NGK SPARK PLUGS | NTK TECHNICAL CERAMICS

NGK SPARK PLUGS (USA), INC.

# NTK CUTTING TOOLS

## GENERAL CATALOG 6000




App for iPad — Available on the App Store

App for ANDROID — ANDROID APP ON Google play

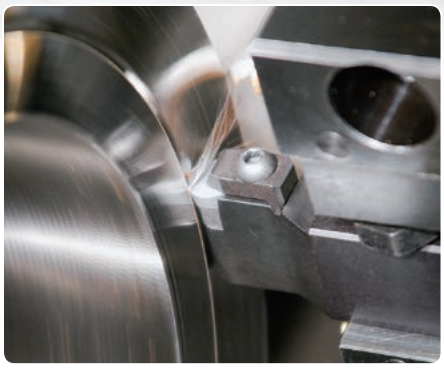
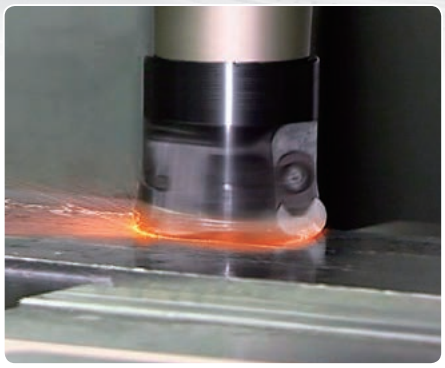
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NTKCUTTINGTOOLS.com

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# NTK TECHNOLOGY

## High Temperature Alloys

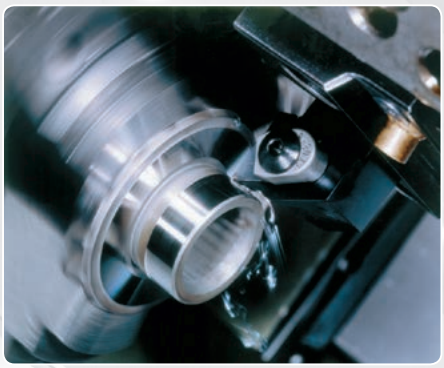
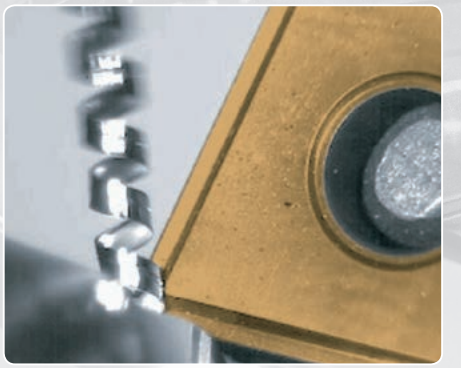




## Gray/Ductile Cast Iron



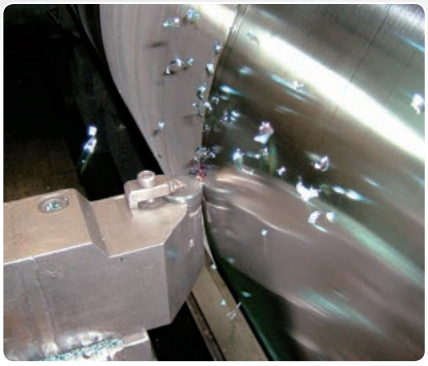



## Hardened Steels

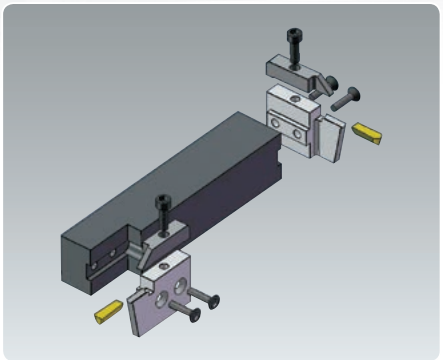




## Mill Rolls





## Grooving

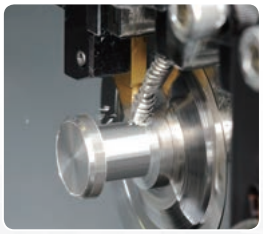


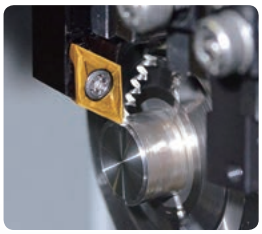
## Tooling For Swiss Type Lathes



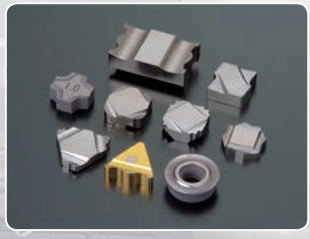








## Bearing Production





## Steel Machining





## High Speed Machining of Aluminum



# Guidelines for Catalog

- This catalog lists products as of September 2014.
- 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 | PD1, 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.

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## NEW PRODUCTS


"JX1" New grade for Super Alloys "BIDEMICS" ..... A2

"JP2" New grade for Super Alloys "BIDEMICS" ..... A3

"NTK CBN Grades" ..... A4

"DM4 / DT4" New PVD coated carbide ..... A5

"PD2" Super micro grain PCD ..... A5

"Groove DUO" Modular system for both OD and Face grooving ..... A6

"New Products for Swiss Type Lathes" ..... A8


## NEW PRODUCTS FOR SWISS-TYPE LATHES


"SPLASH Series" Coolant through toolholders ..... J2

"TBP/TBPA-BM" 3D Chipbreaker for Back turning ..... J4

"GTMH-GX" 3D Chipbreaker for Grooving/Side turning ..... J5

"Front Turning Chipbreakers" ..... J6

"VBGT Tooling" Designed for Swiss machines ..... J7

"SHAPER DUO" New concept of Hex/Square socket machining tool ..... J8

"Groove DUO" Sharper grooving tool for Swiss machines ..... J9

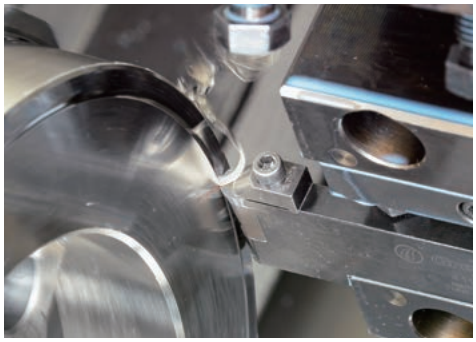


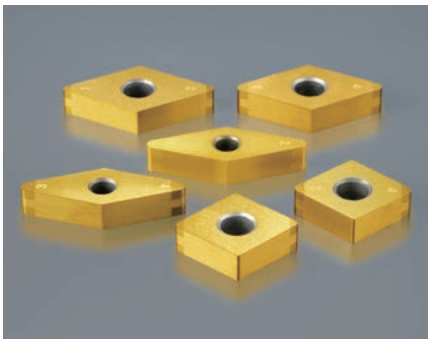
NGK SPARK PLUGS | NTK TECHNICAL CERAMICS

NGK SPARK PLUG CO., LTD.

# NEW BIDEMICS New Era in Aerospace Machining

WATCH ON YouTube





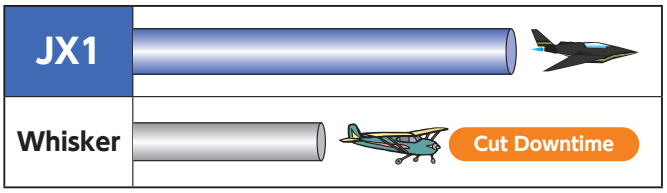
## JX1

**Features** — Patents Pending

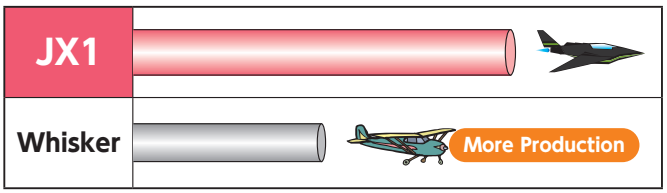
- *Significantly extended tool life compared to whisker ceramics*
- *Double cutting speed potential compared to whisker ceramics*
- *Superior surface finish compared to whisker ceramics*
- *Applicable to powder-metallurgical heat resistant alloys*

### Increase Productivity vs. Whisker Ceramics

① Significantly extended tool life at same speed




② Double speed capability



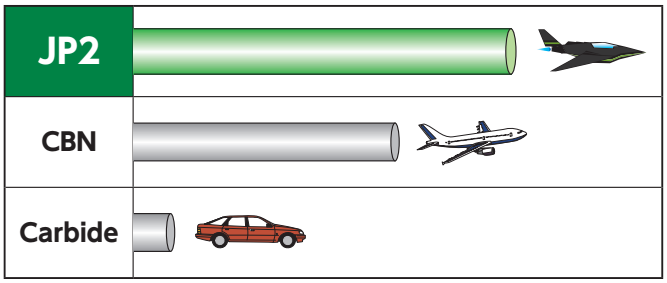

## JP2

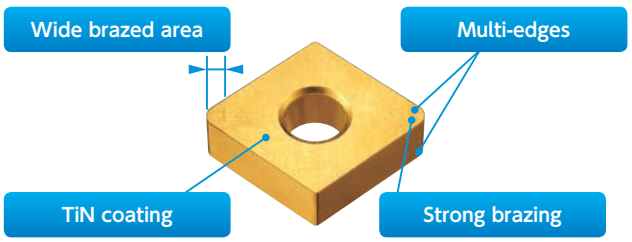
**Features** — Patents Pending

- *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** | .004-.010 | .010-.040 | | ● |

## 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 | ← |



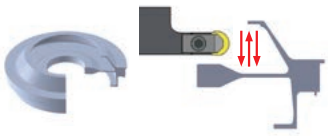
| | | |
|---|---|---|
| NTK : JX1 | 10 min |  |
| Competitor's whisker ceramic | 3 min |  |

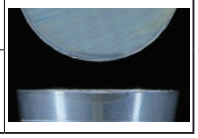
## 2 Higher speeds

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 | JX1  |
| Competitor's whisker ceramic | 60 cc/min | |

**JX1**



**Whisker Ceramic**



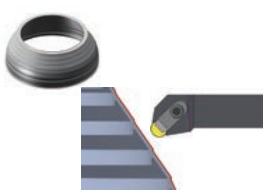
Chips easily break at higher cutting speed vs typically continuous chips of Super Alloy materials. This makes more efficient chip removal.

## 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)**

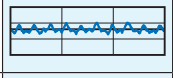
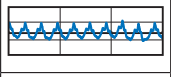
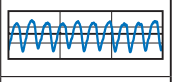
| | Comp. coated whisker | JX1 |
|---|---|---|
| Shape | RNG45 | ← |
| Cutting speed (SFM) | 800 | ← |
| Feed (IPR) | .010 | ← |
| Depth of cut (inch) | .020 | ← |
| | WET | ← |



| | | |
|---|---|---|
| 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 | ← | ← |

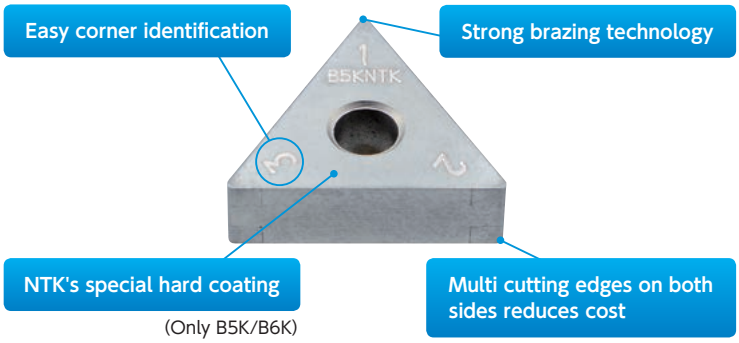
➡D2

# NEW NTK CBN Grades

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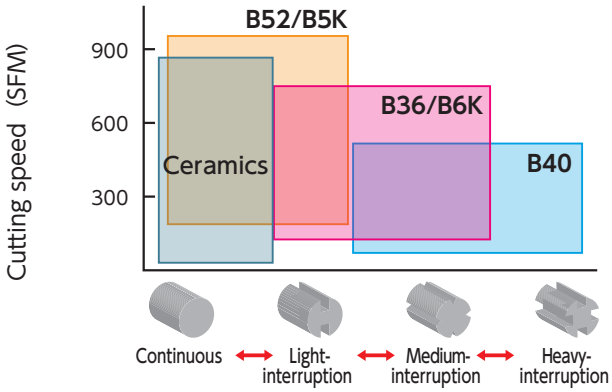
## CBN series



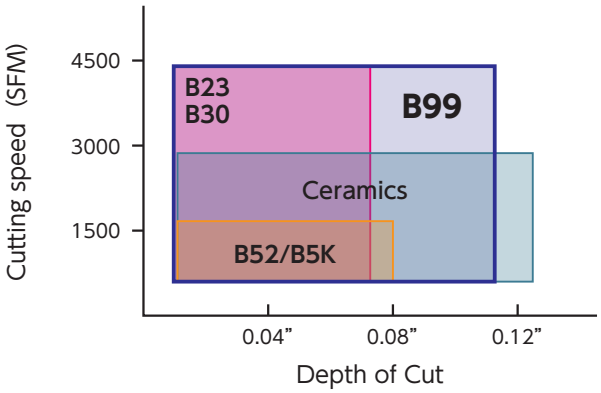



| Grade | Style | Coating | Main Binder | CBN Volume | Applications | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cast Iron | Ductile Cast Iron | Hardened Material | Mill Rolls | Sintered Alloy |
| NEW **B99** | **Solid** | — | **AlN** | **93%** | ● | ○ | | ● | |
| **B23** | Brazed | — | 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%** | | ● | ● | | |

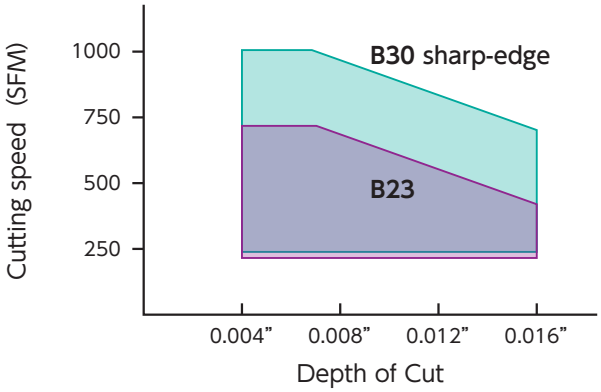
### Hardened Material Applications




### Gray / Ductile Cast Iron Applications




### Sintered Alloy Applications




➡D32

# NEW DM4 / DT4 New PVD coated carbide

WATCH ON YouTube

## DM4

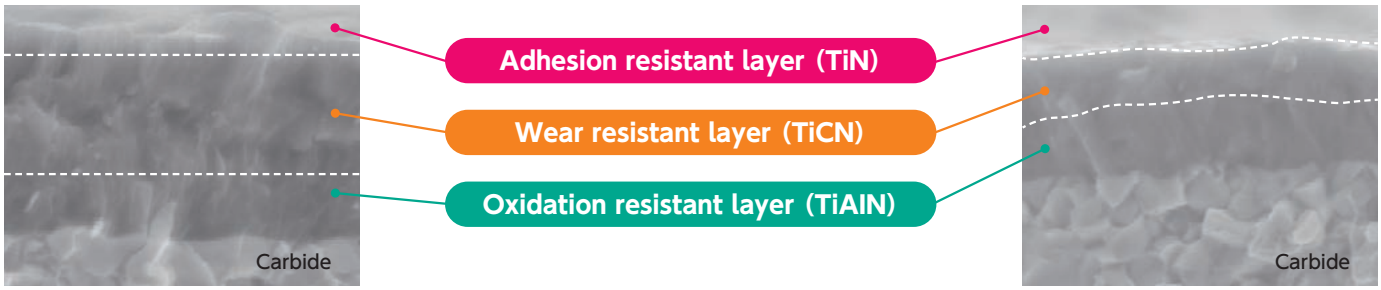


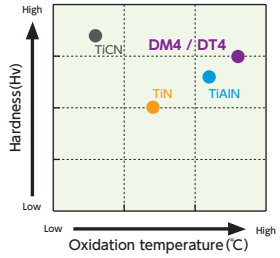
## DT4



### Features

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



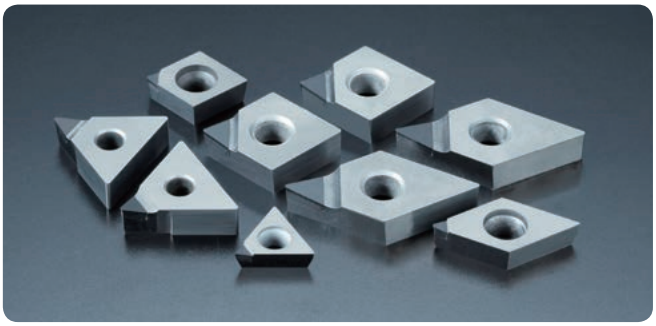




- For Titanium alloys
- For hard to cut materials
- For high temperature alloys

➡D44

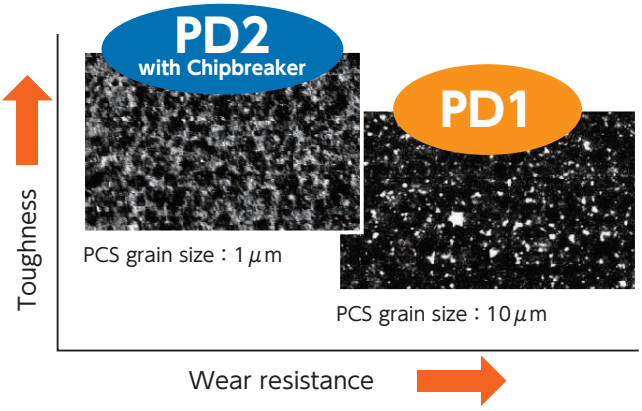
# NEW PD2 Super micro grain PCD

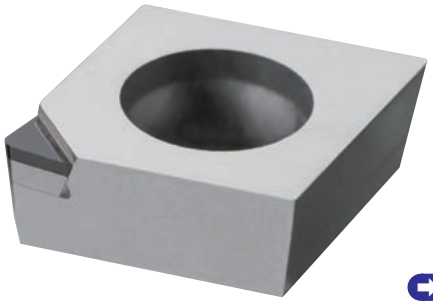
WATCH ON YouTube



### 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 Groove DUO

WATCH ON YouTube

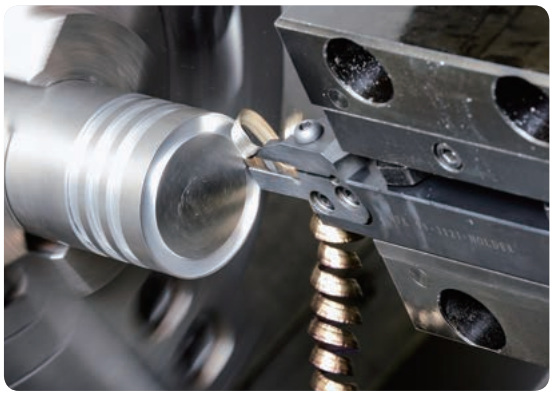


## Features

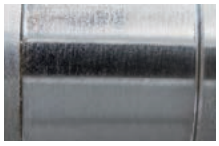
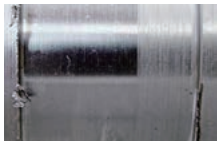
- *Grooving and side turning tools with highly rigid design*
- *3D design chipbreakers result in less tool pressure and excellent chip control*
- *Module system provides more flexibility*

## Multi purpose

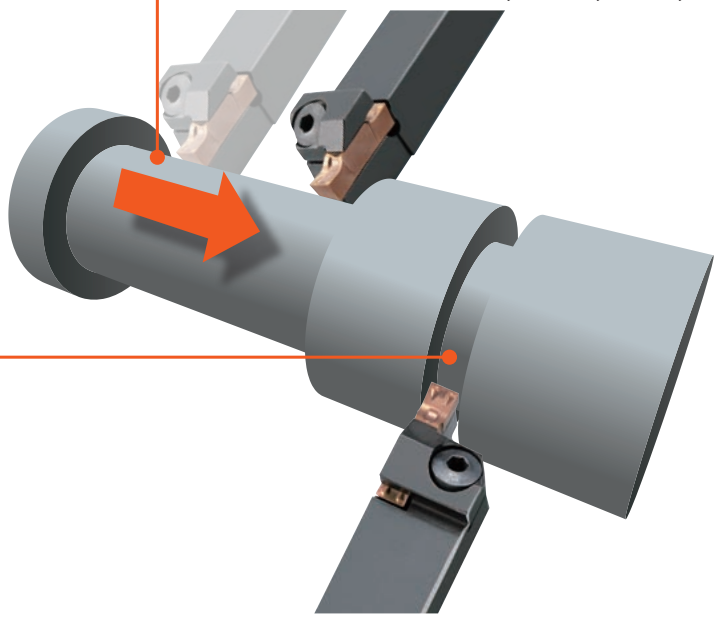
### ■Face Grooving



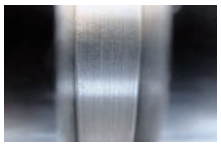
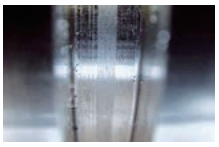
### ■Side-turning

| | NTK:GW chipbreaker | Competitor |
|---|---|---|
| Chip |  |  |
| Surface finish |  |  |

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



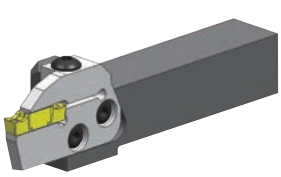
### ■Grooving

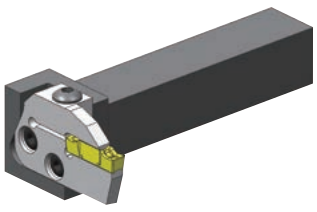
| | NTK:GW chipbreaker | Competitor |
|---|---|---|
| Chip |  |  |
| Surface finish |  |  |

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

## Modular system (To be released in May 2015)

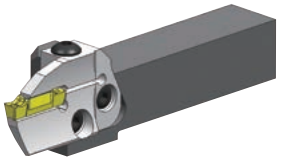
### ■For OD Grooving

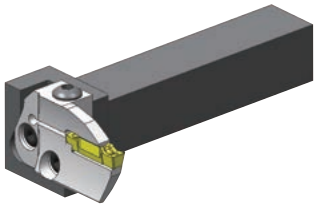




### ■For Face Grooving

From $\phi$1.14"min. diameter

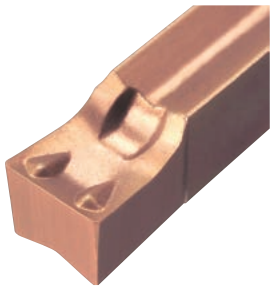




## Chipbreaker

### For Grooving / Side-turning

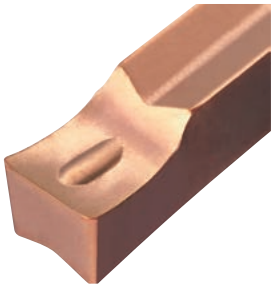
**GW**



- *Excellent chip control*
- *Good sharpness*
- *Side turning capability*

### Less tool pressure

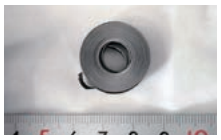
**GV**



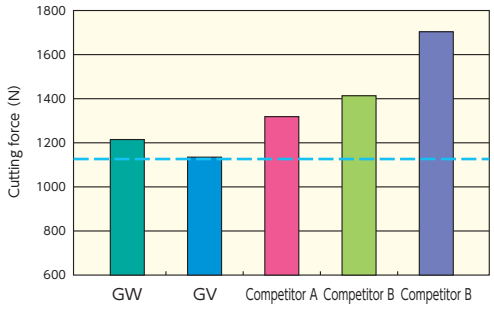
- *Superior sharp edge*

### Chip condition (Grooving)

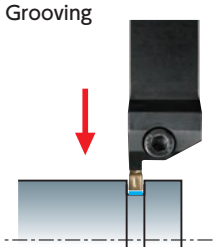
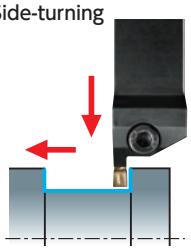
[Cutting condition]
260 SFM .003 IPR .197" width

| | GW | GV |
|---|---|---|
| 304SS |  |  |
| 303SS |  |  |
| 4135 |  |  |

### Tool pressure comparison when grooving



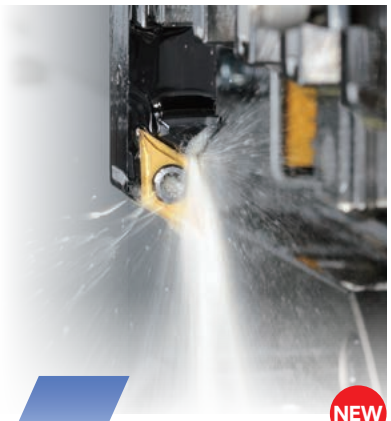

## Recommended cutting conditions

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

Inserts ➡H15 Holders ➡H12・H16

# New Products for Swiss Type Lathes

## Swiss tooling starts in Section J



NEW

Coolant through toolholders

### SPLASH Series

➡J2 • J12 WATCH ON YouTube



NEW

Coolant through boring sleeves

### STICK DUO SPLASH

➡J3 • J12 WATCH ON YouTube

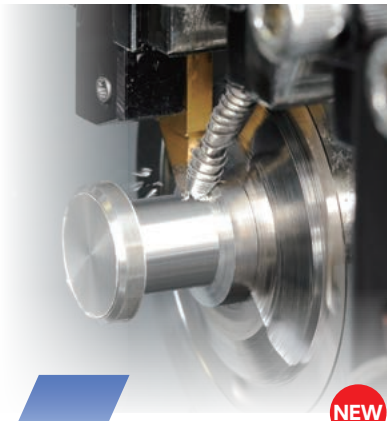


NEW

For HEX / Square socket

### SHAPER DUO

➡J8 • K182 WATCH ON YouTube



NEW

New molded chipbreaker for TBP/TBPA

### TBP / TBPA-BM

➡J4 WATCH ON YouTube



NEW

New molded chipbreaker for GTM32 grooving

### GTMH-GX

➡J5 WATCH ON YouTube



NEW

Developed for Swiss machines

### VBGT Tools

➡J7



NEW

Perfect combination of sharpness and chip control

### YL Chipbreaker

➡J6 WATCH ON YouTube



Very sharp edge with good chip control

### CL Chipbreaker

➡J6 WATCH ON YouTube



For light depth of cut

### AMX Chipbreaker

➡J6 WATCH ON YouTube

B



# Application Introduction


- Machining High Temperature Alloys with BIDEMICS 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

