	V9, W7
SS08	Parts	V9, V11, W7, W8
SS-DSU	DS Sleeve	O26
SSP	Insert	W2
STAC	Toolholder	Q33
STTN	Toolholder	U14
SVAC	Toolholder	Q25, Q26, R13
SVJB	Toolholder	O5, Q24
SVJC	Toolholder	O5, Q26
SVQC	Toolholder	Q27
SVQP	Toolholder	Q30
SVVC	Toolholder	Q27
SVXC	Toolholder	Q26
SVXP	Toolholder	Q31
T-15A	Wrench	I10, I12, I14
T-20	Wrench	I17, I18, I19
TB	Toolholder	R16
TB	Insert	R16
TBDP	Toolholder	R12
TBDP	Insert	R12
TBGE	Insert	E16, E42
TBMH	Insert	R19
TBP	Toolholder	O6, R8
TBP	Insert	O6, R8
TBPA	Insert	O6, R10
TBPS	Insert	O31, R7
TBT	Toolholder	R16

Item number	Description	Page number
TBVC	Toolholder	R14
TBVC	Insert	R14
TC5TN	Parts	F14
TC6CN	Parts	F6, F7, F11, G5, G6
TCGD	Insert	E43, K179
TCGH	Insert	E42, E43, V31
TCGP	Insert	E42, V31
TCGT	Insert	E42, O33, Q33
TCGW	Insert	E43, Q33
TCMT	Insert	E42
TEEN	Insert	E43
TF	Insert	Q32
TFT	Toolholder	Q32
TGC	Toolholder	V22
TMG	Insert	T15
TMN	Insert	V22
TNEG	Insert	E43
TNG	Insert	E16, E17
TNGA	Insert	E18, E26, E43, Q36
TNGG	Insert	E18, E43, E44, Q36
TNMA	Insert	E26, E43, Q36
TNMG	Insert	E45
TNMP	Insert	E45
TNMX	Insert	E26, Q36
TP	Insert	E19, E46
TPC	Insert	E46
TPG	Insert	E19, E26, E46
TPGD	Insert	E46
TPGE	Insert	E19, E46
TPGH	Insert	E46, E47, V31
TPGP	Insert	E47, V31
TPGR	Insert	E47
TPGW	Insert	E26, V30
TPKN	Insert	E47
TPM	Insert	E47
TPMR	Insert	E47
TPMT	Insert	E26, E39, V30
TTMH	Insert	U14
TTP	Toolholder	U10
TTP	Insert	U10
TTPS	Insert	O32, U8
TW5835	Insert	U20
TW9268	Insert	U20
TWC	TW CUTTER	U18, U19
TWG	Toolholder	T17
TWG	Insert	T17
U104-40	Wrench	I23
U107T10	Wrench	I23
US6000926	Parts	I6
US6000927	Parts	I6
VBGT	Insert	E48, Q24
VBGW	Insert	E27, Q24
VBMT	Insert	E48
VCET	Insert	E49, Q29, R15

Item number	Description	Page number
VCGT	Insert	E49, O33, Q25, Q29, Q31, R13, R15
VCGW	Insert	E27, E49, Q29, R15
VCMT	Insert	E49, Q29
VCMW	Insert	E27, Q29, R15
VDB	Insert	H10
VGE	Insert	H8
VGT	Toolholder	H18
VGW	Insert	H7
VNG	Insert	E20
VNGA	Insert	E20, E27, E50
VNGG	Insert	E50
VNMG	Insert	E50
VNMP	Insert	E50
VPET	Insert	E50, Q30, Q31
VPGT	Insert	E50, Q31
VRAO	Toolholder	F18, F19
W106	Parts	F20
W107	Parts	F20
W110	Parts	F20
W120	Parts	F20
WCBN	Toolholder	F7
WCGT	Insert	E51
WCLN	Toolholder	F6
WDHN	Toolholder	F8
WDJN	Toolholder	F8
WDNNN	Toolholder	F9
WNGA	Insert	E21
WNGG	Insert	E51
WNMG	Insert	E51
WNX	Insert	I16
WPGT	Insert	E51
WS0616-T15	Parts	I10, I12, I14
WSDNN	Toolholder	F11
WSSN	Toolholder	F11
WTFN	Toolholder	F14
WTGN	Toolholder	F14
WVJN	Toolholder	F12
WVPN	Toolholder	F12
WVVNN	Toolholder	F13
WWLN	Toolholder	F15
XNS-36	Parts	G4
XX2815	Wrench	I8, Y16
Y-CTPA	Toolholder	O14, R10
Y-GTPA	Toolholder	O7, O15, T24
Y-GTT	Toolholder	O7, O15, R18, T10
Y-SDJC	Toolholder	O4, O13, Q18
Y-SDNC	Toolholder	O13, Q18
Y-SVJC	Toolholder	O5, O13, Q28
Y-TBDP	Toolholder	O14, R12
Y-TBP	Toolholder	O6, O14, R8