# Machining High Temperature Alloys with BIDEMICS and Ceramics

## Solutions for the Aerospace Industry

## JX1 BIDEMICS

NEW ➡D2 • D4

WATCH ON YouTube

### 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

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

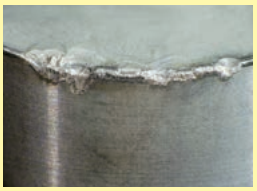
### Recommended Work Materials

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

### Recommended Applications

- Semi-Finish
- Profiling

### Profiling of Inco 718



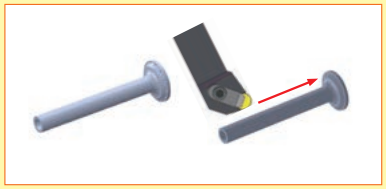
Competitor's Whisker Ceramic

Tool Life : 3min



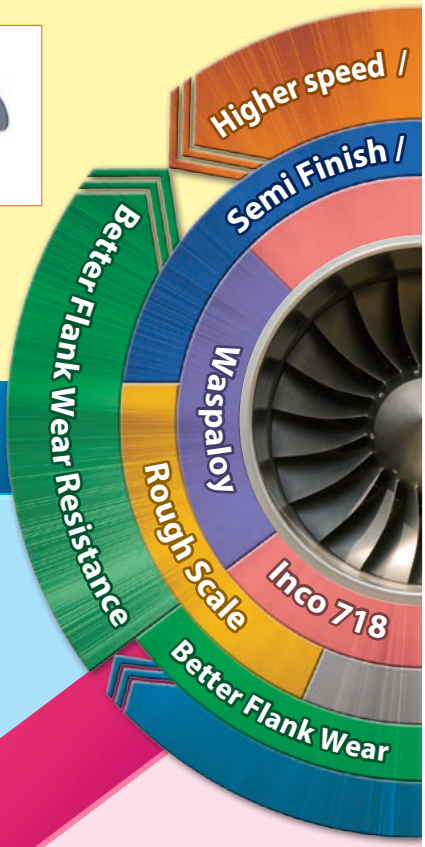
JX1

**Tool Life : 10min**



Turbine Shaft

RNG45, 800SFM, 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

WATCH ON YouTube

### 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

# WA1 Whisker-Reinforced Ceramic ➡D23

| SX7 | SX9 | SX5 |
|---|---|---|
| ◎ | ◎ | ○ |
| ○ | | |
| | ◎ | ○ |
| ◎ | ◎ | |

## 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

## 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

WATCH ON YouTube

## 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

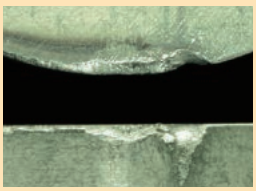
## Recommended Work Materials

- Inco 718
- Inco 625
- Waspaloy
- Udimet 720

## Recommended Applications

- Semi-Finish
- Profiling
- Milling
- Grooving

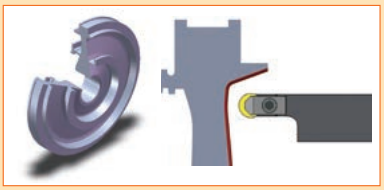
## Profiling of Inco 718



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

| | SX6 |
|---|---|
| Notching | ◎ |
| Flank Wear | |
| Toughness | ○ |
| Heat Shock | ◎ |

### ■ 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 | ● | ○ |




## 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

WATCH ON YouTube

| SP9 |
|---|
| |
| ◎ |
| ◎ |
| |

## Features

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

## Recommended Applications

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

## Recommended Cutting Conditions

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




# HC2, HC6 TiC Ceramic WA1 Whisker Reinforced Ceramic

➡D20・D21

➡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

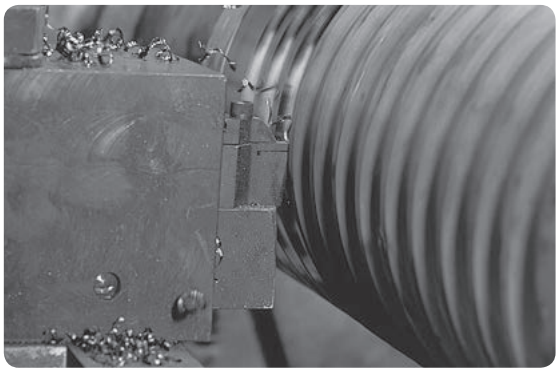
| Work material | Purpose | Grade | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|
| Gray cast iron | Turning | HC2/HC6 | 1200–2100 | .004–.016 | –.060 | ● | ● |
| | | WA1 | 1200–2100 | .004–.016 | –.120 | ● | ● |
| Ductile cast iron | Turning |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

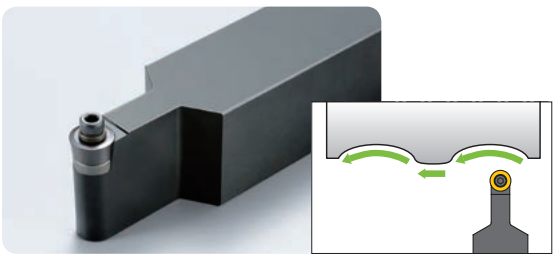
| Material | Choice | Grade | Cutting speed (SFM) | Shore Hardness Scale 55-65 | Shore Hardness Scale 65-72 | Shore Hardness Scale 72- | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|---|---|---|
| Steel *ex. D2* | 1st | HC7 | 450-600 | 100% | 80% | 60% | .004-.012 | .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

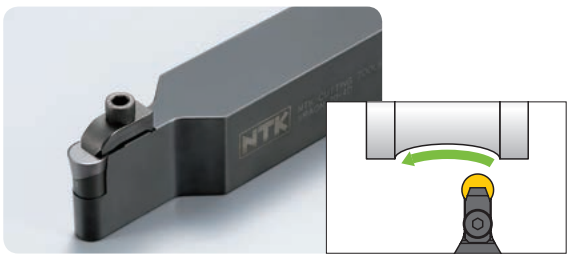
- Hardness of the roll is an important factor.  As the roll gets harder, reduce SFM.
- RCGX style inserts are the preffered insert style for rigidity and cost savings.
- DOC will depend upon the amount of material to remove. When making multiple passes with one edge, vary your DOC to move the wear on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

### Holders

■ HRCD ➡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

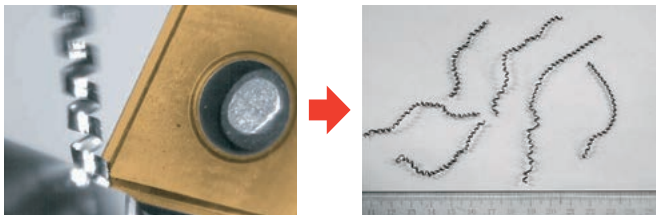




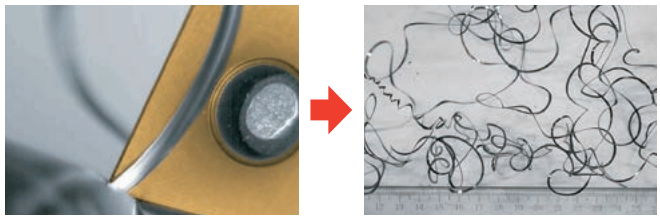
### AG-Chipbreaker

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

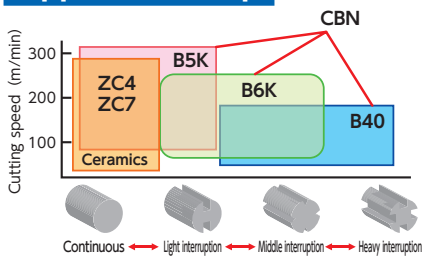
■ With AG-chipbreaker



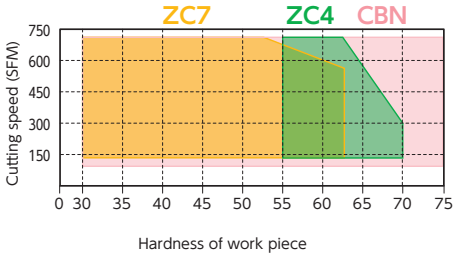
■ Without AG-chipbreaker



### Application Map

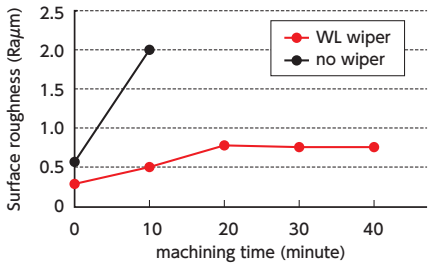



### Recommended Speed Range




### Effect of Wiper Flat on Cutting Edge

CNGA433WL 320SFM 004IPR 020doc




### 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

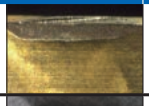
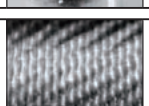
### Recommended Depth of Cut and Feed Rate

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

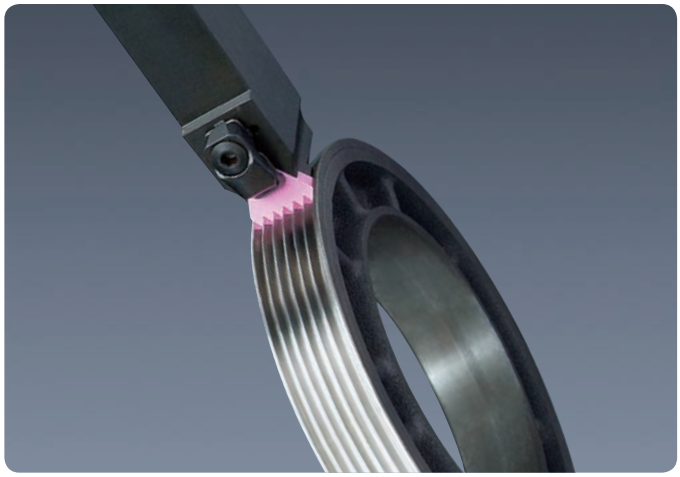
### Troubleshooting for Hard Turning with Ceramic Inserts

| | Case | | Possible cause | Action required |
|---|---|---|---|---|
| Insert | VB wear |  | ●Cutting speed is too high<br>●Feed rate is too low<br>●Improper nose radius | ●Decrease cutting speed<br>●Increase feed rate<br>●Enlarge nose radius |
| | Wear on face |  | ●Improper cutting condition<br>●Improper honed edge | ●Decrease cutting speed<br>●Reduce angle of honed edge |
| | Flaking |  | ●Improper cutting condition<br>●Improper honed edge | ●Reduce honed edge<br>●Use insert without round honing<br>●Decrease feed rate<br>●Increase cutting speed |
| | Fructure |  | ●Improper cutting condition<br>●Improper honed edge<br>●Use of coolant | ●Decrease feed rate<br>●Enlarge honed edge<br>●Put round honing on edge<br>●Stop coolant |
| Workpiece | Chattering |  | ●Too high tool pressure<br>●Shortage of workpiece and/or tool rigidity<br>●Cutting speed is too low | ●Decrease feed rate ●Reduce honed edge<br>●Enlarge relief angle<br>●Shorten the length of tool overhang<br>●Increase cutting speed |
| | Surfacefinish |  | ●Feed rate is too high<br>●Nose radius is too small<br>●Wear of insert | ●Decrease feed rate<br>●Enlarge nose radius<br>●Use insert with wiper flat<br>●Decrease cutting speed |

# Machining Poly-V Pulley Profiles

## Grooving With Ceramics





### Features

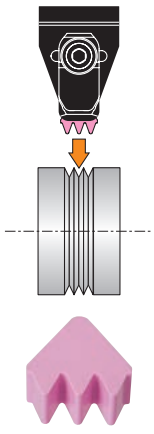
- *High speed machining for Poly-V pulleys*
- *Up to 6-V grooving with single pass*
- *Precision inserts for plunging profiles*



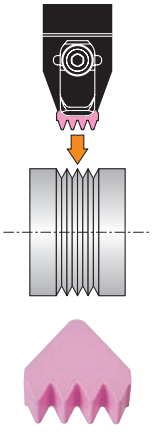
### Recommended Cutting Conditions

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

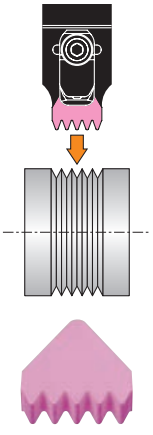
**3V**



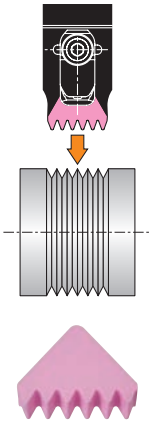
**4V**



**5V**



**6V**



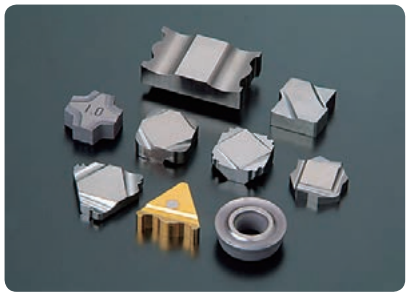
➡H19

# Tools for Bearing Industry

**Features**

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

⇒Contact to NTK for details





# Tube Scarfing Tools

**Features**

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

⇒Contact to NTK for details



# Tooth Chamfering Tools

**Features**

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

⇒Contact to NTK for details



# Tooling for Swiss Type Lathes



NEW

Coolant through toolholders

## SPLASH Series

➡J2 • J12

WATCH ON YouTube



NEW

Coolant through boring sleeves

## STICK DUO SPLASH

➡J3 • J12

WATCH ON YouTube



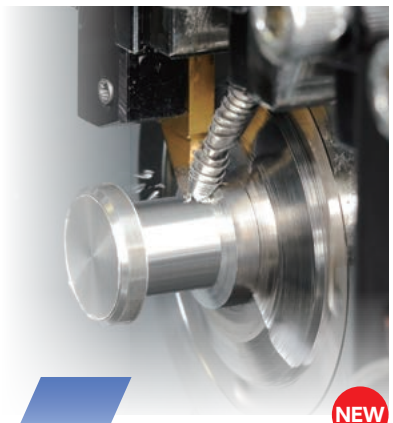
NEW

For HEX / Square socket

## SHAPER DUO

➡J8 • K182

WATCH ON YouTube



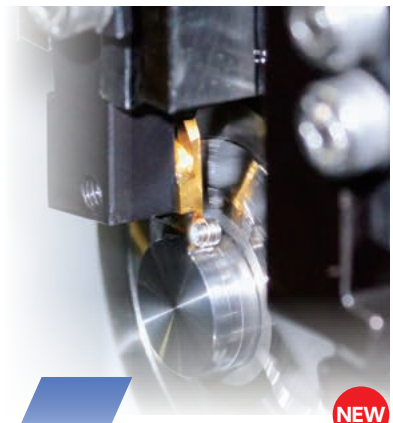
NEW

New molded chipbreaker for TBP/TBPA

## TBP / TBPA-BM

➡J4

WATCH ON YouTube



NEW

New molded chipbreaker for GTM32 grooving

## GTMH-GX

➡J5

WATCH ON YouTube



NEW

Developed for Swiss machines

## VBGT Tools

➡J7



NEW

Perfect combination of sharpness and chip control

## YL Chipbreaker

➡J6

WATCH ON YouTube



Very sharp edge with good chip control

## CL Chipbreaker

➡J6

WATCH ON YouTube

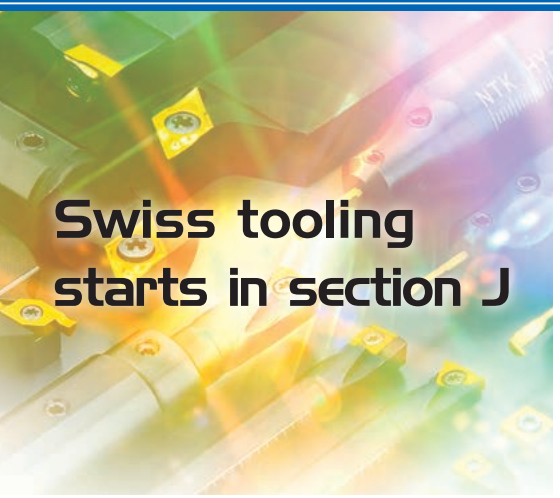


For light depth of cut

## AMX Chipbreaker

➡J6

WATCH ON YouTube






A great solution for chip control problems

## Y-axis Toolholders

➡J20 WATCH ON YouTube



Hight performance thread forming

## THREAD WHIRLING

➡J11 • K142 WATCH ON YouTube



Best for up to ϕ.200 diameter material

## CSV Series

➡J36



Adjustable centerline height

## DS-ACH

➡J26 WATCH ON YouTube



High rigidity boring bar

## Mogul Bar

➡J25 WATCH ON YouTube



6 corner insert for swiss

## UL Chipbreaker

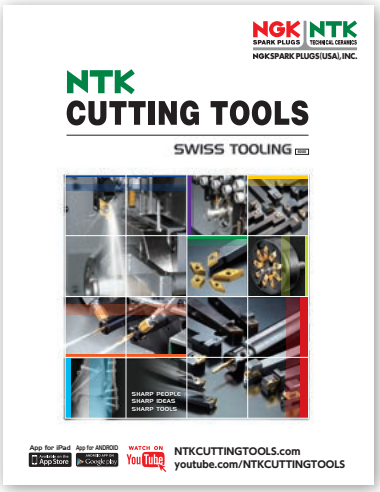
➡J43 WATCH ON YouTube



A must for extended guide bushing users

## Shifted Toolholders

➡J44 WATCH ON YouTube




Swiss tooling starts in section J

# High Speed Milling of Aluminum

## HPC
### igh erformance utter

## Features

- ***Wide cutter diameter range***
  *Ranging from ϕ.79" to ϕ3.94"*
- ***No presetting required***
  *The fixed-type HPC can be indexed simply by replacing inserts*
  *※The adjustable HPC allows adjustment of cutter variance to 5㎛ or less*
- ***High rigidity***
  *High-reliability due to steel cutter body*
- ***Max. speed 18000 RPM***

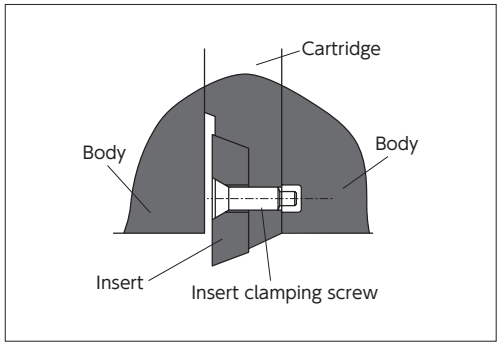


## Safety design

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

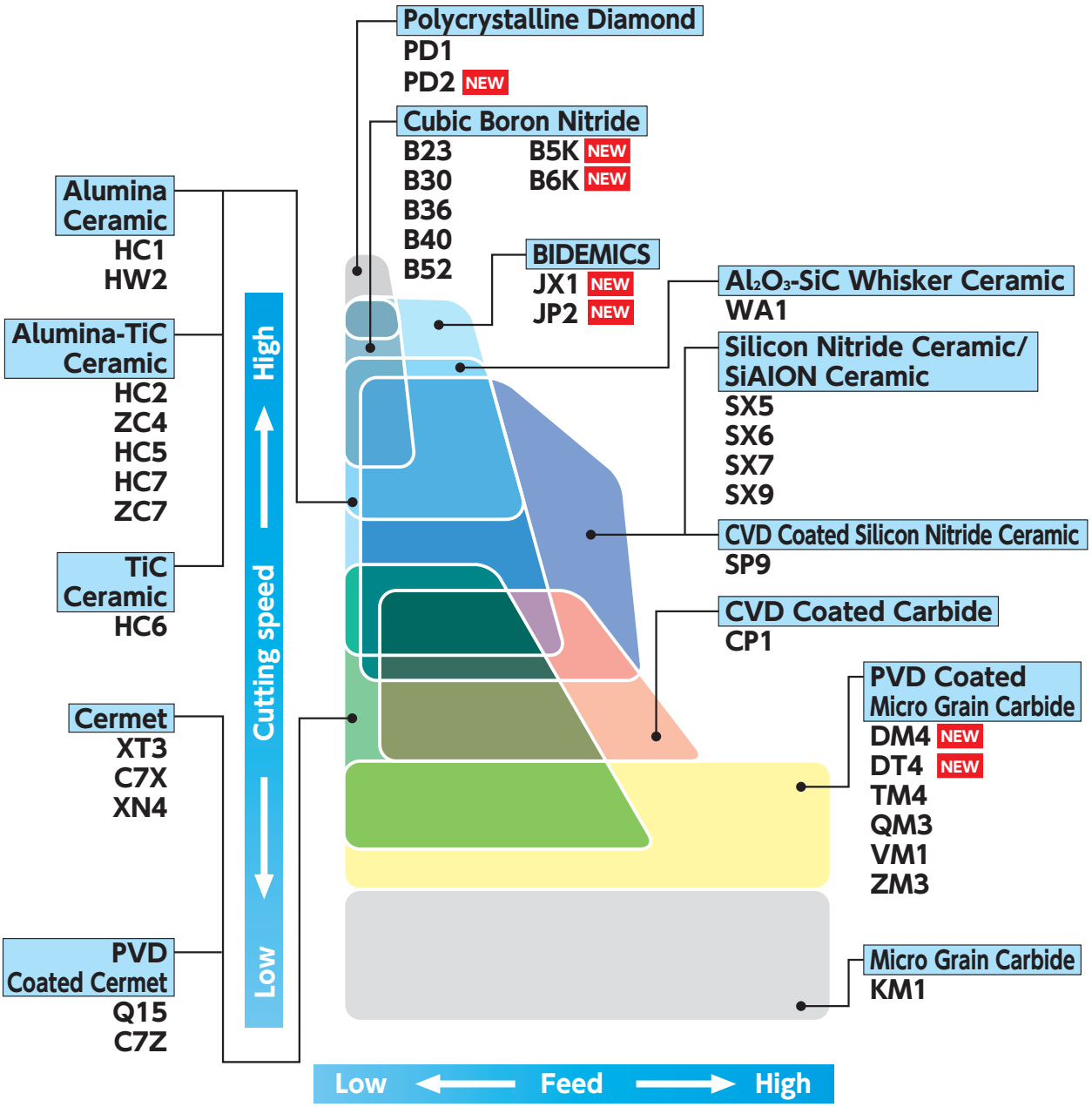
C



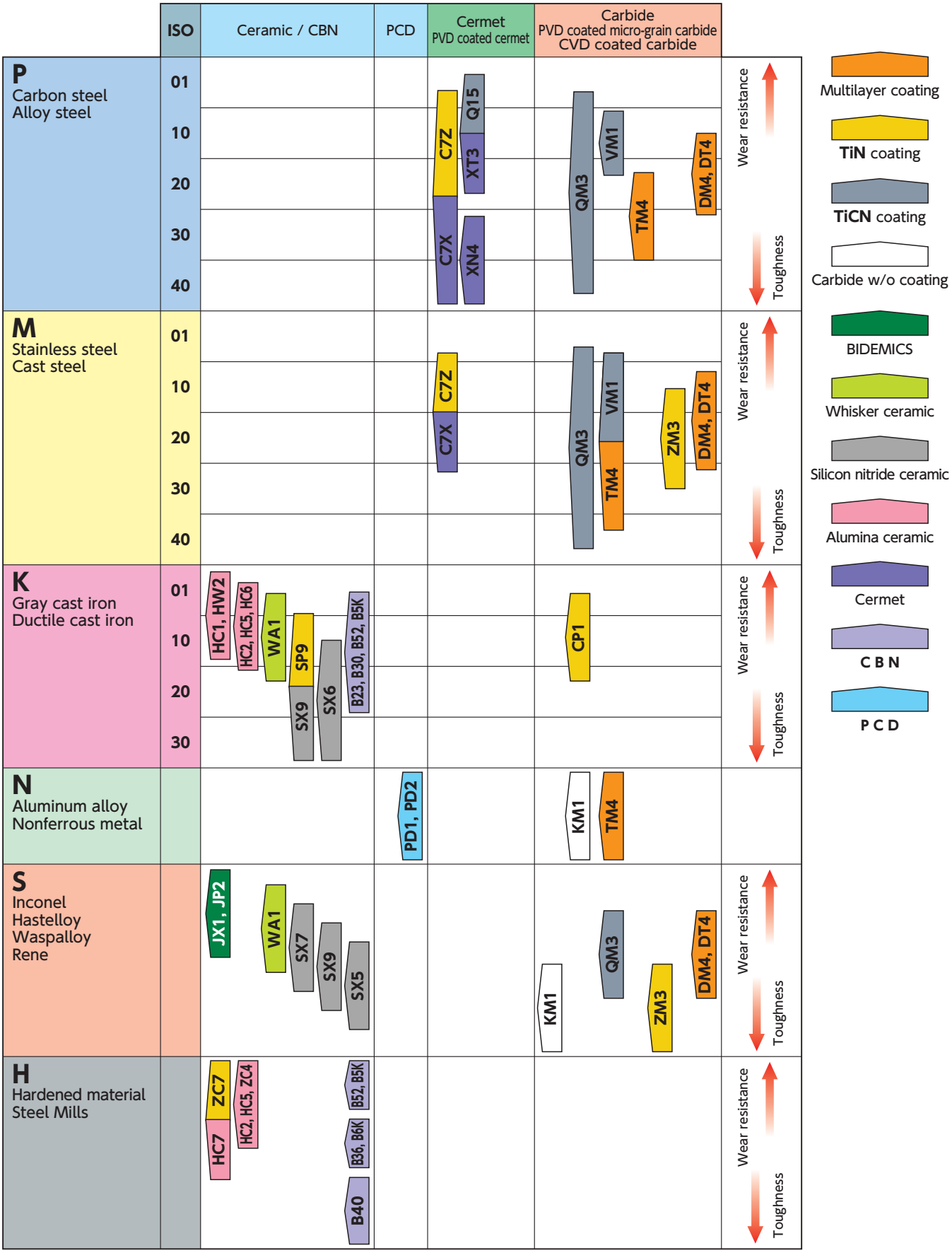
# Tool Materials / Selection Guide


- Application Range of NTK Insert Grades ····· C2
- Recommended Types of Materials and Applications : BIDEMICS, 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



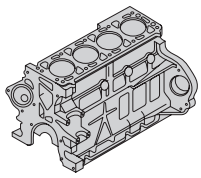
# Insert grade recommendation by work material type



# Tool Materials / Selection Guide

## Recommended Types of Materials and Applications : BIDEMICS, Ceramics and CBN

●1st Choice ○2nd Choice

| Work material | | Tool Grade | | Application: Roughing | Application: Semi-finishing | Application: Finishing | Application: Continuous | Application: Light interruption | Application: Interruption | Coolant: Dry | Coolant: Wet |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat-resistant alloy  * Based on Using ½" IC Insert except JP2 | | BIDEMICS | JX1 | | | | | | | | ● |
| | | | JP2 | | | | | | | | ● |
| | | Ceramic | SX5 | | | | | | | | ● (Turning) |
| | | | SX7 / SX9 | | | | | | | ● (Milling) | ● (Turning) |
| | | | WA1 | | | | | | | ○ | ● |
| Gray cast iron   | | Ceramic | SX6 | | | | | | | ● | ● |
| | | | SP9 | | | | | | | ● | ○ |
| | | | HC1 / HW2 | | | | | | | ● | |
| | | | HC2 / HC6 | | | | | | | ● | ● |
| | | | WA1 | | | | | | | ● | ● |
| | | CBN | B99 | | | | | | | ● | ● |
| | | | B23 / B30 | | | | | | | ○ | ● |
| Chilled Liners  | | Ceramic | HW2 | | | | | | | ● | |
| | | | HC2 | | | | | | | ● | ○ |
| Ductile cast iron  | | Ceramic | SP9 | | | | | | | ○ | ● |
| | | | HC6 | | | | | | | ○ | ● |
| | | CBN | B52 | | | | | | | ○ | ● |
| Hardened material  | | Ceramic | ZC4 / ZC7 | | | | | | | ● | ● |
| | | CBN | B5K / B52 | | | | | | | ○ | ● |
| | | | B6K / B36 | | | | | | | ● | ● |
| | | | B40 | | | | | | | ● | ○ |
| Rolls  * Based on Using ½" IC Insert | Steel Carbide | Ceramic | WA1 | | | | | | | ● | |
| | | | HC7 | | | | | | | ● | |
| | | CBN | B23/B6K/B36 | | | | | | | ● | |
| | Cast iron | Ceramic | HC5/HC2/HC7 | | | | | | | ● | |
| | | CBN | B30 | | | | | | | ● | |
| | Ductile iron | Ceramic | HC5 / HC6 | | | | | | | ● | |
| | | CBN | B5K / B52 | | | | | | | ● | |




• 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 | | Continuous / Light interruption / Interruption | Coolant | |
|---|---|---|---|---|---|---|---|---|
| | | | | Roughing | Semi-finishing | | 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 | | ● | | ● | |

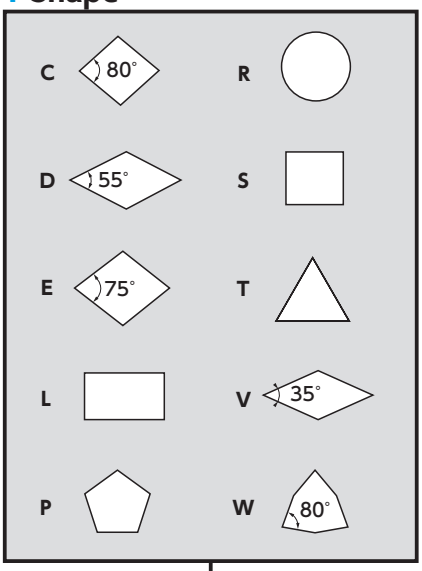



• Starting speed based on using CN..432 insert

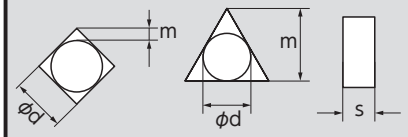
# Tool Materials / Selection Guide

## ANSI / ISO Insert Nomenclature

### 1 Shape




### 3 Tolerance Class




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

C S T

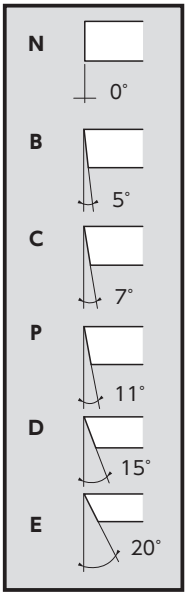
| Inscribed Circle | M tolerance d (inch) | M tolerance m (inch) |
|---|---|---|
| 1/4" | ±.002 | ±.003 |
| 3/8" | ±.002 | ±.003 |
| 1/2" | ±.003 | ±.005 |
| 5/8" | ±.004 | ±.006 |
| 3/4" | ±.004 | ±.006 |
| 1" | ±.005 | ±.007 |

D K

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

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Inch | S | N | G | A |
| Metric | S | N | G | A |

### 2 Clearances




### 4 Type

| Type | Symbol | Type | Symbol |
|---|---|---|---|
| | N (E) | 70°–90° | H |
| | F | | |
| | R | 70°–90° | B |
| | A | | |
| | G | 40°–60° | T |
| | M | 40°–60° | W |
| Special design | X | | |

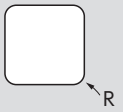
### 6 Thickness

| 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 | | C | D | R | S | T | V | W |
| 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

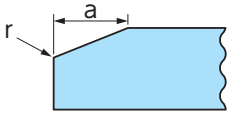
| Corner Radius | Inch | Metric |
|---|---|---|
|   | 1/64" | 1 | 04 |
| | 1/32" | 2 | 08 |
| | 3/64" | 3 | 12 |
| | 1/16" | 4 | 16 |
| | 5/64" | 5 | 20 |
| | 3/32" | 6 | 24 |
| | 1/8" | 8 | 32 |

| 4 | 3 | 3 | T | 04 | 20 |
|---|---|---|---|---|---|
| 5 | 6 | 7 | 8 | 9 | 10 |
| 12 | 04 | 12 | T | 010 | 20 |

## 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 |

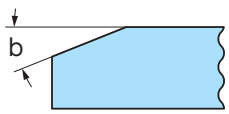
## 9 Negative Land Width




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

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

## 10 Negative Land Angle

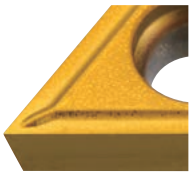
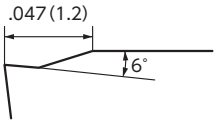
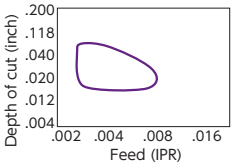
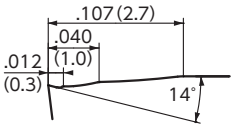
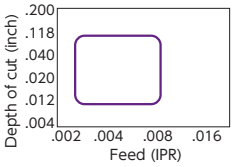
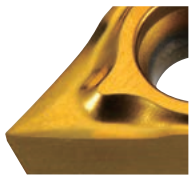
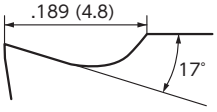
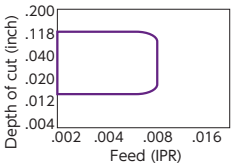
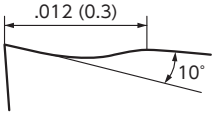
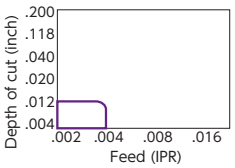
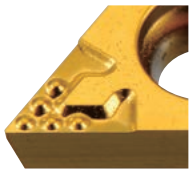
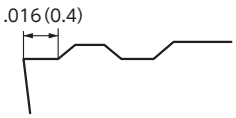
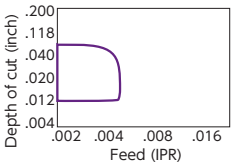
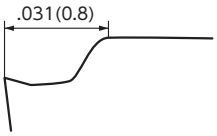
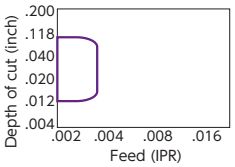
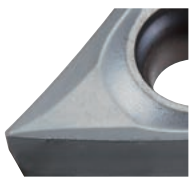
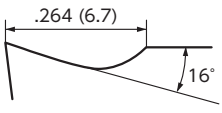
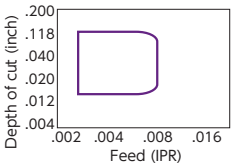



| Description | b |
|---|---|
| 10 | 10° |
| 15 | 15° |
| 20 | 20° |
| 25 | 25° |
| 30 | 30° |

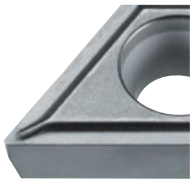
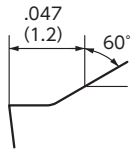
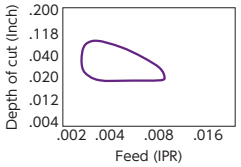
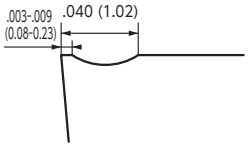
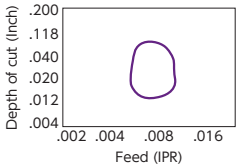
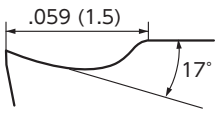
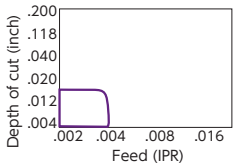
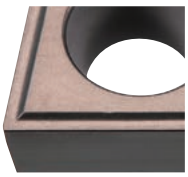
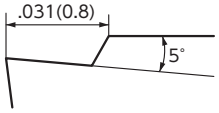
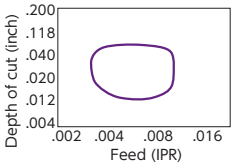
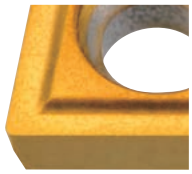
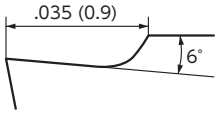
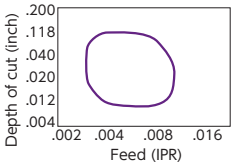
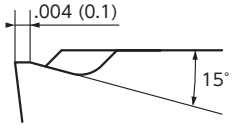
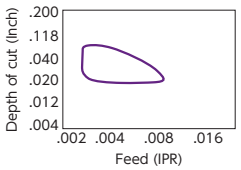
Note: K, J, P & Q show its primary land angle

# Chipbreakers for Positive inserts

## Molded Chipbreakers for Positive Inserts

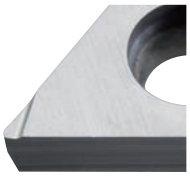
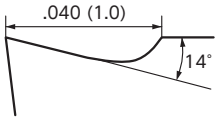
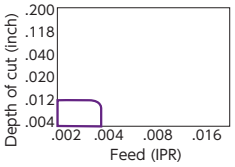
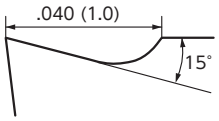
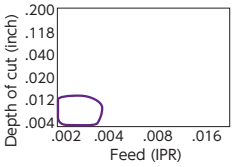
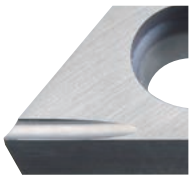
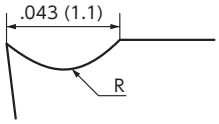
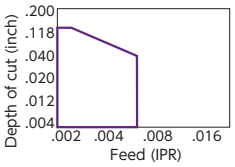
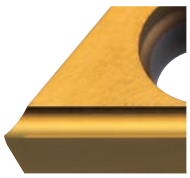
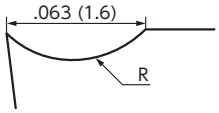
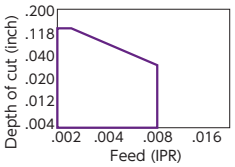
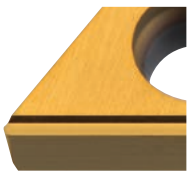
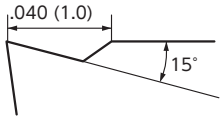
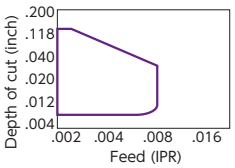
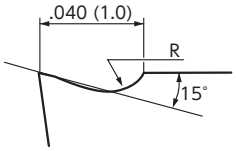
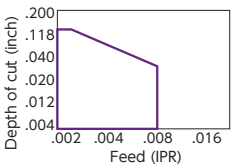
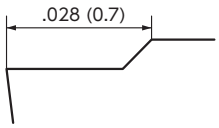
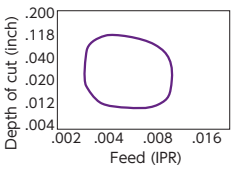
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **AM3** |  ➡J6 |   DCGT32.508 shown | ●All purpose chipbreaker<br>●Sharp edge with toughness |   |
| **YL** | NEW  WATCH ON YouTube ➡J6 |   DCGT11T302MYL | ●Great combination of sharpness and toughness<br>●Covers extremely wide range<br>●Excellent chip control |   |
| **CL** |  WATCH ON YouTube ➡J6 |   DCGT32.508M shown | ●Sharpest molded Chipbreaker<br>●Excellent chip control<br>●Less tool pressure |   |
| **AMX** |  WATCH ON YouTube ➡J6 |   DCGT32.508M shown | ●Designed for very light depth of cut<br>●Good sharpness |   |
| **AZ7** |  WATCH ON YouTube |   DCGT32.508M shown | ●Excellent chip control at light feed and light depth of cut |   |
| **ZR** |  |   DCMT32.508 shown | ●Covers a wide depth of cut range under high-speed and low-feed conditions |   |
| **1L** |  |   DCGT32.508 shown | ●Double-positive design with low tool pressure<br>●Tough cutting edge and excellent performance in combination with QM3 |   |

## Molded Chipbreakers for Positive Inserts (continued)

| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **AF3** |  |  DCGT32.508 shown | ●Good chip control |  |
| **GA** |  |  VBGT332 shown | ●Sharp and tough cutting edge |  |
| **FG** ➡J25 |  |  TPGH221 shown | ●Exclusively designed for ID boring<br>●Evacuates chips BACKWARD at light depth of cut<br>●Sharp cutting edge with high rake angle |  |
| **AF1** |  |  CCGT32.508 shown | ●Produces remarkable surfaces in semi-finishing of steels |  |
| **AM5** |  |  CPGH21.508 shown | ●Chipbreaker for boring<br>●Provides both good cutting performance and chip control |  |
| **QB** |  |  WCGT5208 shown | ●Sharp and tough cutting edge |  |

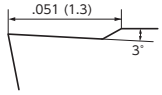
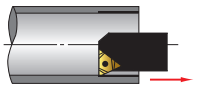
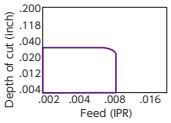
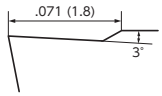
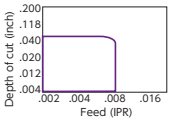
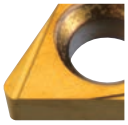
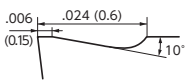
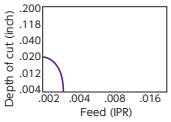
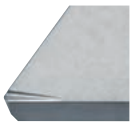
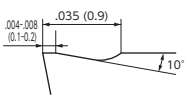
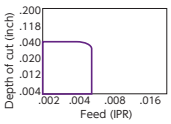
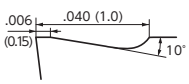
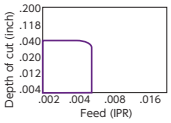
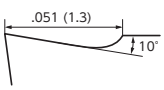
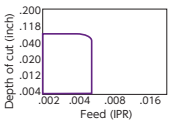
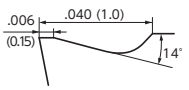
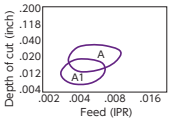
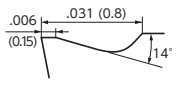
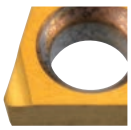
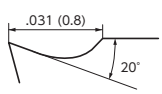
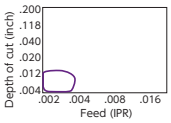
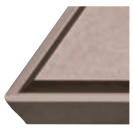
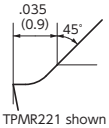
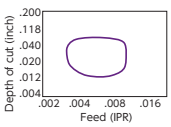
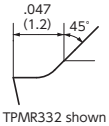
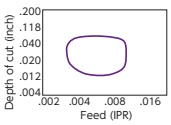
# Chipbreakers for Positive inserts

## Ground Chipbreakers for Positive Inserts

| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **KHG** |  |  DCET32.508 shown | ●Excellent chip control on finishing cuts<br>●For super high-precision machining<br>＊Precision tolerance in corner radius: ±.0004" |  |
| **K** |  |  TPGHP7308 shown | ●Superb chip control on finishing applications<br>●Sharp cutting edge with the high rake angle |  |
| **UHG** |  |  DCET32.504M shown | ●Sharp cutting edge<br>●Covers wide cutting condition range<br>＊Precision tolerance in corner radius: ±.0004" |  |
| **U/U1** |  |  DCGT32.508 shown | ●Sharp cutting edge prevents materials from work hardening |  |
| **S** |  |  DCGT320.508 shown | ●Standard ground chipbreaker with wide cutting condition coverage<br>●Sharp cutting edge with excellent chip control |  |
| **AT** |  |  DCGT32.508 shown | ●Excellent adhesion resistance with dimensional stability<br>●Best for small diameter parts and for machining low carbon steels |  |
| **FM** |  |  DCGT32.508 shown | ●Full-peripheral ground chipbreaker |  |

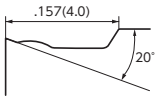
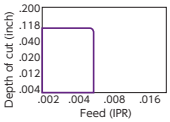
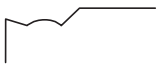
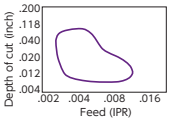
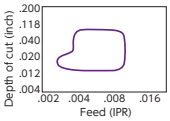
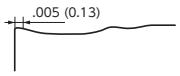
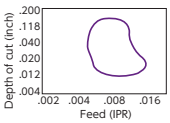
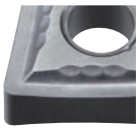
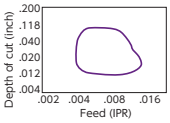
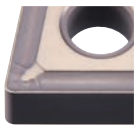
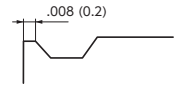
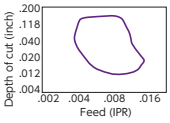
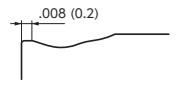
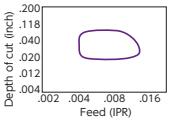
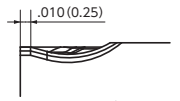
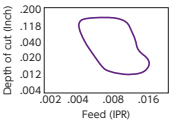
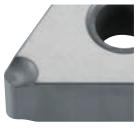
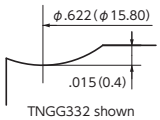
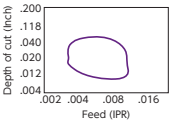
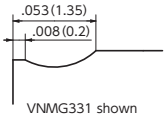
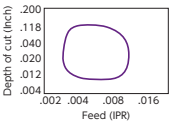
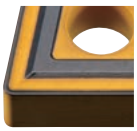
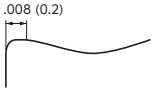
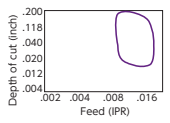
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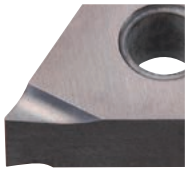
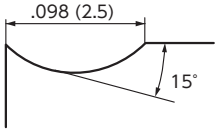
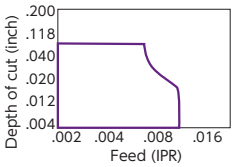
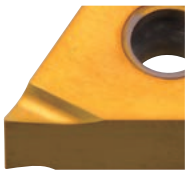
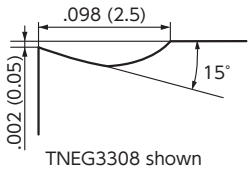
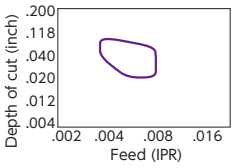
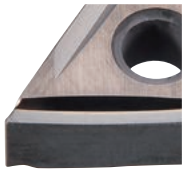
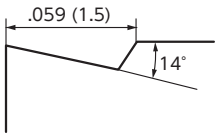
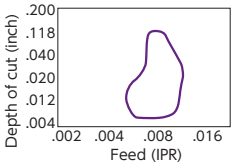
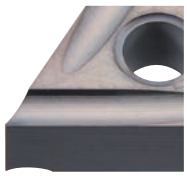
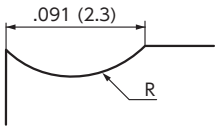
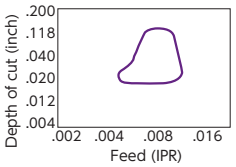
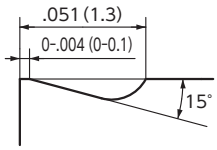
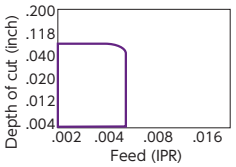
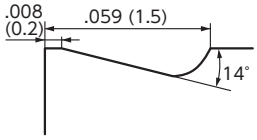
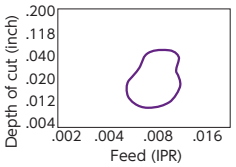
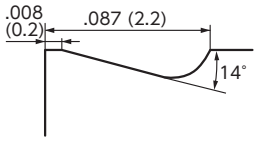
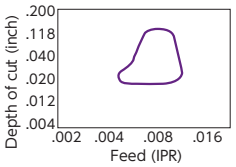
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **F05** |  ➡J25 |   TPGP5208 shown | ●Exclusively designed for ID boring<br>●Evacuates chips BACKWARD<br>●Excellent choice for blind hole machining   |   |
| **F1** |  ➡J25 |   TPGP2208 shown | |   |
| **B1** |  |   TCGP5208 shown | ●Stable cutting when boring thanks to sharp and tough cutting edge |   |
| **P1** |  |   TPGR321R shown | |   |
| **B2** |  |   TPGP7308 shown | |   |
| **B3** |  |   TPGP6308 shown | |   |
| **A** |  |   CPGP0308 shown | ●Tough cutting edge and good chip control<br>●General-purpose ID chipbreaker |   |
| **A1** |  |   CPGP8308 shown | | |
| **A2** |  |   ERGP52Y shown | ●Control chips at light feed and light depth of cut<br>●Sharp cutting edge due to large rake angle |   |
| **A283** |  |   TPMR221 shown | ●Breaks chip into small pieces |   |
| **A305** |  |   TPMR332 shown | |   |

# Chipbreakers for Negative inserts

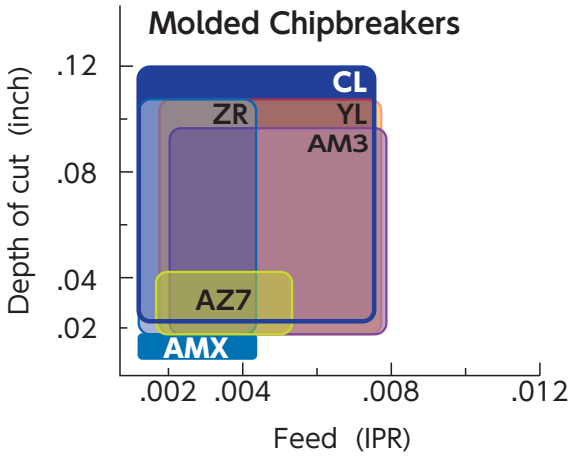
## Molded Chipbreakers for Negative Inserts