MEMO

MEMO

■ Metalcutting Safety

Applicable Products	Possible Risks	Safety Measures
General Cutting Tools	⊙Contact with a sharp cutting edge with bare hands may result in injury.	*Use protective gear such as protective gloves when taking the tool out of packaging and installing into the machine.
	⊙Misuse or using under inappropriate conditions may cause the cutting tool to break and/or shatter into pieces, resulting in personal injury.	*Use protective equipment, machine guarding and/or protective glasses. *Use within the range of recommended conditions. Please refer to the instruction manual and catalog.
	⊙Sudden increase in cutting resistance due to sudden impact load or excessive wear may cause the cutting tool to break and/or shatter into pieces, resulting in personal injury.	*Use protective gear such as protective gloves when taking the tool out of packaging and installing into the machine.
	⊙High-temperature chips may be produced and long chips may be ejected, resulting in injury and/or burns.	*Use protective equipment, machine guarding and/or protective glasses. *Before removing chips, always stop the machine. Wear protective gloves and use proper equipment for chip removal.
	⊙The tool and material/work being cut can become very hot. Touching them immediately after use may cause burns.	*Use protective gear such as protective gloves.
	⊙Sparks, heat generation due to breakage and/or chips during cutting may cause fire.	*Do not use the machine and tools in locations where there are risks of ignition or explosion. *When using water-insoluble cutting oil, fire prevention measures must be implemented.
	⊙Out of balance machine set ups when used at a high-speed, may cause insert breakage due to excess vibration or chatter, resulting in injury.	*Use protective equipment, machine guarding and/or protective glasses. *Perform a trial-run beforehand to make sure the setup is stable, free of chatter, vibration and abnormal noise.
Throw-Away Type Tools (With indexable insert)	⊙Inappropriately clamped inserts and/or components may become detached from the machine during cutting, resulting in injury.	*Before installing the insert, clean the seating surface and clamping components so that they are free of debris. *Use the wrench supplied to install the insert and check that the insert and components are securely clamped. Do not use any inserts or components other than the items specified.
	⊙Excessively tightening with a device such as a pipe extension may cause the insert and/or components to break or detach due to over clamping.	*Do not use tightening devices such as pipe extensions to obtain further torque. Always use the supplied wrench.
	⊙At high speeds, inserts and/or components may lose clamping pressure due to the loosening effect of centrifugal force. This is very dangerous. Always ensure secure clamping systems and check regularly.	*Use within the range of recommended conditions. Please refer to the instruction manual and catalog.
Cutters and Rotational Tools	⊙As cutters have sharp cutting edges, contact with bare hands may result in injury.	*Use protective equipment such as protective gloves.
	⊙Imbalance or excessive rotation may cause the tool to break due to vibration or chatter, resulting in potential injury.	*Use at a rotational speed within the recommended conditions. *To prevent excessive rotation and vibration due to worn bearings, regularly check the machine rotor/rotating parts for the accuracy and balance and adjust as required.
Brazed Inserts / Tools	⊙Inserts may break or become, detached due to incorrect brazing.	*Use protective equipment such as machine guards and/or protective glasses. Additional guarding around the chuck and drill may be advisable.
Others	⊙It is not advisable to use brazed inserts repeatedly as the braze may progressively weaken.	*Do not use brazed inserts repeatedly as the strength of such inserts is lowered.
	⊙Use only for the original and intended purpose. Using outside recommended parameters is very dangerous, causing damages to machines and/or tools.	*Always use and operate as specified, observing the required safety rules and conditions.

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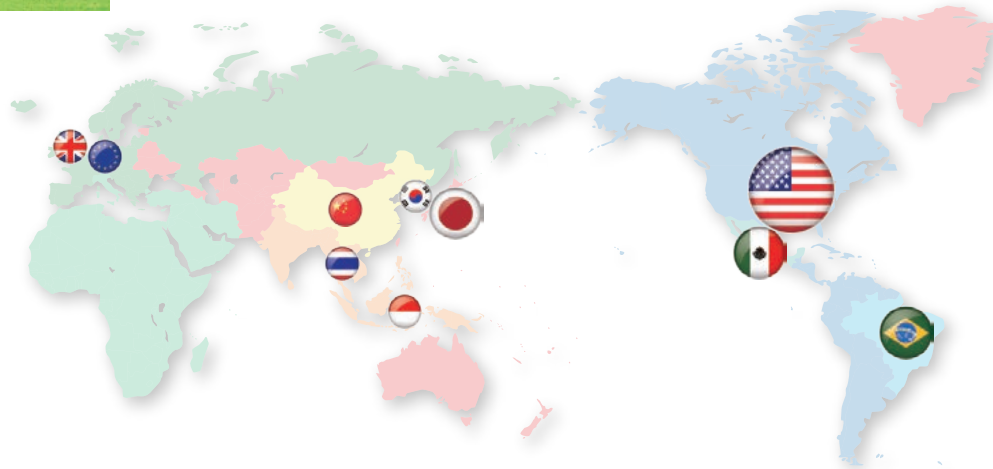
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