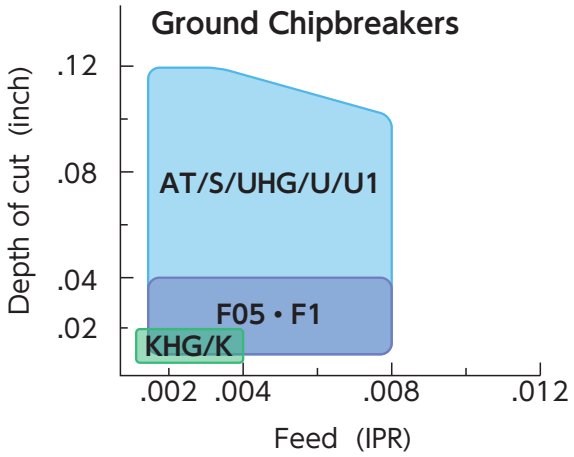
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **UL** |  WATCH ON YouTube ➡J43 |   TNGG3304M shown | ●Negative insert with a positive insert's chipbreaker<br>●Reduced burr<br>●Improved microfinish<br>●Superb advantage in cost per corner over positive inserts |   |
| **ZF1** |  |  CNMG432 shown | ●Produce small curled chips on finishing cuts |   |
| **WM** |  |  CNMG431 shown | ●Remarkable chip control in the low feed range |   |
| **ZW1** |  |   CNMG432 shown | ●Versatile chipbreaker with remarkable chip control performance in a wide range of conditions |   |
| **ZP** |  |  CNMG432 shown | ●Double-positive rake and sharp cutting edge<br>●Low tool pressure even at heavy depth of cut |   |
| **Z5** |  |   CNMG432 shown | ●Very tough insert<br>●Designed for machining with heavy interruption |   |
| **WV** |  |   CNMG432 shown | ●Offers the advantages of both a tough cutting edge and chip control |   |
| **WR** |  |   WNMG432 shown | ●Designed for cermet<br>●Covers wide range of conditions |   |
| **R1** |  |   TNGG332 shown | ●Sharp cutting edge<br>●Good chip control |   |
| **GE** |  |   VNMG331 shown | ●Sharp and tough cutting edge |   |
| **G** |  |   CNMG432 shown | ●Tough chipbreaker for roughing with exceptional stability |   |

## Ground Chipbreakers for Negative Inserts

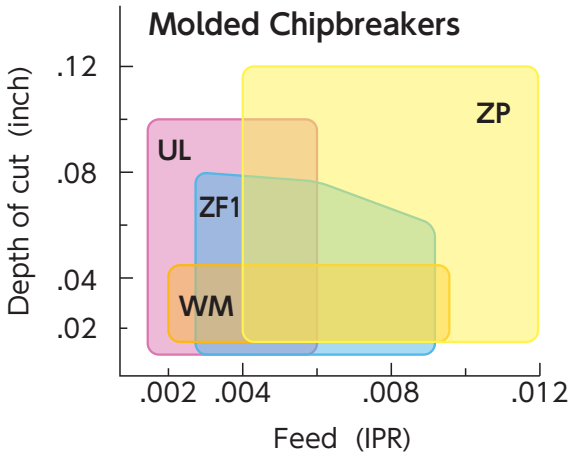
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **DA** |  |  TNGG3304 shown | ●Excellent chip control and sharp cutting edge |  |
| **D1** |  |  TNEG3308 shown | |  |
| **N1** |  |  TNGG3308 shown | ●Double-positive design with the large rake angle<br>●Excellent chip control |  |
| **U2** |  |  TNGG3308 shown | ●Reduced burr and work hardening due to high rake design |  |
| **L2** |  |  TNGG332R shown | ●General-purpose chipbreaker with excellent toughness and chip control |  |
| **B** |  |  TNGG331 shown | |  |
| **C** |  |  TNGG3308 shown | |  |

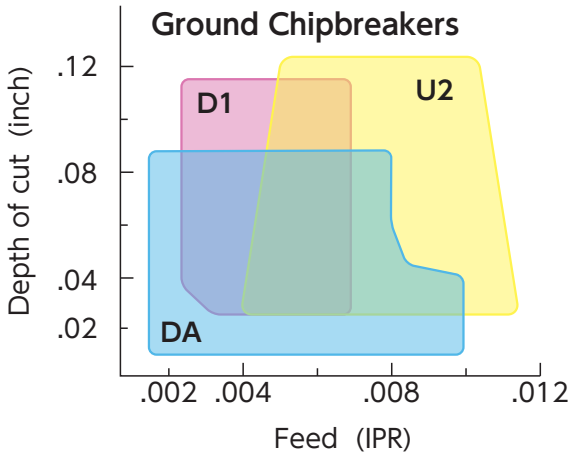
## Positive Inserts



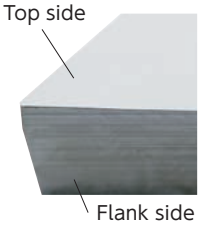
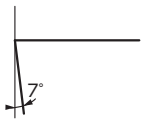




## Negative Inserts

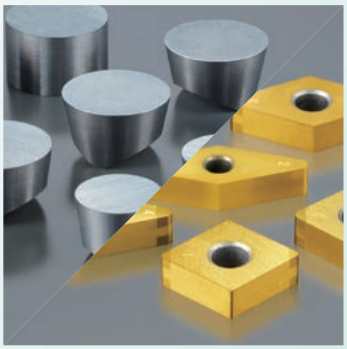



## Flat Top with Mirror Finish

| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| V<br>P<br>H |  |  | ●Very up-sharp edge with mirror finish<br>V: Mirror finish on Top and Flank side with R0 nose radius<br>P: Mirror finish on Top and Flank side<br>H: Mirror finish on Top side | — |

# D



## Grade Introduction


■ BIDEMICS ····· D2

● Guideline for Machining Heat Resistant Alloys ····· D6

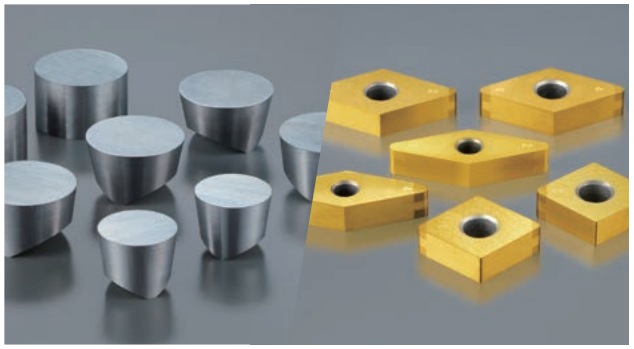
■ Ceramics ····· D15

■ BIDEMICS (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**.



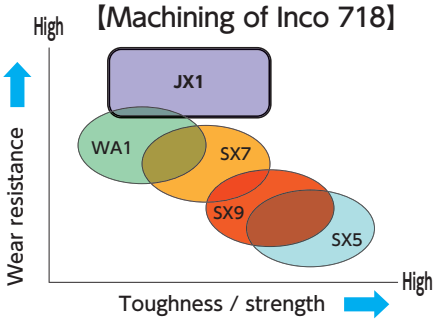
### JX1 Semi-finishing & Finishing / Rough no scale

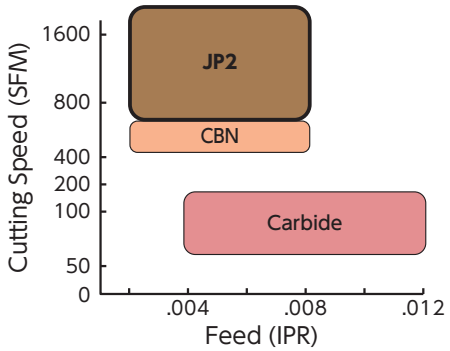
- Up to 1600 SFM speed capability
- Much longer tool life at Whisker ceramics's speed range
- Better wear resistance and notching resistance than Whisker ceramics
- Superior surface finish vs. Whisker ceramics

### 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】




## ● Physical properties

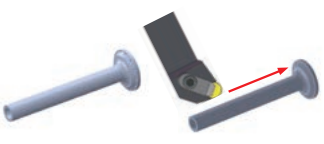
| Grade | Hardness HRA | Bending Strength MPa | Thermal Conductivity W/m・K |
|---|---|---|---|
| **JX1** | **95.5** | **1,800** | **40** |
| **WA1** | 94.5 | 1.200 | 35 |

- *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 | ← |



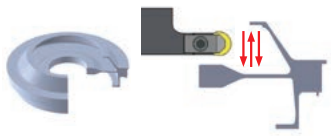
| | | |
|---|---|---|
| NTK : **JX1** | 10 min |  |
| Competitor's whisker ceramic | 3 min |  |

## 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.

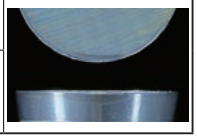
**Turbine disk (Inco718 rough)**

| | 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 |

JX1



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

JX1



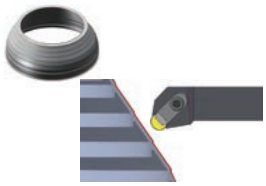
Whisker Ceramic



## 3 Works well on wide range of High Temperature Alloys

**Turbine case (718Plus semi finish)**

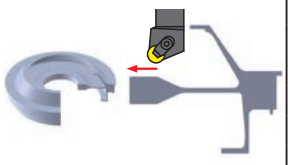
| | Comp. coated whisker | JX1 |
|---|---|---|
| Shape | RNG45 | ← |
| Cutting speed (SFM) | 800 | ← |
| Feed (IPR) | .010 | ← |
| Depth of cut (inch) | .020 | ← |
| | WET | ← |



| | | |
|---|---|---|
| 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 | ← |

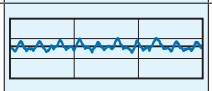
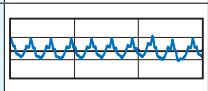
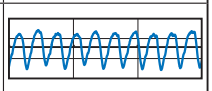


| | | |
|---|---|---|
| NTK : JX1 | 4 pass |  |
| Competitor's whisker ceramic | 1 pass |  |

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 .

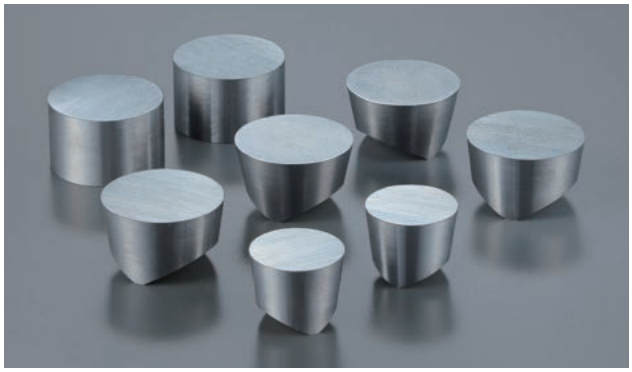
## 4 Superior surface finish

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

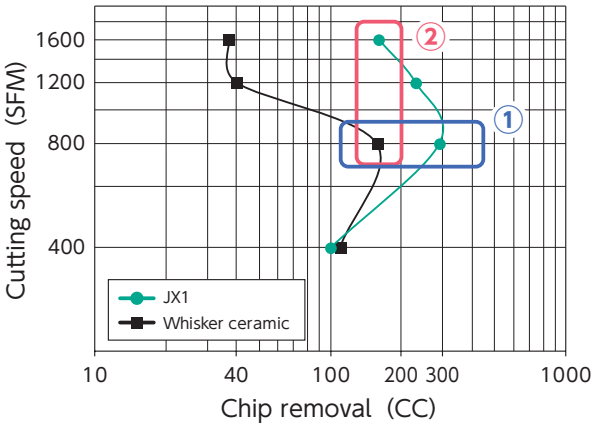
## New Composite Material for Super Alloy Machining



### Features

Patents Pending

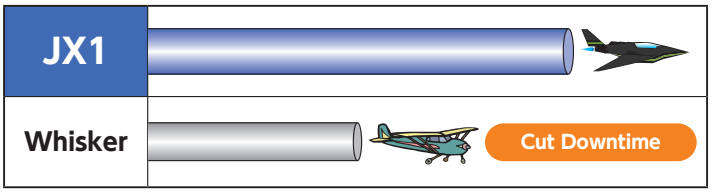
- *Significantly extended tool life compared to whisker ceramics*
- *Double cutting speed potential compared to whisker ceramics*
- *Superior surface finish compared to whisker ceramics*
- *Applicable to powder-metallurgical heat resistant alloys*



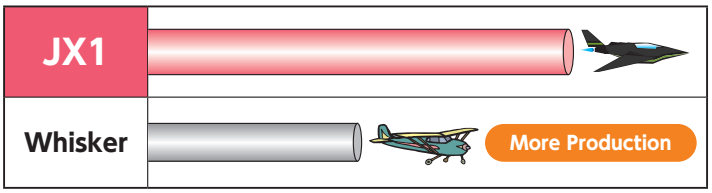



### Increase Productivity vs. Whisker Ceramics

#### ① Significantly extended tool life at same speed



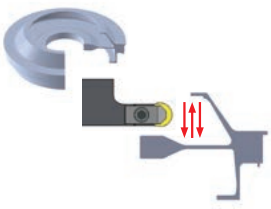

#### ② Double speed capability



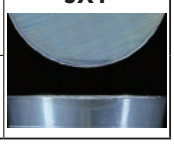

| Grade | Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|---|
| JX1 | Heat Resistant Alloy | Turning | Rough no scale | 600-**1600** | .005-.011 | .040-.100 | | ● |
| | | | Semi finishing | 600-**1600** | .004-.010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

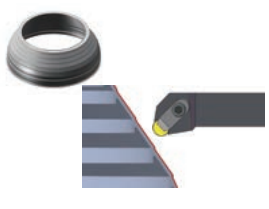


| | | |
|---|---|---|
| NTK : JX1 | 120 cc/min | JX1 |
| Competitor's whisker ceramic | 60 cc/min | |



### Turbine case (718Plus semi finish)

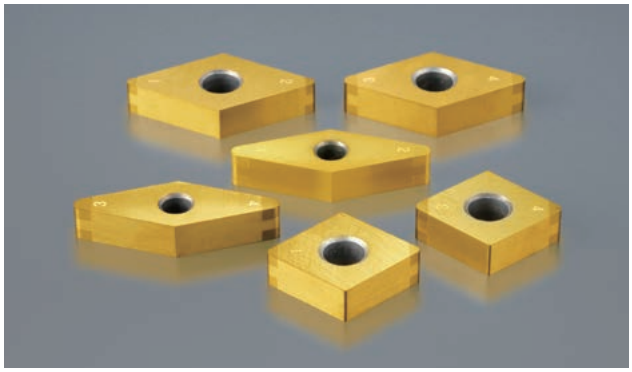
| | Comp. coated whisker | JX1 |
|---|---|---|
| Shape | RNG45 | ← |
| Cutting speed (SFM) | 800 | ← |
| Feed (IPR) | .010 | ← |
| Depth of cut (inch) | .020 | ← |
| | WET | ← |



| | | |
|---|---|---|
| NTK : JX1 | 3 pass |  |
| Competitor's whisker ceramic | 1 pass |  |

# JP2

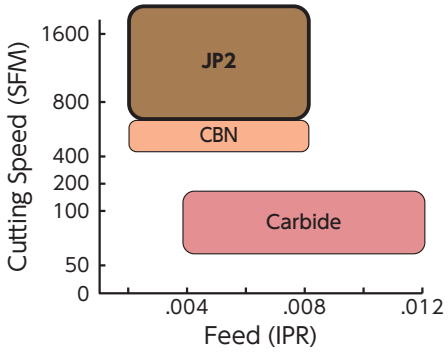
## Ultra High-Speed Finishing of Super Alloys

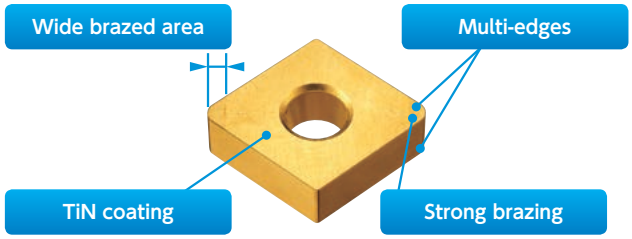


### Features

Patents Pending

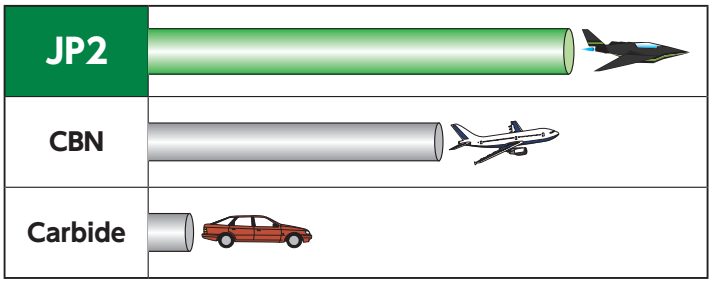
- *High speed finish turning can be performed at 800SFM or higher*
- *Superior wear resistance compared to CBN's*
- *Superior notching resistance vs CBN or carbides*
- *Superior surface finishes vs CBNs and coated carbides*




### Increase Productivity vs. Carbide

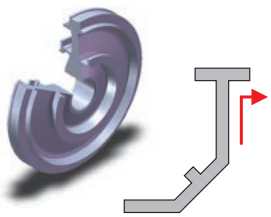
#### ① 10 to 15 times higher speed capability




| Grade | Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|---|
| JP2 | Heat Resistant Alloy | Turning | Finishing | 600-**1700** | .004-.010 | .010-.040 | | ● |

**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 | ← |

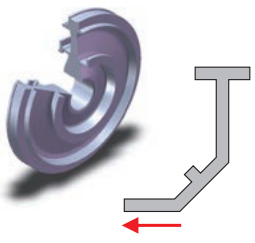


NTK : JP2 — 525 cc/min

Competitor's Coated Carbide — 45 cc/min

**Disc (Inco718 Semi-finishing / Finishing)**

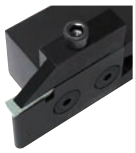
| | Competitor's Coated Carbide | JP2 |
|---|---|---|
| Shape | CNGP432 | CNGA432 |
| Cutting speed (SFM) | 150 | 600 |
| Feed (IPR) | .0035 | ← |
| Depth of cut (inch) | .015+.005 | ← |
| | WET | ← |
| Tool life | 1pc | 4pcs |



NTK : JP2 — 4 pcs with 4 times higher productivity

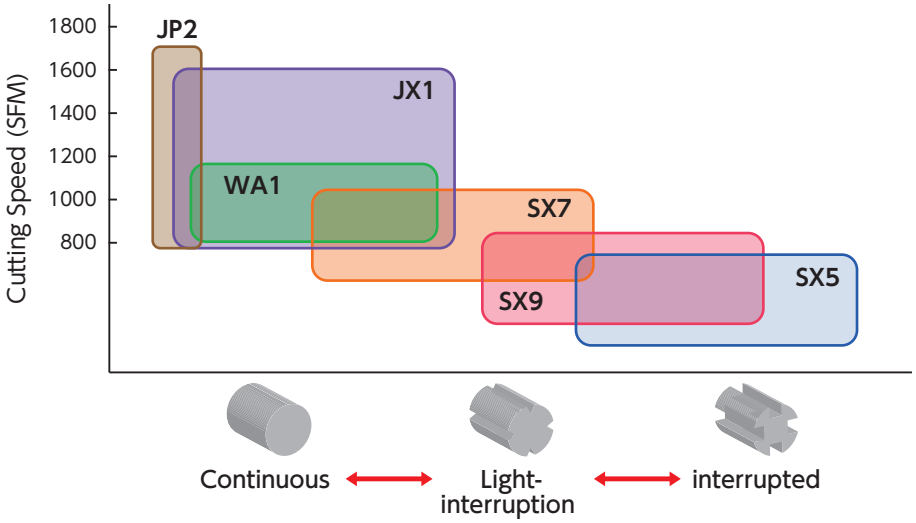
Competitor's Coated Carbide — 1 pc

## Insert Grade

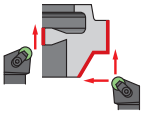
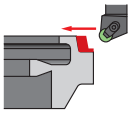
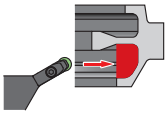
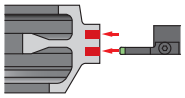
| Category | Grade | Applications | Scale | No scale | Profiling | Finishing | Grooving | Milling |
|---|---|---|---|---|---|---|---|---|
| | | |  |  |  |  |  |  |
| BIDEMICS | JX1 | Special grade with higher speed and longer tool life potential | | ● | ● | | | |
| | JP2 | Special grade for finish turning | | | | ● | | |
| 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

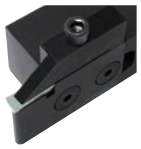
## Grade Map



## Applications

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

## Applications

| Application | Grade | Work material | Cutting speed (600 800 1000 1200 1400 1600) | Feed (.004 .008 .012 .016 .020) | Depth of cut (.020 .040 .060 .080 .100) | Coolant |
|---|---|---|---|---|---|---|
| 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 | .007 (.004-.010) IPR | .030 (.010-.040)" | 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 (1500 2000 2500 3000 3500 4000) | Feed (.002 .003 .004 .005 .006) | Depth of cut (.020 .040 .060 .080 .100) | Coolant |
|---|---|---|---|---|---|---|
| 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)" | |

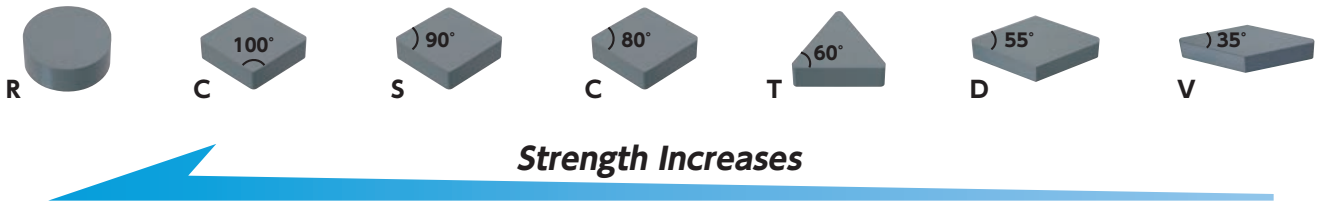
Guidelines For Success

## Keys to successful machining of Heat Resistant Alloys

- NTK's BIDEMICS and ceramics delivers extremely high productivity to heat resistant alloy machining
- BIDEMICS offer excellent flank wear resistance and SiAlON ceramics provide exceptional notch wear resistance
- BIDEMICS enables 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

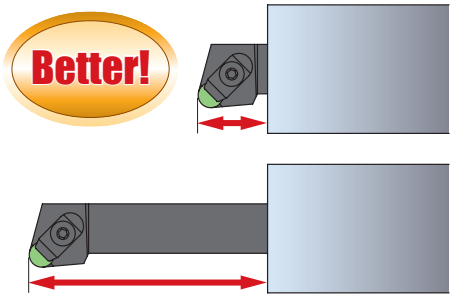



## Use largest nose radius

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

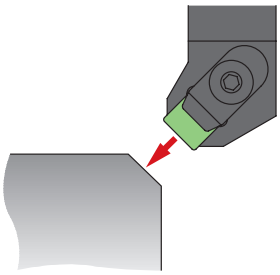
## Minimize overhang

Too much overhang may cause chatter or insert breakage




## Pre-chamfering

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



## No dwelling

Inserts wear out when rubbing the part instead of cutting

## Coolant

When turning with 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

### Insert Breakage



- Cutting Condition → 1 ➡D10
- Programming at Scale → 2 ➡D11
- Insert Grade → Choose tougher grade
- Insert Shape → 6 ➡D13
- Edge Preparation → 7 ➡D13

### Notching



- Cutting Condition → 1 ➡D10
- Depth of Cut → 3 ➡D11
- Lead Angle → 4 ➡D11
- Programming → 5 ➡D12
- Insert Grade → Choose SiAlON ceramic

### Flank Wear



- Cutting Condition → 1 ➡D10
- Insert Grade → Choose harder grade

### Flaking



- Cutting Condition → 1 ➡D10
- Programming → 5 ➡D12
- Edge Preparation → 7 ➡D13

### Heat

- Cutting Condition → 1 ➡D10
- Insert Shape → 6 ➡D13
- Edge Preparation → 7 ➡D13

### Chatter

- Cutting Condition → 1 ➡D10
- Others → 1 ➡D13

- Grooving information → ➡ H3

## 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

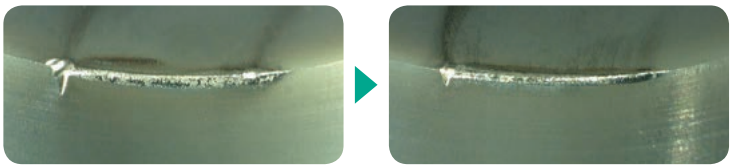
### Test Results

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



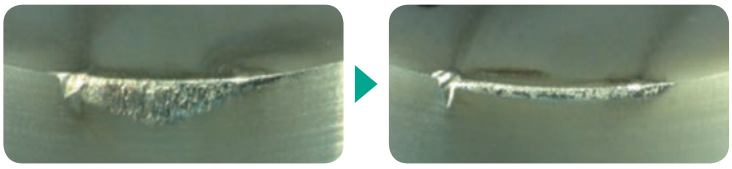
500 SFM → **1800 SFM**

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



.008 IPR → **.016 IPR**

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

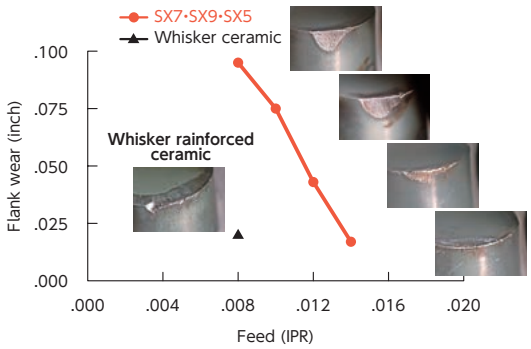


1300 SFM → **500 SFM**

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

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

Feed rate increased decreases wear amount of SiAlON




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

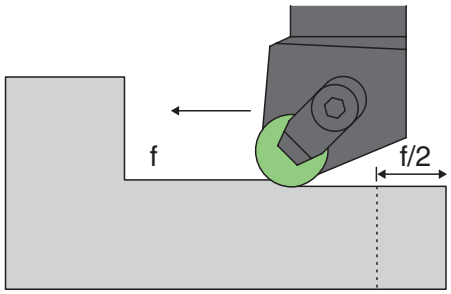
Note : Be careful to reduce the feed rate by 25%, when going into a corner.

# Troubleshooting (continued)

## 2 Scale machining

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

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



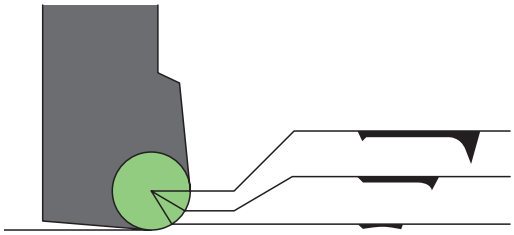

## 3 Depth of Cut

**Depth of Cut Notching**

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

**Depth of Cut**

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



### Recommended Depth of Cut Range (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

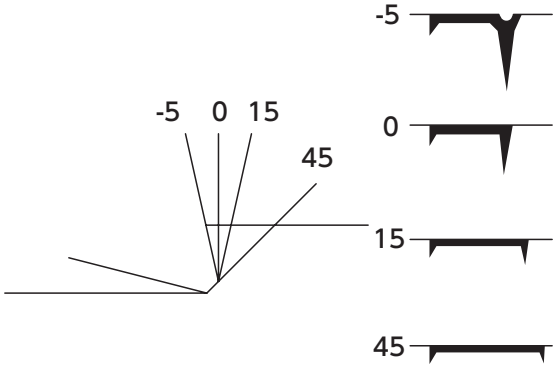
**Lead Angles**

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**

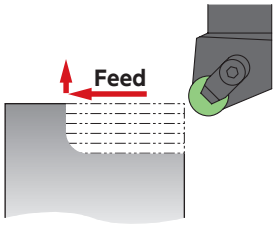


# Troubleshooting (continued)

## 5 Programming

### ● Rough

**Same Depth of Cut**

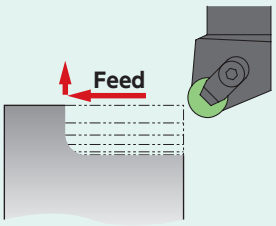


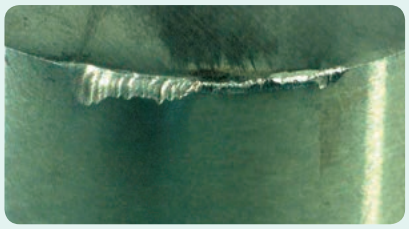



Note)
Notch wear on the insert cutting edge as shown in is the result of multiple passes being taken at the same depth of cut. This type of wear will minimize tool life. The following programming examples will help to minimize this mode of failure.

change to

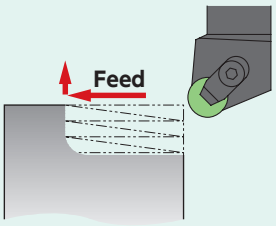
**Varying Depth of Cut**



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.

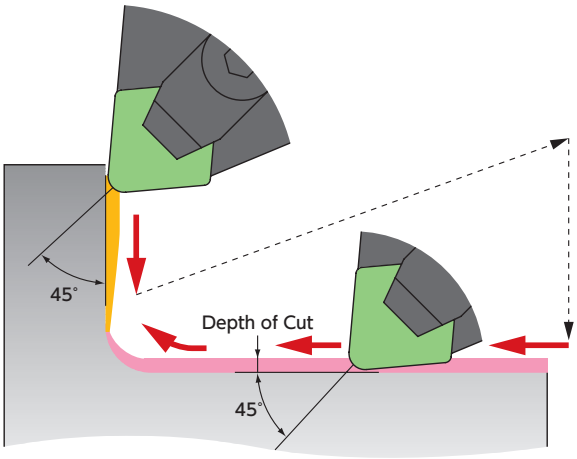
**Ramping**






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




・$\alpha = 45°$

| 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 frow both directions.

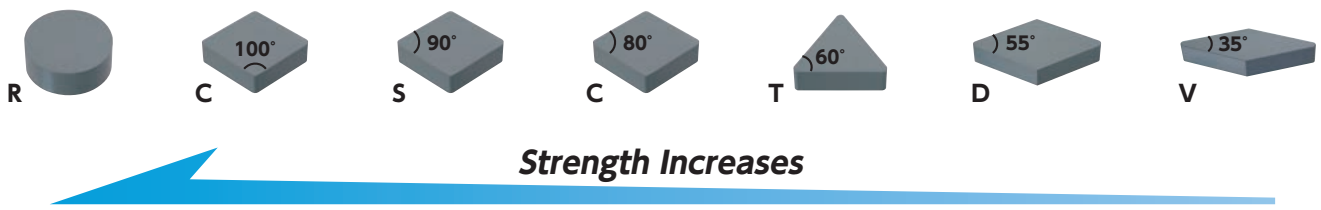
***Depth of Cut***



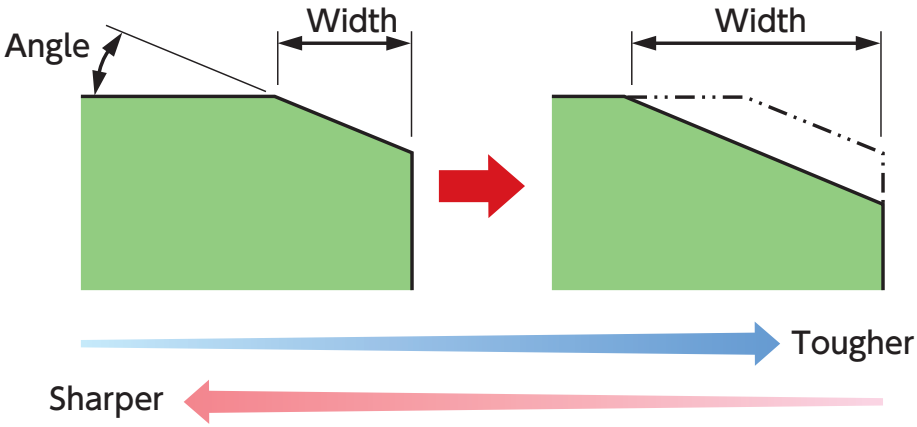

***Better***

## 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

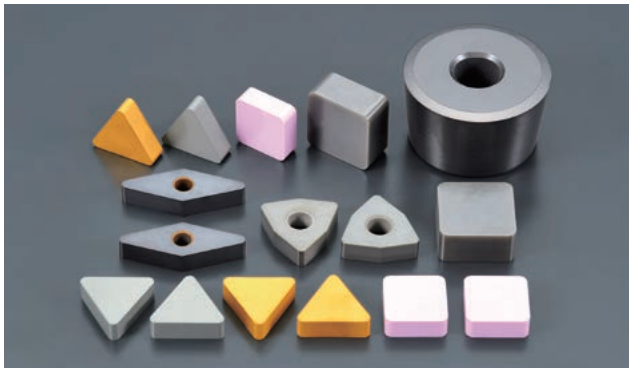
# D



## Ceramics


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

# Ceramics



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.



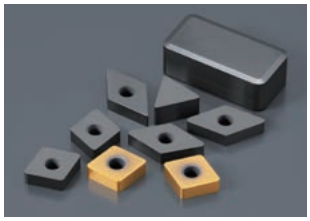
● ***Alumina-based ceramics (White ceramics)***

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***

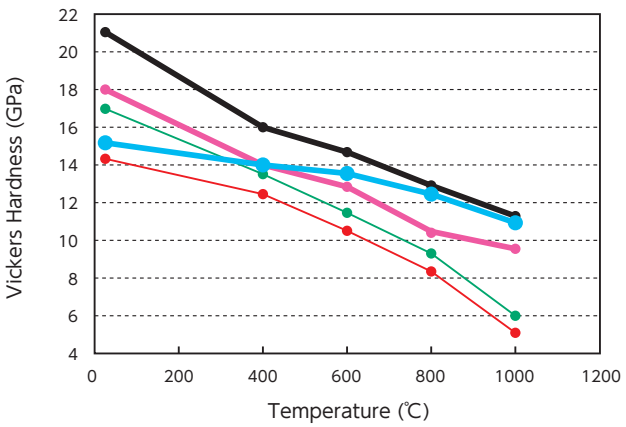
For **Heat Resistant Alloys**
**Gray Cast Iron**
**Hardened Materials**
**Mill Rolls**

## Advantages of ceramic cutting tool (1)

*The material retains high hardness even at increased temperatures !!*

**Excellent wear resistance at high cutting speed**

【 Hardness at high temperature by tool material 】

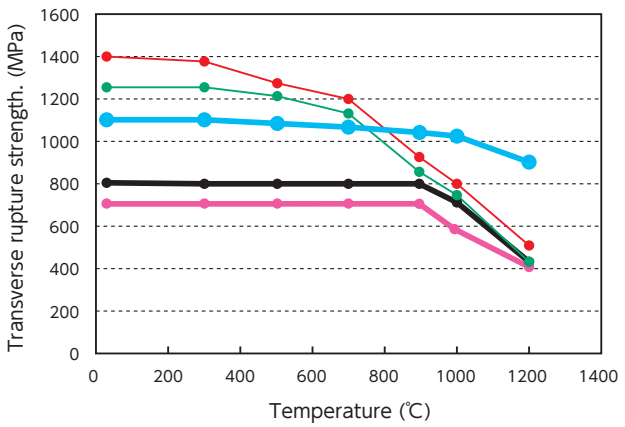


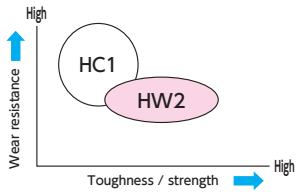
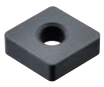
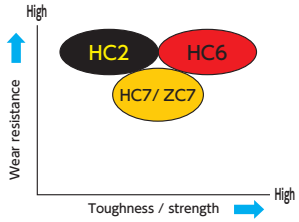
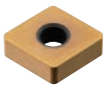
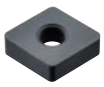
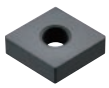
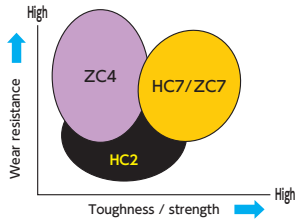
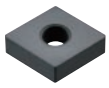
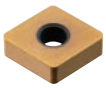
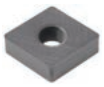
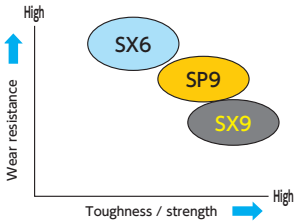
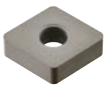
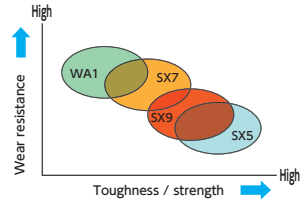
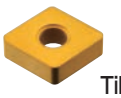
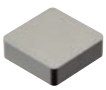

## Advantages of ceramic cutting tools (2)

*Low impact on bending strength even under high temperature*

**Stable machining is possible in the high speed range**

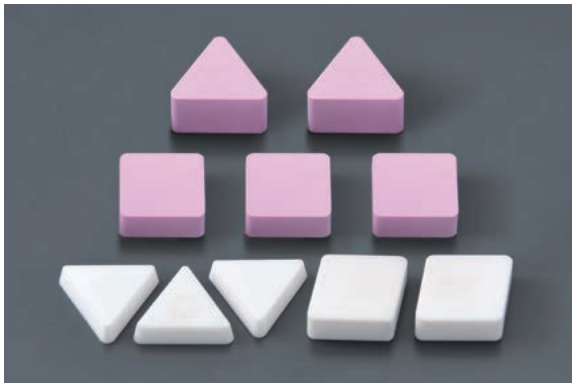
【 Breaking strength at high temperature by tool material 】



| | Grade / Coating | Applications / Features | Physical properties* | | | | | | Application map |
|---|---|---|---|---|---|---|---|---|---|
| | | | Density g/cm³ | 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**  $Al_2O_3$ | K<br>Semi-finish / Finish<br>Best wear resistance | 4.0 | 94.0 | 700 | 400 | 7.8 | 17 | [Gray cast iron, Finish, DRY, White ceramics]   |
| | **HW2**  $Al_2O_3$ | K<br>Rough / Semi-finish / Finish<br>Outstanding fracture toughness | 4.1 | 94.0 | 750 | 390 | 7.8 | 19 | |
| Black ceramics Alumina + TiC-based ceramics | **HC2**  $Al_2O_3$+TiC | K H<br>Semi-finish / Finish<br>General black ceramic | 4.3 | 94.5 | 800 | 420 | 7.9 | 21 | [Gray cast iron, Finish, WET, Black ceramics]   |
| | **ZC4**  $Al_2O_3$+TiC | K H<br>Semi-finish / Finish<br>Competitive vs CBN | 4.6 | 95.5 | 1,000 | 420 | 7.8 | 25 | |
| | **HC5**  $Al_2O_3$+TiC | K<br>Semi-finish / Finish<br>Stable performance for Mill Rolls | 4.3 | 95.0 | 900 | 420 | 7.8 | 25 | |
| | **HC6**  $TiC+Al_2O_3$ | K<br>Semi-finish / Finish<br>Excellent performance for Ductile | 4.7 | 94.0 | 800 | 450 | 7.6 | 29 | [Machining of hardened materials]   |
| | **HC7**  $Al_2O_3$+TiC | K H<br>Semi-finish / Finish<br>Stable performance for Mill Rolls | 4.6 | 95.0 | 1,100 | 420 | 7.9 | 23 | |
| | **ZC7**  $Al_2O_3$+TiC TiN coat | K H<br>Semi-finish / Finish<br>Excellent wear resistance in wide hardness range | 4.6 | 95.0 | 1,100 | 420 | 7.9 | 23 | |
| | **SX5**  SiAlON | K S<br>Rough / Semi-finish<br>Excellent toughness | 3.6 | 92.5 | 1,100 | 350 | 4.0 | 18 | [Machining of Gray cast iron / Rough]   |
| | **SX6**  $Si_3N_4$ | K<br>Rough<br>1st choice for Cast Iron machining | 3.2 | 93.5 | 1,200 | 320 | 3.0 | 50 | |
| | **SX7**  SiAlON | K S<br>Rough / Semi-finish<br>Can replace whisker ceramic | 3.3 | 93.5 | 900 | 290 | 3.4 | 11 | |
| | **SX9**  SiAlON | K S<br>Rough / Semi-finish<br>Excellent combination of toughness and heat resistance | 3.3 | 93.5 | 1,200 | 330 | 3.0 | 15 | [Machining of Inco 718]   |
| | **SP9**  $Si_3N_4$ TiN+$Al_2O_3$ coat | K<br>Rough / Semi-finish / Finish<br>Low tool pressure increased toughness Decreased tool pressure | 3.3 | 93.5 | 1,200 | 330 | 3.0 | 15 | |
| Whisker - reinforced ceramics | **WA1**  $Al_2O_3$+SiC | K H S<br>Semi-finish / Finish<br>Superior flank wear resistance with toughness | 3.7 | 94.5 | 1,200 | 400 | 7.6 | 35 | |

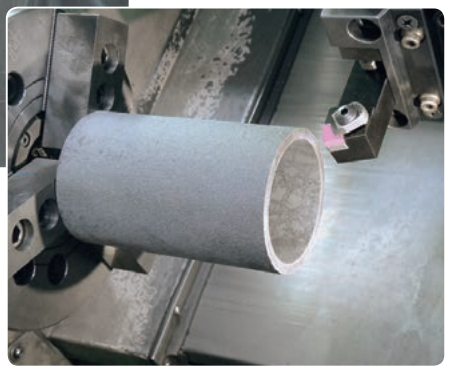
*For coated grades, the values of the substrate material are indicated.

## Alumina-based ceramics (White ceramics)

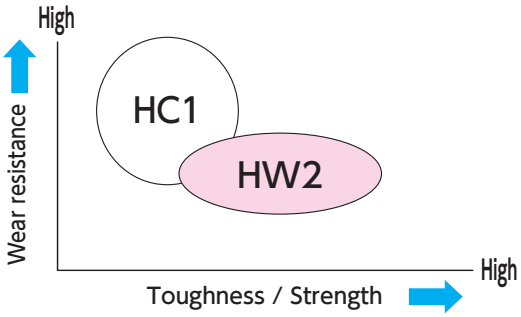


Characterized by high oxidation resistance and adhesion resistance. This ceramic utilizes alumina that is thermally and chemically stable. This ceramic is best suited for high-speed cutting applications where cutting temperature tends to be high with no coolant.





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






# HC1

**Ideal grade for high-speed finishing of cast iron !**



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

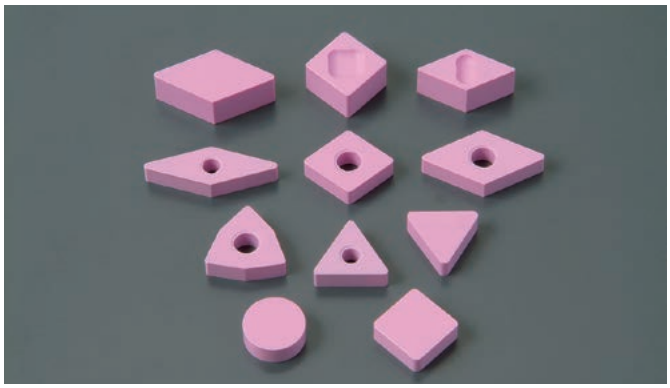
### Features

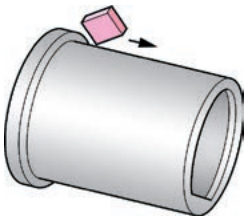
- *Best wear resistance*
- *Stable machining performance in many high-speed machining applications*

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

# HW2

## Alumina-based ceramic grade with high toughness !



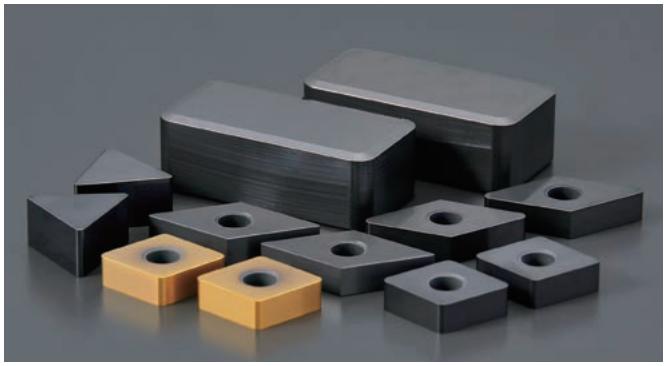
| Cylinder liner | |
|---|---|
| Chilled liner |  |
| 1200 SFM | |
| .012 IPR | |
| .080" DOC | |
| DRY | |
| NTK : **HW2** | 70 pcs |
| Competitor's white ceramic | 30 pcs |

### Features

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

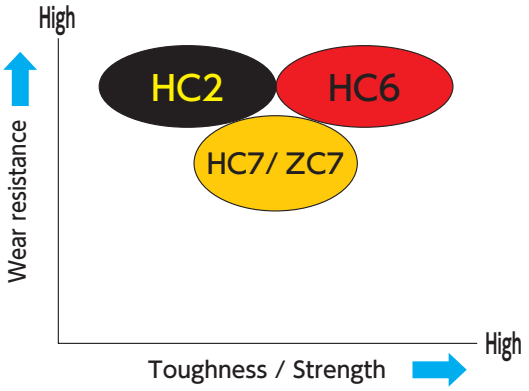
| Grade | Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|---|
| **HW2** | Gray cast iron | Turning | Rough-Finish | 1200–2100 | .004–.016 | .020–.080 | ● | |
| | Cylinder Liners | Turning | Rough-Finish | 600–1800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

## Alumina TiC-based ceramics (Black ceramics)

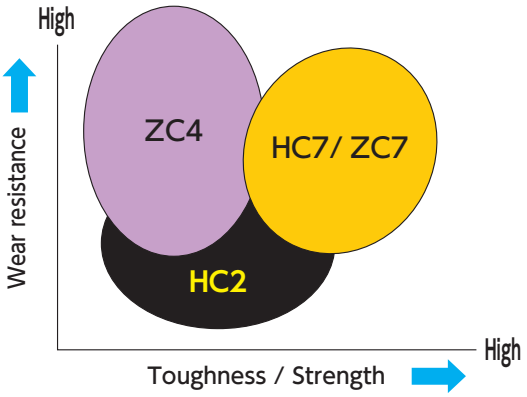


Alumina TiC-based ceramics are strengthened by adding hard carbide to highly pure alumina. This process results in ceramic materials that shows excellent performance in either wet or dry cutting conditions. As an added benefit, hardness and toughness has been improved which enables the machining of partially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

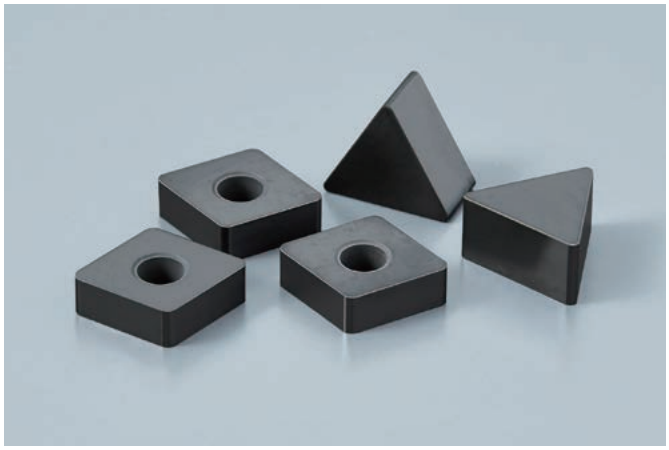
【Gray cast iron, Finishing, WET, Black ceramic】




【Machining of hardened materials】




## 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 |

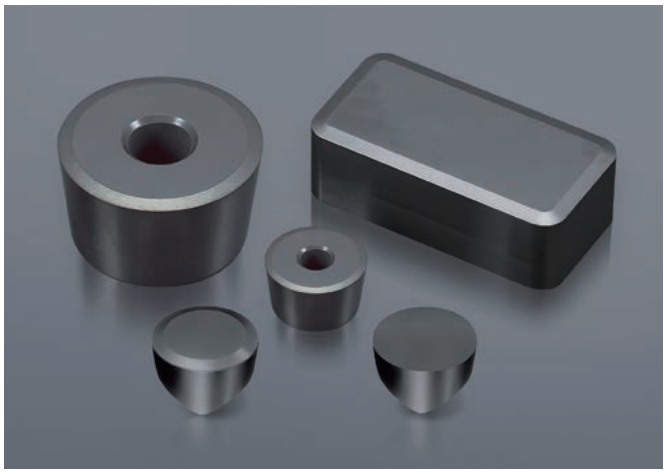
### Features

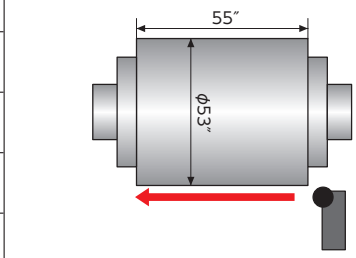
- *Well-balanced content of aluminum oxide and titanium carbide ($Al_2O_3$+TiC) sintered under pressure*
- *Stable performance under a wide range of machining conditions*
- *General purpose ceramic which works well in a wide range of cutting applications*

| 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 |

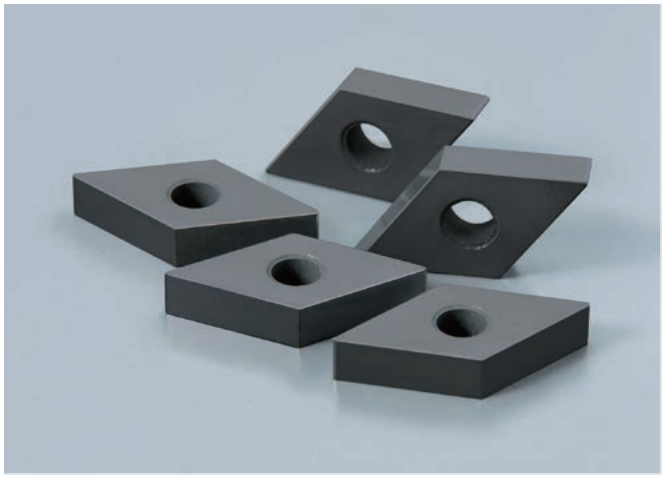
### Features

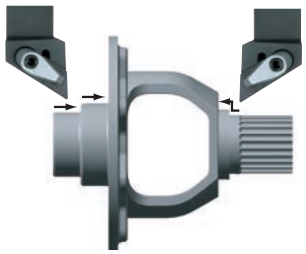
- *Developed for use in hard turning applications for mill rolls*
- *Excellent toughness combined with wear resistance*

| 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

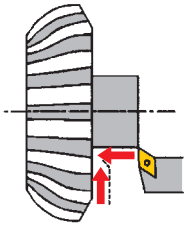
- *Designed specifically for finish turning of ductile / nodular cast irons*
- *TiC-based ceramic with improved wear resistance at high cutting speed*

| 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 |

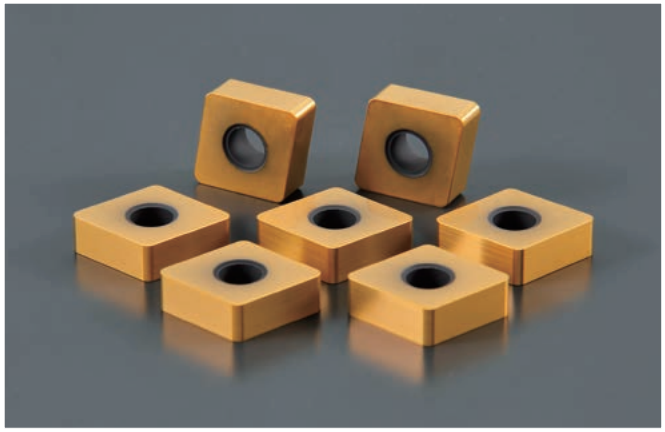
### Features

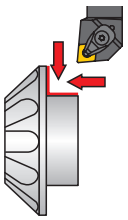
- *TiN-coated premium ceramic grade with the finest grain size of all the NTK ceramic grades*
- *Best for hard turning applications from (HRC 55 - 70)*
- *The gold coating makes edge wear easily detectable*

| 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 !



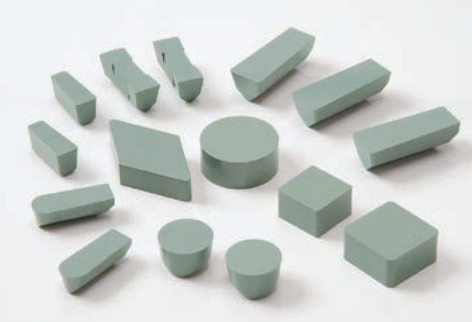
| Gear | |
|---|---|
| Carburized and hardened steel |   HRC58-62 |
| 300 SFM | |
| .005 IPR | |
| .006" DOC | |
| WET | |
| NTK : **ZC7** | 80 pcs |
| Competitor's CBN | 80 pcs |

### 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 | ● | |

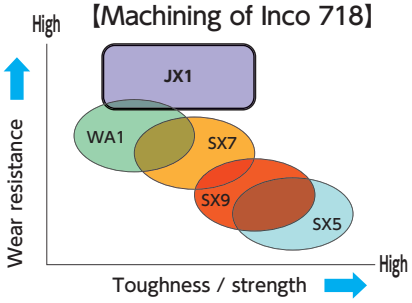
## Whisker-reinforced ceramics



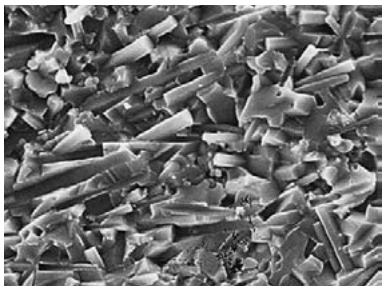
WA1 ceramic grade has a unique combination of superior wear resistance, toughness and flaking resistance as a result of adding SiC whiskers to Alumina. WA1 is primarily used in machining continuous cuts of aerospace alloys because of its productivity and reliability characteristics. WA1 can also be used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

【Heat-resistant alloy】

【Machining of Inco 718】

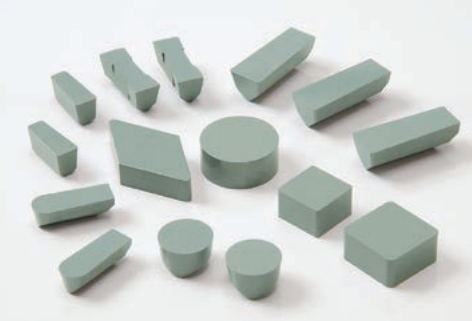



【WA1 structure】





# 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

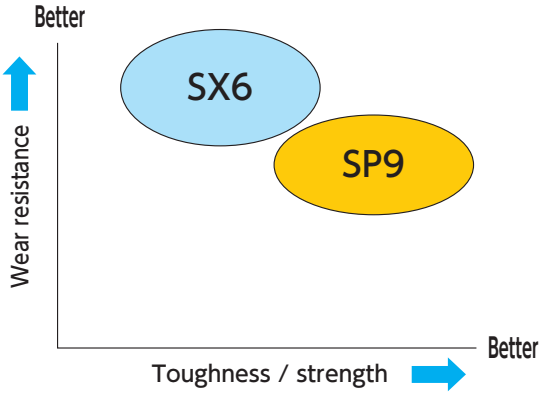
| Grade | Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|---|
| WA1 | Heat resistant alloy | Turning | Rough no scale | 600-1000 | .005-.010 | .040-.100 | | ● |
| | | | Semi finish Profiling | 600-1100 | .004-.010 | .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.

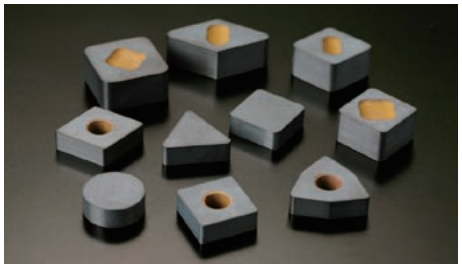
【Gray cast iron, Roughing】








# SX6 Premium Silicon Nitride

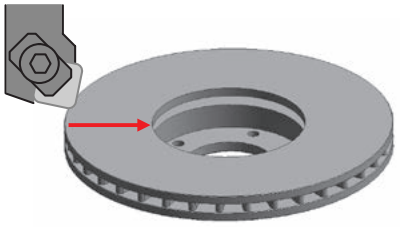


### Features

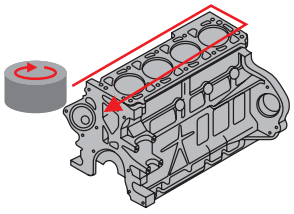
- *Excellent wear resistance in applications where notch wear appears*
- *Stable tool life in the applications where thermal shock resistance is required : such as WET machining or milling*
- *Long tool life and high productivity at high cutting speed*

| 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 !

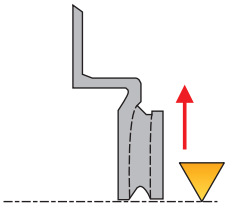


### Features

- *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*

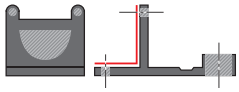
| Grade | Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR / IPT) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|---|
| SP9 | Gray cast iron | Turning | Rough–Finish | 1200–2700 | .012–.024 | –.140 | ● | ○ |
| | | Milling | Rough–Semi finish | 1200–2500 | .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 |

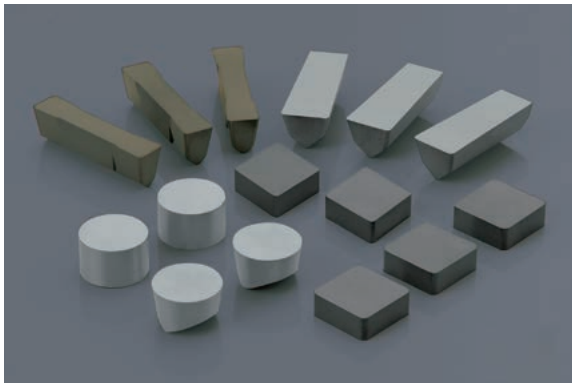
**Mount bracket**

| | Comp. carbide | SP9 |
|---|---|---|
| Cutter | 7 tooth | 10 tooth |
| Cutting speed (SFM) | 490 | 1820 |
| Feed (IPT) | .008 | .005 |
| Depth of cut (inch) | .080+.080 | ← |
| | DRY | ← |



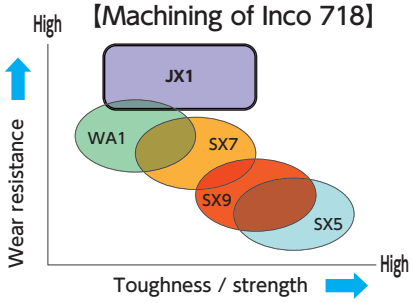
| | |
|---|---|
| NTK : **SP9** | 390 pcs with 3.6times higher productivity |
| Competitor's carbide | 180 pcs |

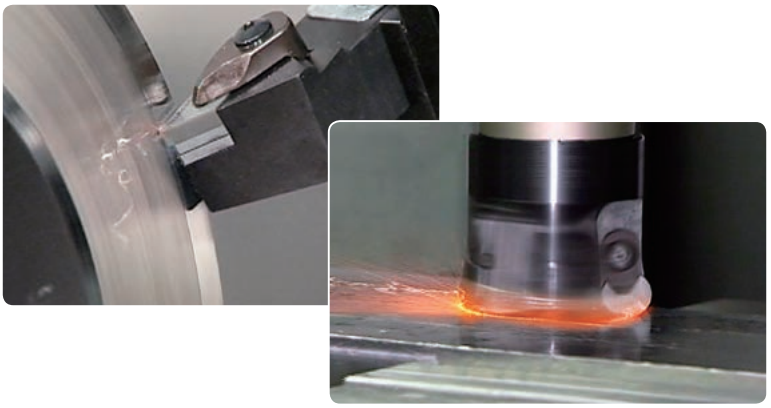
## SiAlON Ceramics



- 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.

【Machining of Inco 718】

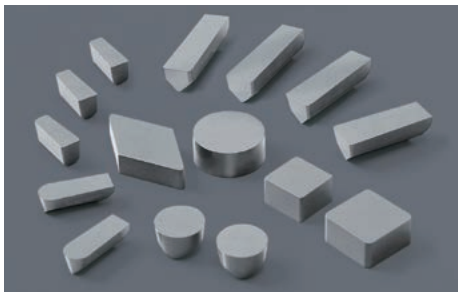




# SX7

## 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)

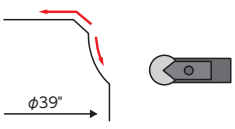
| | Comp. carbide | Comp. whisker | SX7 |
|---|---|---|---|
| Shape | VNGA333 | ← | ← |
| Cutting speed (SFM) | 160 | 650 | 800 |
| Feed (IPR) | .0078 | ← | ← |
| Depth of cut (inch) | .020 | ← | ← |
| | WET | ← | ← |
| Tool life | 1 pass | ← | ← |




| | |
|---|---|
| NTK : SX7 | 7 min /pc |
| Competitor's whisker ceramic | 15 min /pc |
| Competitor's carbide | 24 min /pc |

### Turbine case (Waspaloy semi finish)

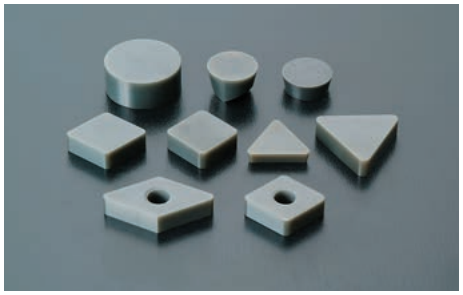
| |
|---|
| RPGX45 |
| 800 SFM |
| .012 IPR |
| Various DOC |
| WET |




| | |
|---|---|
| NTK : SX7 | 7.2 min |
| Competitor's whisker ceramic | 5.3 min * Broken |

# SX9

## Best grade for roughing Inco 718 with scale !



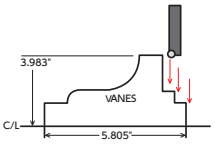
### Features

- *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 | ← |

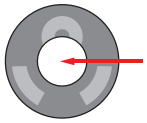



NTK : SX9 — * High productivity

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 | ← |

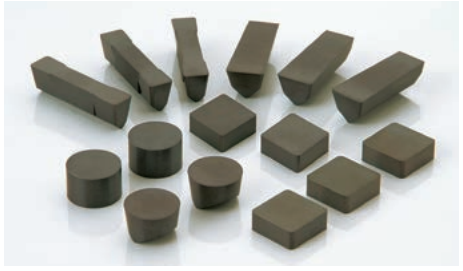


NTK : SX9 — 10 pass with high productivity

Competitor's whisker ceramic — 5 pass

# SX5

## Best grade for roughing Waspaloy with scale !



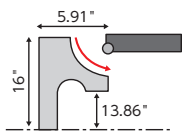
### Features

- *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 | ← |

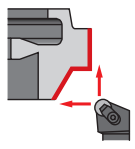



NTK : SX5 — 1 pass with 2.5times higher productivity

Competitor's whisker ceramic — 1 pass

**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

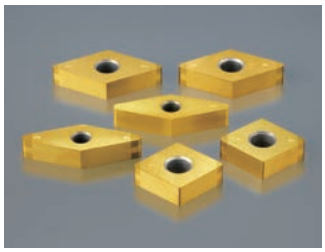


## BIDEMICS (Brazed) / CBN / PCD

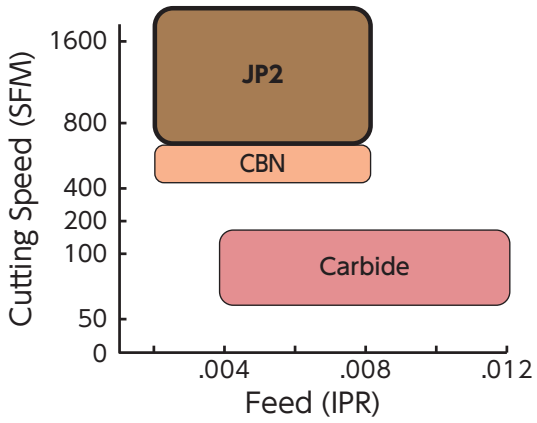

- BIDEMICS ..... D31
- CBN (EZ CUBE) ..... D32
- PCD ..... D34

# BIDEMICS (Brazed) / CBN / PCD

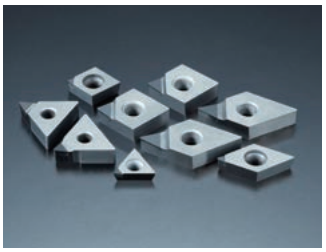
## BIDEMICS



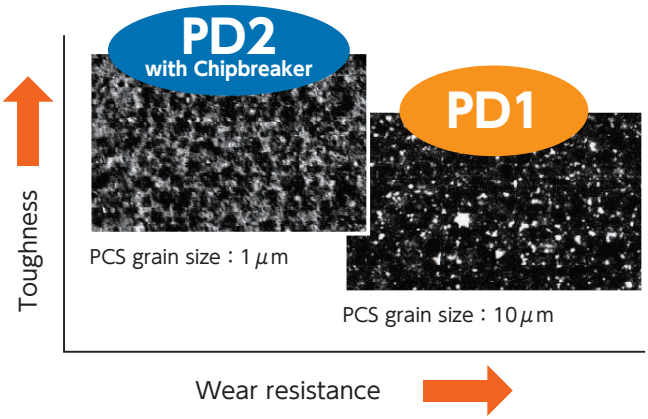
●*High Temperature Alloy*



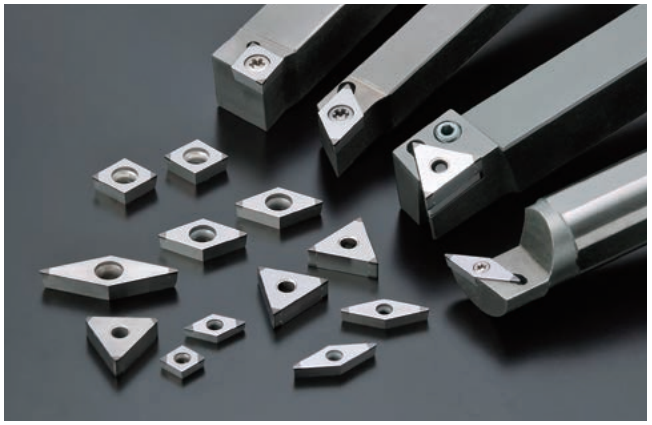

## PCD



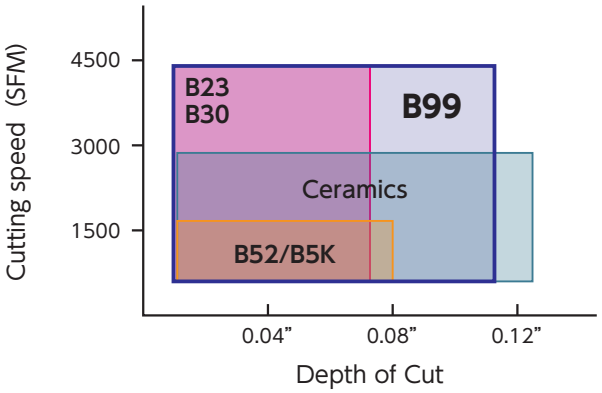
●*Non-ferrous material*



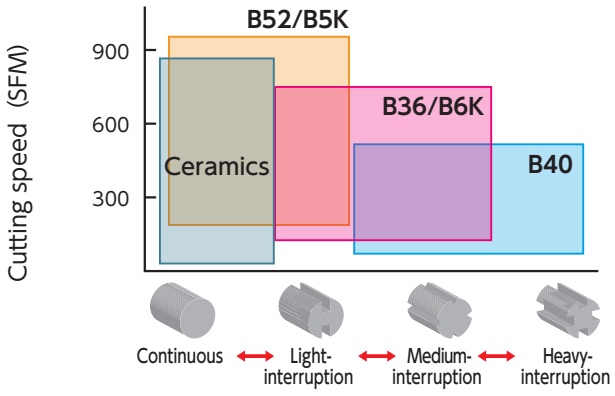

## CBN Series



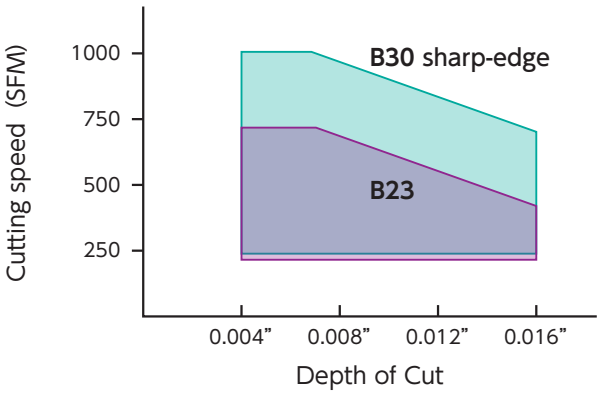
### Gray / Ductile Cast Iron Applications



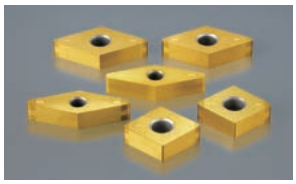

### Hardened Material Applications




### Sintered Alloy Applications



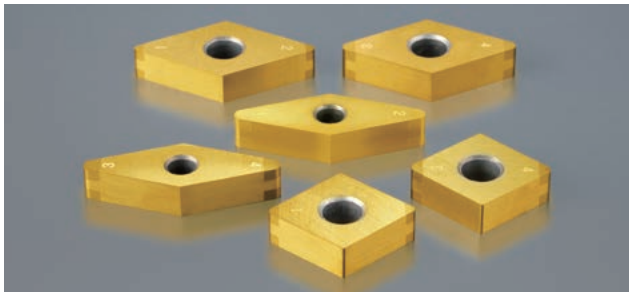
## BIDEMICS

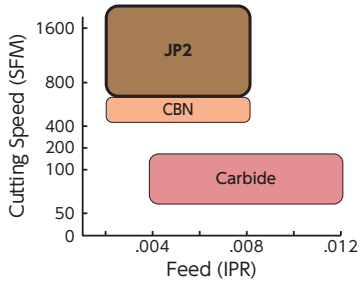


JP2 combines the unique cutting tool properties of NTK BIDEMICS with the ability to be brazed. This maximizes geometry flexibility and economy.

# JP2

## Ultra High-Speed Finishing of Super Alloys

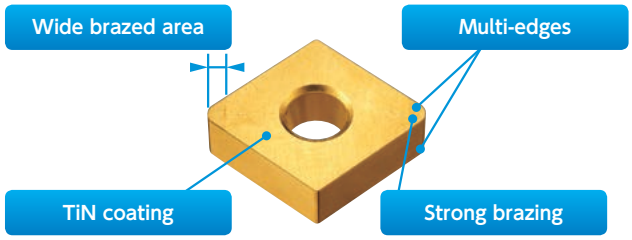





### Features

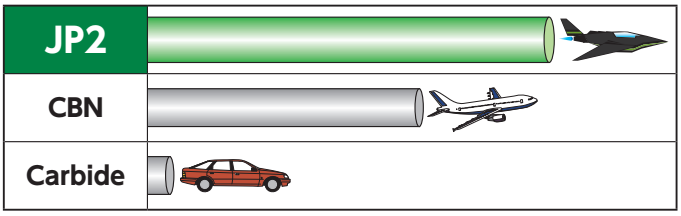
Patents Pending

- *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*



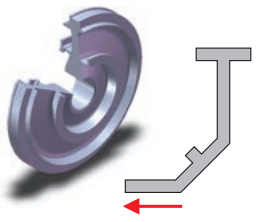

### Increase Productivity vs. Carbide

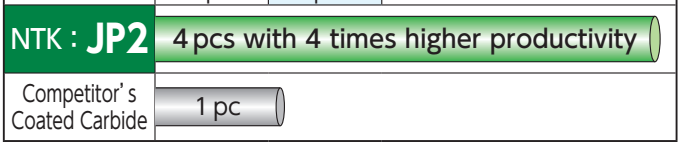
- **10 to 15 times higher speed capability**



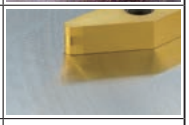
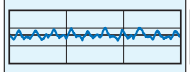
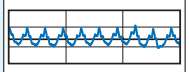
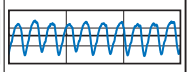

**Disc (Inco718 Semi-finishing / Finishing)**

| | 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 |






### Superior Surface Finish

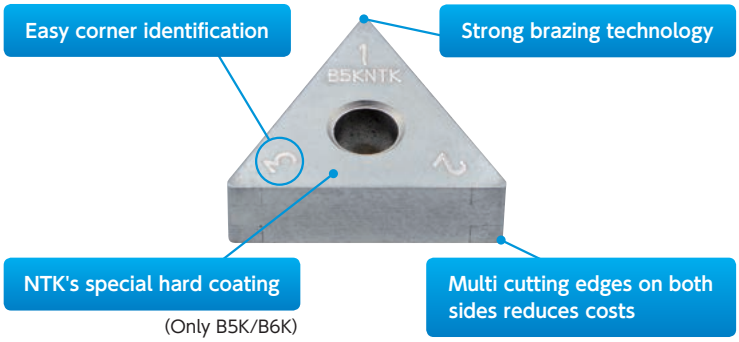
| | | JP2 | CBN | Carbide |
|---|---|---|---|---|
| | |  |  |  |
| Machined surface | |  |  |  |
| Roughness | |  |  |  |
| | Ra | 0.64 μm | 1.18 μm | 2.75 μm |
| | Rz | 3.36 μm | 5.56 μm | 9.64 μm |
| Cutting speed | | 800 SFM | ← | 120 SFM |
| Feed rate | | .006 IPR | ← | ← |
| Cycle time | | 3.3 min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

| Grade | Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|---|
| JP2 | Heat Resistant Alloy | Turning | Finishing | 600-**1700** | .004-.010 | .010-.040 | | ● |

# 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<br>Semi finish | 2000–3500 | .006–.020 | .020–.140 | ● | ● |
| Mill Rolls | Turning | Rough<br>Semi finish | 100–200 | .004–.012 | .010 | ● | |

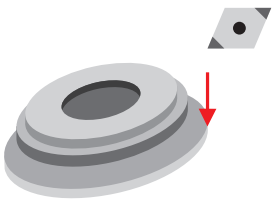
## B23

### 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<br>Semi finish | 1300–4500 | .004–.020 | .008–.080 | ○ | ● |
| Sintered alloy | Turning | Rough–<br>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 |

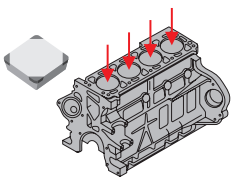
# B30

## 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 |

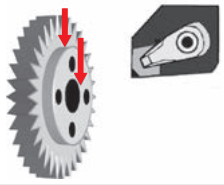
# B6K / B36

## 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 |

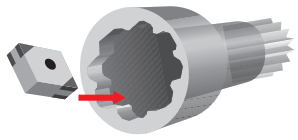
# B40

## 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 |

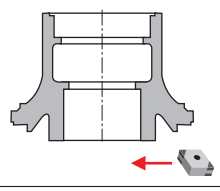
# B5K / B52

## 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***

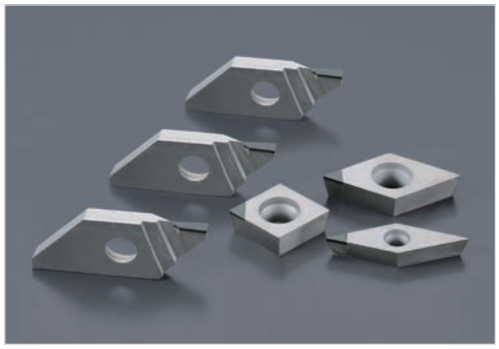
【Recommended cutting conditions】

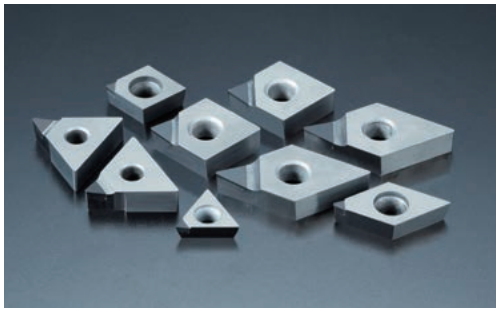
| Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|
| Ductile cast iron | Turning | Finish | 300–1600 | .004–.016 | .012–.080 | ○ | ● |
| Hardened material | Turning (Continuous / Light interruption) | Rough–Finish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

# BIDEMICS (Brazed) / CBN / PCD

## 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】

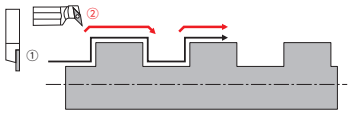
| Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR/IPT) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|
| Aluminum alloy Non-ferrous material | Turning | Rough–Finish | –6500 | –.006 | –.200 | | ● |
| | Milling | Rough–Finish | –25000 | –.008 | –.200 | | ●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

## 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 |

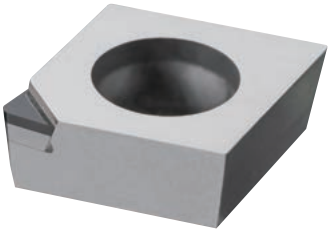



| | |
|---|---|
| ①NTK : **PD1** | 30,000 pcs |
| ②NTK : **PD1** | 30,000 pcs |

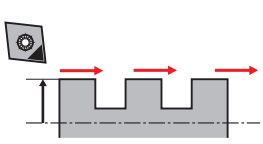
## NEW PD2

### 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*

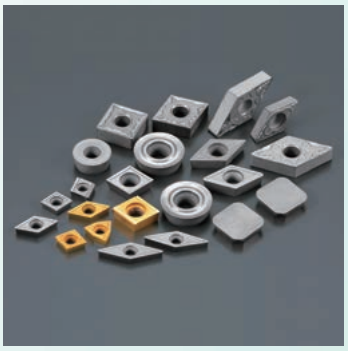


| Spool | |
|---|---|
| A6061 | |
| 560 SFM | |
| .002 IPR | |
| .006 DOC | |



| | |
|---|---|
| NTK : **PD2** | 15,000 pcs |
| Competitor's PCD | 10,000 pcs |

# D

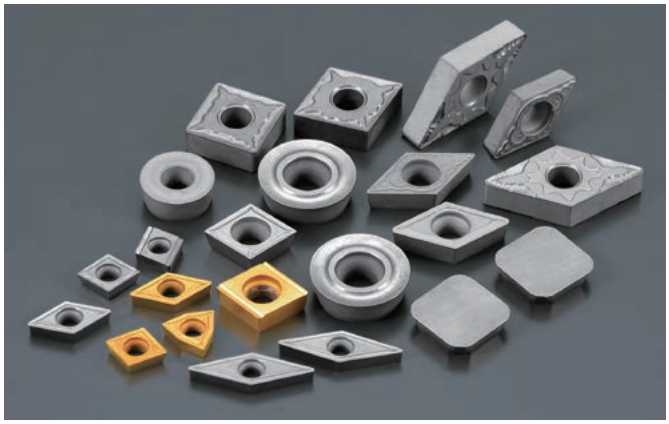


## Cermet / PVD-coated Cermet

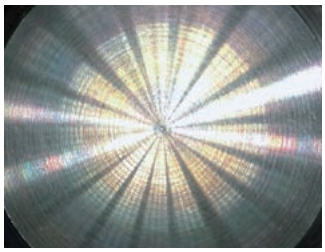

- Overview ····· D36
- Cermet / PVD-coated Cermet D38

# Cermet / PVD-coated Cermet

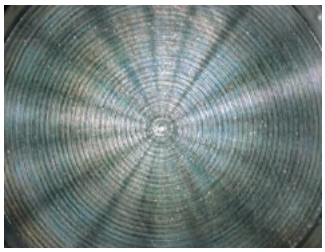
## Cermet series



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.



Surface finished with cermet

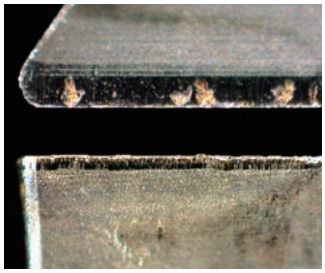


Surface finished with carbide

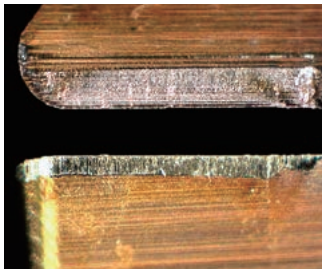
### Features

### 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.



Cermet



Carbide

### High speed cutting

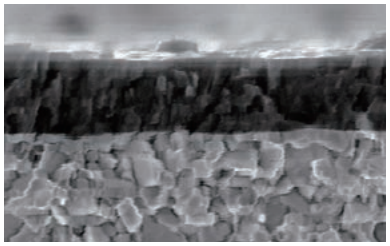
The main components, TiC and TiN, are more resistant to wear and oxidation at high temperature than WC (tungsten carbide), which is the main component of carbide tools. Because of excellent wear and oxidation resistance, cermet grades are less reactive with work materials and make stable high speed machining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

## PVD-coated cermet series



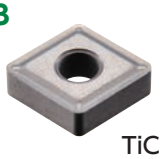
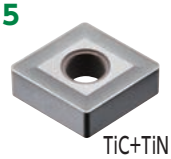
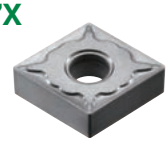


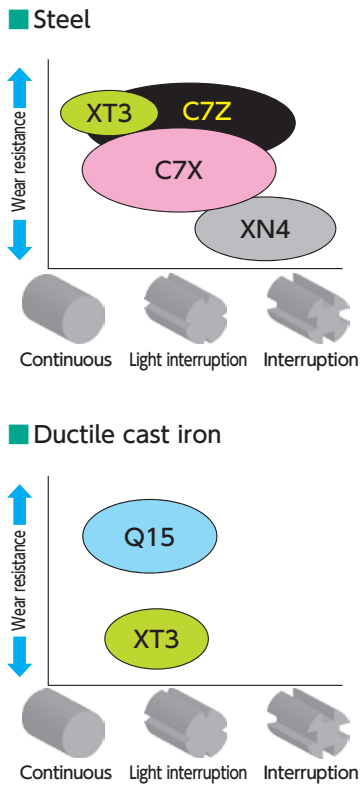
PVD TiN or TiCN coated cermet grades bring improved wear resistance. Since the coating layer does not contain any binder components, the coating maximizes the wear resistance of the titanium which delivers excellent performance and the tool life.




### Features

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

| Grade / Coating | Applications / Features | Physical properties* Density g/cm³ | Hardness HRA | Bending strength MPa | Young's modulus GPa | Thermal expansion coefficient X10⁻⁶/K | Thermal conductivity W/m・K | Applications and ceramic property map |
|---|---|---|---|---|---|---|---|---|
| **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 | |



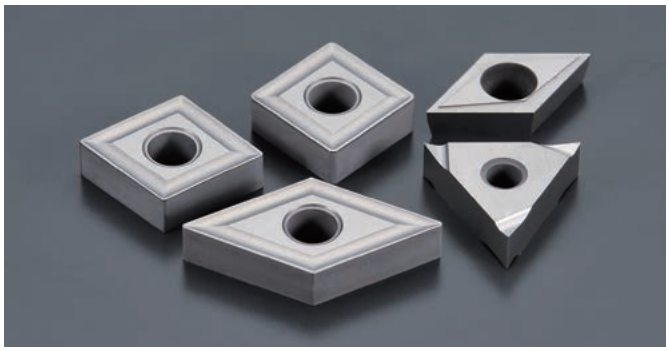

*For coated grades, the values of the base material are indicated.

## Applications

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

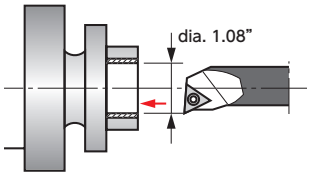
# XT3

## Well balanced combination of wear resistance and toughness !



### Features

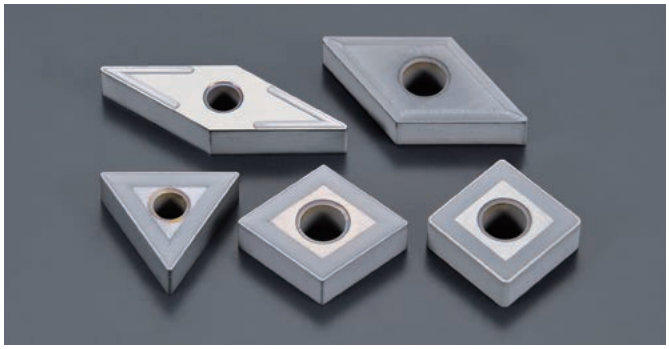
- *Well-balanced combination of wear resistance and toughness*
- *Covers a wide range of steel cutting, from medium cutting to finishing of steel*

| 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 |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron | Conventional lathes | Wear resistance |

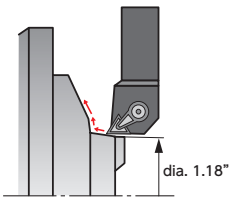
# Q15

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



### Features

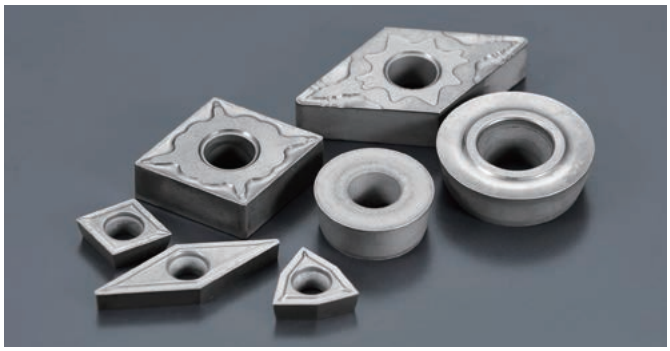
- *Further improved wear resistance and toughness from the TiCN-based coating*
- *The recommended grade for high-speed finishing of ductile cast iron*

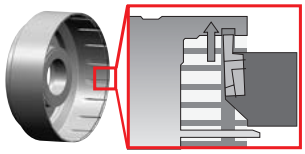
| Differential case | |
|---|---|
| Ductile cast iron |   |
| 525 SFM | |
| .004 IPR | |
| .008" DOC | |
| WET | |
| NTK : **Q15** | 35 pcs |
| Competitor's cermet | 20 pcs |

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron<br>● Ductile cast iron | Conventional lathes | Wear resistance |

# C7X

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



| AT clutch | |
|---|---|
| SS |  |
| 800 SFM | |
| .0008-.0016 IPR | |
| .060" DOC | |
| WET | |
| NTK : **C7X** | 200 pcs |
| Competitor's cermet | 100 pcs |

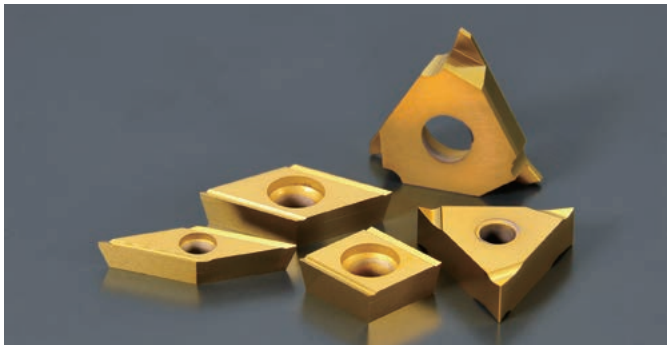
### Features

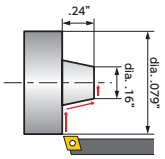
- *Overcomes the traditional weakness of conventional cermet grades with improved thermal shock resistance*
- *Excellent grade for grooving and bearing machining*

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron | Swiss-type lathes<br>Conventional lathes | Balance |

# C7Z

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



| Spring | |
|---|---|
| SS |  |
| 430 SFM | |
| .002 IPR | |
| .012" DOC | |
| WET | |
| NTK : **C7Z** | 1600 pcs |
| Competitor's cermet | 1200 pcs |

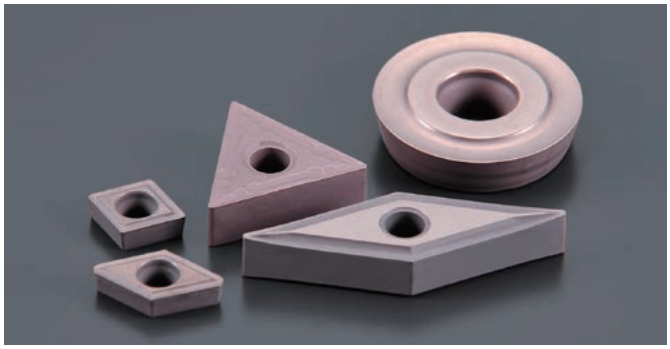
### Features

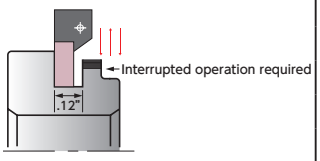
- *Further improvement in wear resistance and thermal shock resistance with a TiN-based coating*
- *Excellent performance in grooving and bearing machining*
- *The most recommended grade for high-speed machining of steel*

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron | Swiss-type lathes<br>Conventional lathes | Balance |

# XN4

## Toughest cermet grade with excellent fracture resistance !



| Gear | |
|---|---|
| 5120H |  |
| 360 SFM | |
| .004 IPR | |
| | |
| WET | |
| NTK : **XN4** | 300 pcs |
| Competitor's cermet | 200 pcs |

### Features

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

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● 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

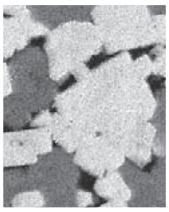
# Micro-grain Carbide and PVD/CVD-coated Carbide



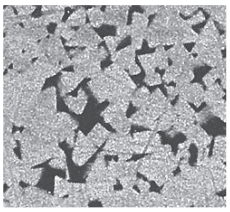
## Excellence in precision machining and machining of hard-to-cut materials

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

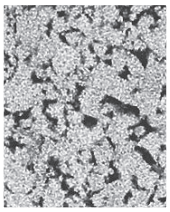
## Carbide grade



General carbide structure



Micro-grain carbide structure

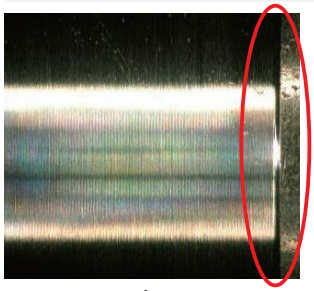


Super micro-grain carbide structure

## The result of intensive reseach and development for improving carbide grades

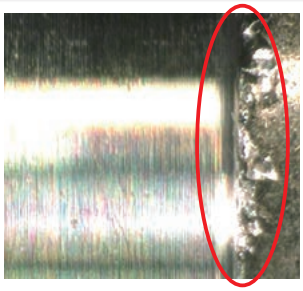
The NTK carbide grade series shows very stable performance under a wide range of conditions. NTK uses micro-grain carbide well balanced between wear resistance and toughness, as substrate.

## Features Superior cutting performance



No burrs

Machined with our insert with a sharp cutting edge



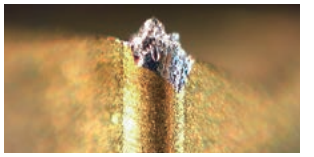
Burrs

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

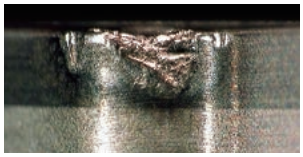
## Relentless pursuit of better cutting performance

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.

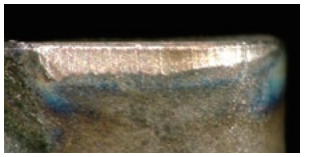
## Features Precise analysis on insert wear patterns



Build-up edge



Chipping / fracture



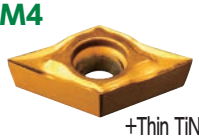
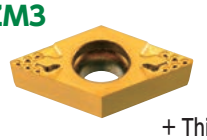
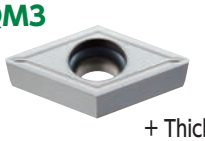
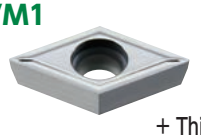
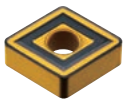
Flank wear



Wear on rake

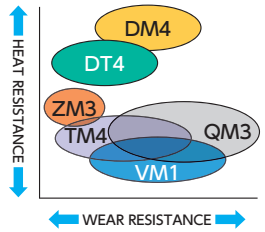
## Continuous research on insert tool life

Damage to insert cutting edges varies depending on the machining process and the work material. There are various types of coatings that reduce such damages 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 likes, by utilizing our state-of-the-art technologies.

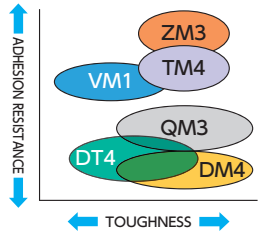
| | Grade / Coating | Applications / Features | Density g/cm³ | Hardness HRA | Bending strength MPa | Young's modulus GPa | Thermal expansion coefficient X10⁻⁶/K | Thermal conductivity W/m・K |
|---|---|---|---|---|---|---|---|---|
| | | | Physical properties* | | | | | |
| PVD coated | **DM4**  Micro-grain carbide + Thick TiN-TiCN-TiAlN coat | P M S H<br>●Best oxidation resistance enable high temperature machining | 14.4 | 91.0 | 3000 | 580 | 5.8 | 63 |
| PVD coated | **DT4**  Micro-grain carbide + Thin TiN-TiCN-TiAlN coat | P M S H<br>●Excellent oxidation resistance for Swiss-type lathes | 14.4 | 91.0 | 3000 | 580 | 5.8 | 63 |
| PVD coated | **TM4**  Micro-grain carbide +Thin TiN-TiCN-TiN coat | P M N S<br>●Best combination of wear resistance and toughness and adhesion resistance for Swiss-type lathes | 14.4 | 91.0 | 3000 | 580 | 5.8 | 63 |
| PVD coated | **ZM3**  Micro-grain carbide + Thick TiN coat | P M N<br>●Best Adhesion resistance enables high accuracy machining | 14.4 | 91.0 | 3000 | 580 | 5.8 | 63 |
| PVD coated | **QM3**  Micro-grain carbide + Thick TiCN coat | P M S H<br>●Best wear resistance enable stable machining | 14.4 | 91.0 | 3000 | 580 | 5.8 | 63 |
| PVD coated | **VM1**  Micro-grain carbide + Thin TiCN coat | P M N<br>●Best edge sharpness and good wear resistance | 14.8 | 92.0 | 2500 | 640 | 5.7 | 84 |
| Uncoated | **KM1**  Micro-grain carbide | P M N<br>●Best for non-ferrous material with mirror finish | 14.8 | 92.0 | 2500 | 640 | 5.7 | 84 |
| CVD coated | **CP1**  Carbide + Thick film $Al_2O_3$-TiCN coat | K<br>●Good balance of wear resistance and toughness for cast iron machining | 14.9 | 92.0 | 2400 | 640 | — | — |

Applications map

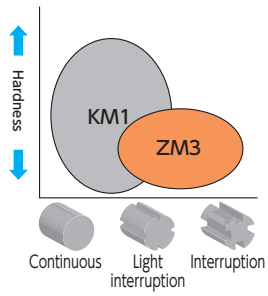
■Correlation chart 1




■Correlation chart 2



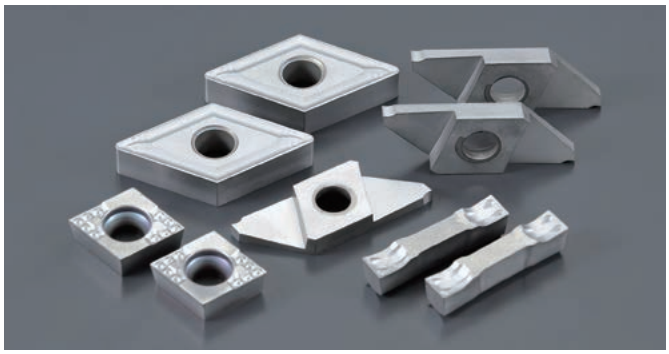

■Aluminum / Brass



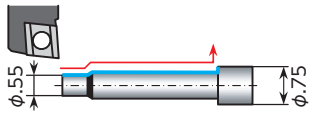

※For products with coating, the values of the base material are indicated.

# QM3

## Superb wear resistance and fracture resistance in interrupted cutting !



| Spindle | |
|---|---|
| 4135 | |
| 330 SFM | |
| .0012 IPR | |
| .008" DOC | |
| WET | |
| NTK : **QM3** | 600 pcs |
| Competitor's PVD-coated carbide | 300 pcs |



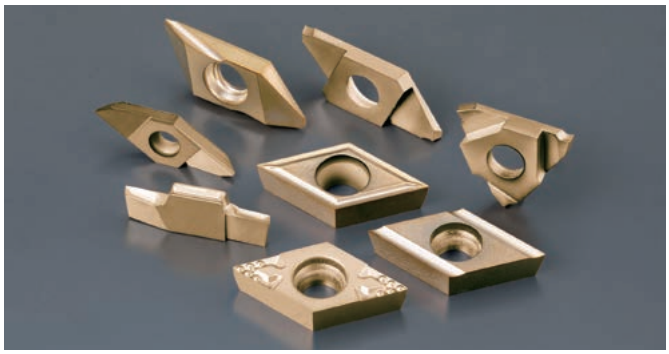

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Heat resistant alloys | Swiss-type lathes<br>Conventional lathes | Wear resistance |

### Features

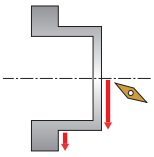
- ***Excellent toughness and wear resistance for wide speed range***
- ***Stable interrupted machining of steel***

# NEW DT4

## Excellent heat 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 |



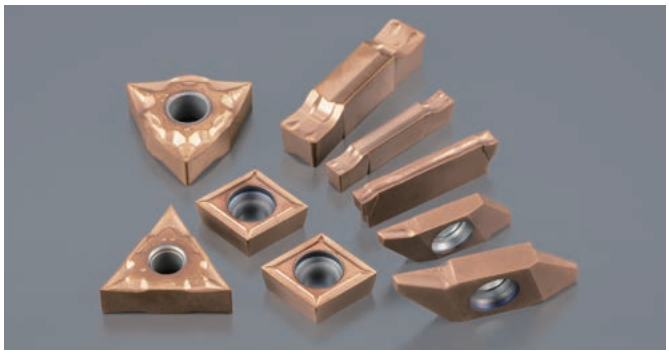
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Titanium alloys<br>● Stainless steels<br>● Alloy steels<br>● Carbon steels<br>● Heat resistant alloys | Swiss-type lathes | Oxidation<br>Heat resistance |

### Features

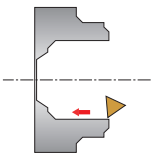
- ***Excellent oxidation resistance for Swiss-type lathes***

# NEW DM4

## Excellent oxidation resistance !



| 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 |
|---|---|---|
| ● Titanium alloys<br>● Stainless steels<br>● Alloy steels<br>● Carbon steels<br>● Heat resistant alloys | Conventional lathes<br>Swiss-type lathes | Oxidation<br>Heat resistance |

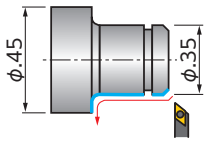
### Features

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

# TM4

## Next generation standard insert grade Swiss-type lathes !



| Automobile parts | |
|---|---|
| 304 SS |   |
| 260 SFM | |
| .0008 IPR | |
| .047" DOC | |
| WET | |
| NTK : **TM4** | 950 pcs |
| Competitor's PVD-coated carbide | 500 pcs |

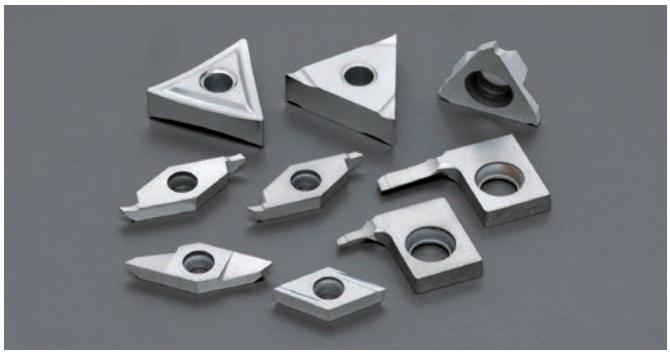
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels | Swiss-type lathes | Balance |

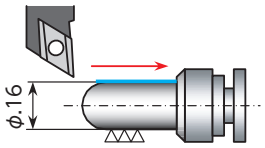
### Features

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

# VM1

## High precision machining of small diameter parts !



| Plug | |
|---|---|
| 12L14 |   |
| 460 SFM | |
| .0006 IPR | |
| .004" DOC | |
| WET | |
| NTK : **VM1** | 800-1000 pcs |
| Competitor's PVD-coated carbide | 150 pcs |

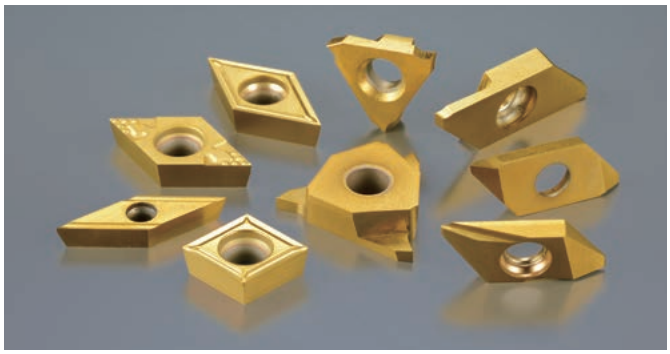
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels | Swiss-type lathes | Edge sharpness |

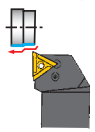
### Features

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

# ZM3

## The best selling grade 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 |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Non-ferrous materials | Swiss-type lathes<br>Conventional lathes | Adhesion resistance |

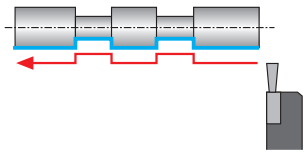
### Features

- ***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***

# Micro-grain Carbide

## KM1 — Longer tool life even for machining hard-to-cut materials !

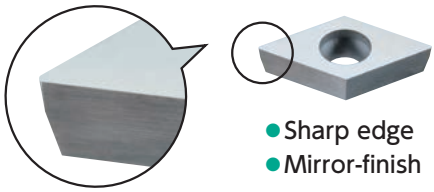


| Spool machining | |
|---|---|
| 5056 (Aluminium) |  |
| 300 ~ 560 SFM | |
| .0016 IPR | |
| .02"-.20" DOC | |
| WET | |
| NTK : **KM1** | 300 pcs |
| Competitor's PVD-coated carbide | 200 pcs |

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Aluminium<br>● Plastic<br>● Non-ferrous materials | Swiss-type lathes | Edge sharpness |

### 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***

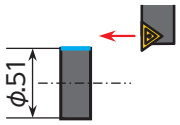


- Sharp edge
- Mirror-finish

# CVD-coated Carbide

## CP1 — For roughing cast iron and 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 |

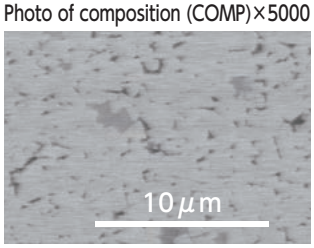
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Ductile cast iron<br>● Gray cast iron | Conventional lathes | Wear resistance |

### Features

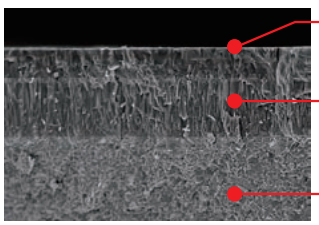
- ***High wear resistance achieved by laminating thick film TiCN layer and $Al_2O_3$ layer as the coating; Great for cast iron cutting even in high-speed range***
- ***Excellent deposition resistance due to our original insert rake surface treatment to bring the mirror finish***
- ***Can also be used for machining ductile cast iron***

【Coating structure】

Photo of composition (COMP)×5000




Film structure



Coating of highly smooth micro-grain $Al_2O_3$

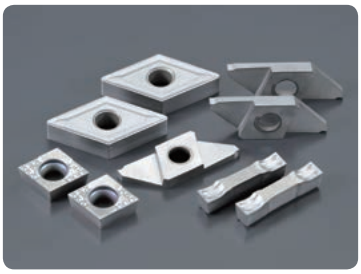
Coating of micro-grain pillar-shaped TiCN

Substrate : ultra-hard carbide

Equivalent to HRA 91.3 Young's modulus : 640 GPa

## PVD Coatings

### QM3/Q15 Q-Coat

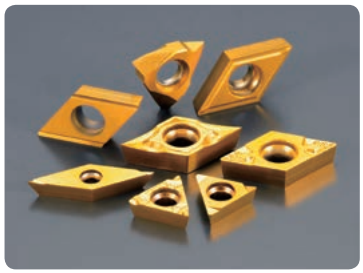


***Best wear resistance***

- *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

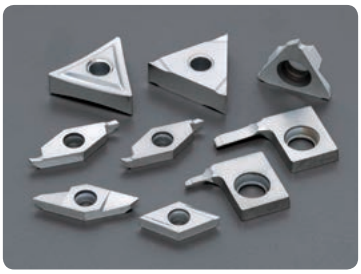



***Best balance of heat resistance and sharp edges***

- *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

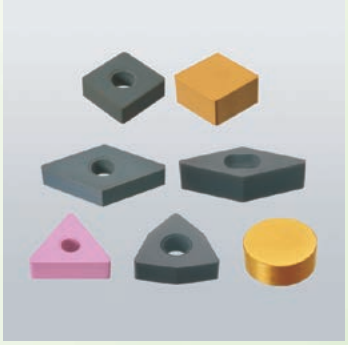
### Coating Specitications

| | 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

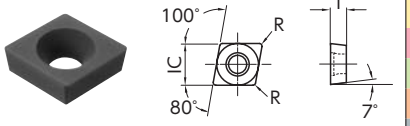


## Insert Item List


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

## CCGW

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




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

| 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 |
| 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 | | | | | | ● | ● | | | | | | | | |

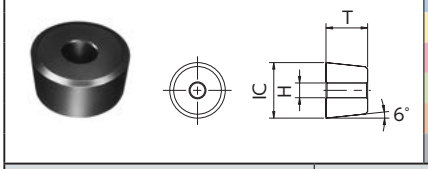
Holders ➡ K36
Boring bars ➡ K174

## CDH

| (inch) | IC | T | H |
|---|---|---|---|
| CDH 22 | 1/2 | 1/4 | .125 |
| CDH 33 | 3/4 | 3/8 | .250 |

| (inch) | IC | T | H |
|---|---|---|---|
| CDH 42 | 1 | 1/2 | .266 |
| CDH 43 | 1 | 3/4 | .266 |

| (inch) | IC | T | H |
|---|---|---|---|
| CDH 515 | 1-1/4 | 3/8 | .391 |
| CDH 53 | 1-1/4 | 3/4 | .391 |




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

| 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 |
| 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

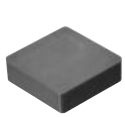
● : 1st Choice ● : Alternate choice
● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

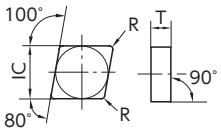
# CNG

| (inch) | IC | T |
|---|---|---|
| CNG 43 | 1/2 | 3/16 |
| CNG 45 | 1/2 | 5/16 |

| (inch) | IC | T |
|---|---|---|
| CNG 54 | 5/8 | 1/4 |
| CNG 55 | 5/8 | 5/16 |

| (inch) | IC | T |
|---|---|---|
| CNG 64 | 3/4 | 1/4 |
| CNG 65 | 3/4 | 5/16 |





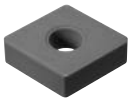
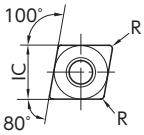

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●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

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

Holders ➡ F6 • F7
Boring bars ➡ G5

## CNGA

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


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

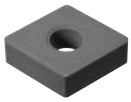
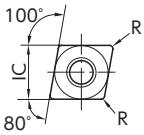
| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
| 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 • K63
Boring bars ➡ G5

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

## CNGA-WL with wiper for higher feed

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

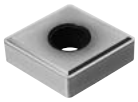
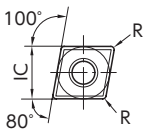




| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| Item Number | ISO Item Number | IC | R | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | 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 • K63
Boring bars ➡ G5

## CNGG with chipbreaker

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

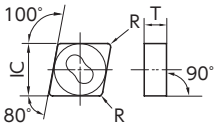




| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| Item Number | ISO Item Number | IC | R | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | 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 • K63
Boring bars ➡ G5

## CNGX

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

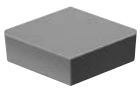
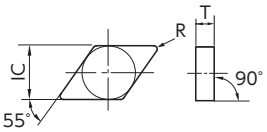




| | | Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
| Steel | P | CNGX 432 T0320 | CNGX 120408 T00820 | 1/2 | .031 | | ● | | | | | ● | | | | | | | | |
| Stainless Steel | M | CNGX 432 T0420 | CNGX 120408 T01020 | 1/2 | .031 | | | | | | | | | | | | | | | |
| Cast Iron | K | CNGX 432 T0820 | CNGX 120408 T02020 | 1/2 | .031 | | | | | | ● | | | | | | | | | |
| Non-Ferrous Material | N | CNGX 433 T0220 | CNGX 120412 T00520 | 1/2 | .047 | | ● | | | | | | | | | | | | | |
| Heat Resistant Alloy | S | CNGX 433 T0320 | CNGX 120412 T00820 | 1/2 | .047 | | ● | | | | | | | | | | | | | |
| Hardened Material | H | 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 |

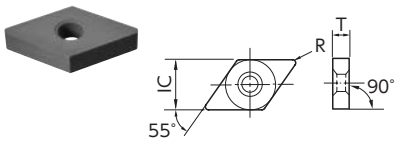

| | | Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
| Steel | P | DNG 431 T0420 | DNGN 150404 T01020 | 1/2 | .016 | | | | | | | | | | | ○ | | | | |
| Stainless Steel | M | DNG 432 T0220 | DNGN 150408 T00520 | 1/2 | .031 | | | | | ● | | | | | | | | | | |
| Cast Iron | K | DNG 432 T0420 | DNGN 150408 T01020 | 1/2 | .031 | | | | | ● | | | | | | | | | | |
| Non-Ferrous Material | N | DNG 432 T0425 | DNGN 150408 T01025 | 1/2 | .031 | | | | | | | | | | ○ | | | | ○ | |
| Heat Resistant Alloy | S | DNG 432 T0525 | DNGN 150408 T01225 | 1/2 | .031 | | | | | | | | | | | ● | | | | |
| Hardened Material | H | 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)

## DNGA

| (inch) | IC | T |
|---|---|---|
| DNGA 33 | 3/8 | 3/16 |
| DNGA 43 | 1/2 | 3/16 |

| (inch) | IC | T |
|---|---|---|
| DNGA 44 | 1/2 | 1/4 |
| DNGA 54 | 5/8 | 1/4 |



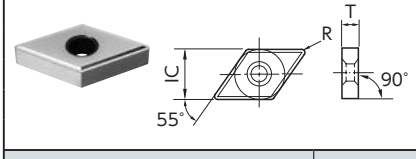

| | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| 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 | 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 • K64
Boring bars ➡ G5

## DNGG with chip-breaker

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



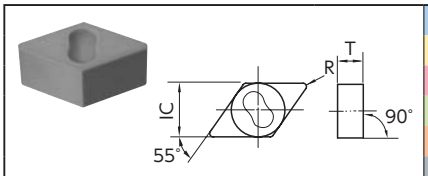

| | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| 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 | 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 • K64
Boring bars ➡ G5

## DNGX

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

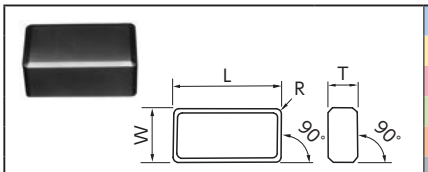



| | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Steel | P | | | | | | | | | | | | | | |
| | Stainless Steel | M | | | | | | | | | | | | | | |
| | Cast Iron | K | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | Non-Ferrous Material | N | | | | | | | | | | | | | | |
| | Heat Resistant Alloy | S | ● | ● | ● | ● | ● | | | | | | | | | |
| | Hardened Material | H | | | | | ● | | | | | | ● | ● | ● | ● | ● | ● |
| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| 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 |

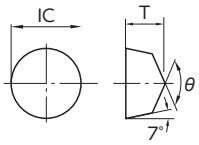



| | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Steel | P | | | | | | | | | | | | | | |
| | Stainless Steel | M | | | | | | | | | | | | | | |
| | Cast Iron | K | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | Non-Ferrous Material | N | | | | | | | | | | | | | | |
| | Heat Resistant Alloy | S | ● | ● | ● | ● | ● | | | | | | | | | |
| | Hardened Material | H | | | | | ● | | | | | | ● | ● | ● | ● | ● | ● |
| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| 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)

## 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 |

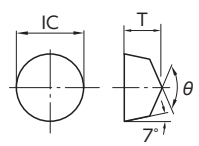

| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| Item Number | ISO Item Number | IC | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2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

Holders ➡ 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 |

| (inch) | IC | T | θ |
|---|---|---|---|
| RCGX 105 | 5/8 | .388 | 120 |
| RCGX 106 | 3/4 | .388 | 120 |
| RCGX 108 | 1 | .461 | 140 |


| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| Item Number | ISO Item Number | IC | JX1 | 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 | | | | | | | ● | | | | | | ● | ● | ● | ● | ● |
| RCGX 101 P2010 | | 3/16 | | | | | | | | | | | ● | | | | |
| RCGX 102 P4815 | | 1/4 | | | | | | | | | | | ● | ● | ● | | |
| RCGX 102 T0225 | | 1/4 | | | ● | ● | | | | | | | | | | | |
| RCGX 102 T0820 | | 1/4 | | | | | | | | | | | ● | | | | |
| RCGX 103 P4815 | | 3/8 | | | | | | | | | | | ● | ● | | | |
| RCGX 103 P8015 | | 3/8 | | | | | | | | | | | | | ● | | |
| RCGX 103 T0820 | | 3/8 | | | | | | | | | | | ● | | | | |
| RCGX 103 T0825 | | 3/8 | | | | | | | | | | | | | | | ● |
| RCGX 103 T1625 | | 3/8 | | | | | | | | | | | | | | | ● |
| RCGX 104 P6015 | | 1/2 | | | | | | | | | | | ● | ● | ● | | |
| RCGX 104 P8015 | | 1/2 | | | | | | | | | | | | | ● | | |
| RCGX 104 T0820 | | 1/2 | | | | | | | | | | | ● | | | | |
| RCGX 104 T1625 | | 1/2 | | | | | | | | | | | | | | | ● |
| RCGX 105 P4815 | | 5/8 | | | | | | | | | | | ● | ● | | | |
| RCGX 105 P8015 | | 5/8 | | | | | | | | | | | | | ● | | |
| RCGX 105 S8020 | | 5/8 | | | | | | | | | | | ● | | ● | | |
| RCGX 106 P4815 | | 3/4 | | | | | | | | | | | ● | | | | |
| RCGX 106 P8015 | | 3/4 | | | | | | | | | | | ● | ● | ● | | |
| RCGX 108 P8015 | | 1 | | | | | | | | | | | ● | | | | |

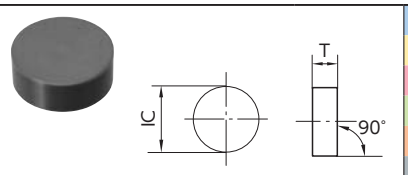
Holders ➡ F18 • F19

## RNG

| (inch) | IC | T |
|---|---|---|
| RNG 32 | 3/8 | 1/8 |
| RNG 33 | 3/8 | 3/16 |
| RNG 42 | 1/2 | 1/8 |
| RNG 43 | 1/2 | 3/16 |

| (inch) | IC | T |
|---|---|---|
| RNG 45 | 1/2 | 5/16 |
| RNG 55 | 5/8 | 5/16 |
| RNG 64 | 3/4 | 1/4 |
| RNG 65 | 3/4 | 5/16 |

| (inch) | IC | T |
|---|---|---|
| RNG 85 | 1 | 5/16 |
| RNG 86 | 1 | 3/8 |




| | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| 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 | 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 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 Z0620 | RNGN 120700 Z01520 | 1/2 | | | | | | ● | | | | | | | | | | |
| RNG 45 S0825 | RNGN 120700 S02025 | 1/2 | | | | | | | | | | | | | | | ● | |
| RNG 45 T0825 | RNGN 120700 T02025 | 1/2 | | | | | | | | | | | | ● | | | ○ | |
| RNG 45 Z0825 | RNGN 120700 Z02025 | 1/2 | | | | | | | | | | | | | | ● | | ● |
| RNG 45 P2810 | RNGN 120700 P07010 | 1/2 | | | | | | | | | | | | ● | | | | |
| RNG 55 T0220 | RNGN 150700 T00520 | 5/8 | | | | ● | ● | ● | | | | | | | | | | |
| RNG 55 T0225 | RNGN 150700 T00525 | 5/8 | | | | ○ | | ○ | | | | | | | | | | |
| RNG 55 T0320 | RNGN 150700 T00820 | 5/8 | | | ● | | | | | | | | | | | | | |
| RNG 64 T0825 | RNGN 190600 T02025 | 3/4 | | | | | | | | | | | | ● | | | | |
| RNG 64 P6010 | RNGN 190600 P15010 | 3/4 | | | | | | | | | | | | ● | | | | |
| RNG 65 T0220 | RNGN 190700 T00520 | 3/4 | | | | ● | ● | ● | | | | | | | | | | |
| RNG 65 T0225 | RNGN 190700 T00525 | 3/4 | | | | ○ | | | | | | | | | | | | |
| RNG 65 T0320 | RNGN 190700 T00820 | 3/4 | | | ● | | | | | | | | | | | | | |
| RNG 65 T0420 | RNGN 190700 T01020 | 3/4 | | | | ● | | ● | | | | | | | | | | |
| RNG 85 T0220 | RNGN 250700 T00520 | 1 | | | | ○ | ● | ○ | | | | | | | | | | |
| RNG 85 S6015 | RNGN 250700 S15015 | 1 | | | | | ● | | | | | | | | | | | |
| RNG 86 T0220 | RNGN 250900 T00520 | 1 | | | | | ● | | | | | | | | | | | |

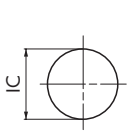
Holders ➡ F16
Boring bars ➡ G4
Cutters ➡ I 7

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

## RPG

| (inch) | IC | T |
|---|---|---|
| RPG 21.5 | 1/4 | 3/32 |
| RPG 32 | 3/8 | 1/8 |
| RPG 42 | 1/2 | 1/8 |

| (inch) | IC | T |
|---|---|---|
| RPG 43 | 1/2 | 3/16 |
| RPG 65 | 3/4 | 5/16 |

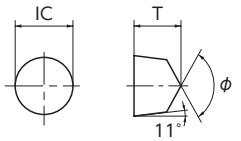

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | |
| Cast Iron | K | ○ ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | |
| Heat Resistant Alloy | S | ● ● ● ● ● |
| Hardened Material | H | ○ ○ ● ● ● |

| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | 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 |

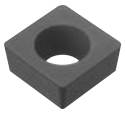
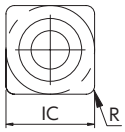

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | |
| Cast Iron | K | ○ ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | |
| Heat Resistant Alloy | S | ● ● ● ● ● |
| Hardened Material | H | ○ ○ ● ● ● |

| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | 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 | | | | ● | | ● | | | | | | | | | | |

Holders ➡ F17 • F18 • F19

## SCGW

| (inch) | IC | T |
|---|---|---|
| SCGW 32 | 3/8 | 5/12 |
| SCGW 43 | 1/2 | 3/16 |

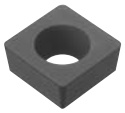
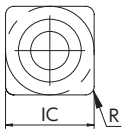




| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | | | | | | | | |
| Cast Iron | K | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 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 |
| 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 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | 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

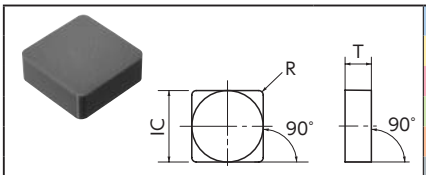


● : 1st Choice ● : Alternate choice
● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

# SNG3 / SNG4 / SNG55

| (inch) | IC | T |
|---|---|---|
| SNG 32 | 3/8 | 1/8 |
| SNG 33 | 3/8 | 3/16 |
| SNG 43 | 1/2 | 3/16 |

| (inch) | IC | T |
|---|---|---|
| SNG 45 | 1/2 | 5/16 |
| SNG 55 | 5/8 | 5/16 |



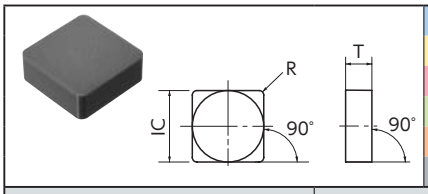

| | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | | | | | | | | | | | | | | | |
| Cast Iron | K | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Non-Ferrous Material | N | | | | | | | | | | | | | | | |
| Heat Resistant Alloy | S | ● | ● | ● | ● | ● | | | | | | | | | | |
| Hardened Material | H | | | | | ● | | | | | | ● | ● | ● | ● | ● |

| 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

## SNG6

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

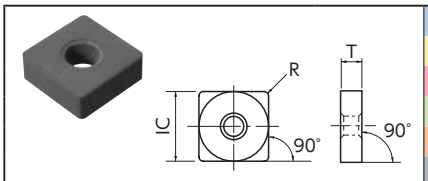



| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| Item Number | ISO Item Number | IC | R | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | 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 | | | | | | | ● | | | | | | ● | ● | ● | ● | ● |
| 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 |



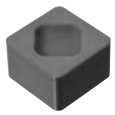
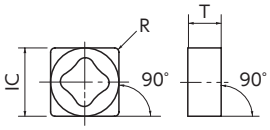

| | | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| Item Number | ISO Item Number | IC | R | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | 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 | | | | | | | ● | | | | | | ● | ● | ● | ● | ● |
| 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 |

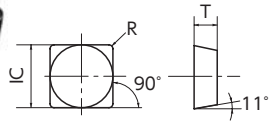

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | |
| Cast Iron | K | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | |
| Heat Resistant Alloy | S | ● ● ● ● ● |
| Hardened Material | H | ● ● ● ● ● ● |

| 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 |
| **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 |


| | | |
|---|---|---|
| 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 |
| **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)

## 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 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | 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 | ● ● ● ● ● ● ● ● ● ● ● ● |

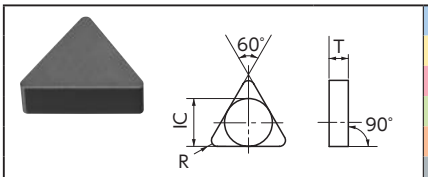
| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | SX7 | SX9 | SX5 | WA1 | 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)

# TNG4 / TNG5

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




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

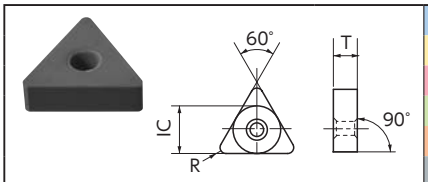
| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | HC1 | HW2 | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 |
| **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 |
|---|---|---|
| TNGA 32 | 3/8 | 1/8 |
| TNGA 33 | 3/8 | 3/16 |

| (inch) | IC | T |
|---|---|---|
| TNGA 43 | 1/2 | 3/16 |



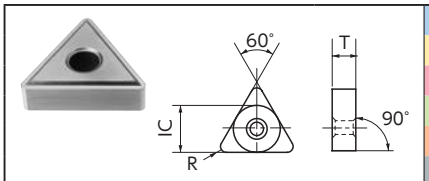

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | | | | | | | | | | | | | | | | |
| Cast Iron | K | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 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 |
| 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 • K60

## TNGG with chip-breaker

| (inch) | IC | T |
|---|---|---|
| TNGG 33 | 3/8 | .063 |




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

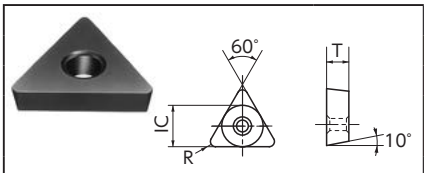
| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | SX7 | SX9 | SX5 | WA1 | 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 • K60

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

## TP

| (inch) | IC | T |
|---|---|---|
| TP 41 | 1/4 | .094 |
| TP 42 | 1/4 | .094 |



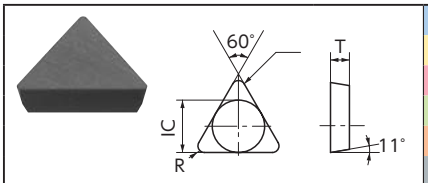

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | | | | | | | |
| Cast Iron | K | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Non-Ferrous 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 |
| TP 41 T0225 | | 1/4 | .016 | | | | | | | | | | | ● | | | | |
| TP 42 T0225 | | 1/4 | .031 | | | | | | | | | | | ● | | | | |

## TPG / TPGE

| (inch) | IC | T |
|---|---|---|
| TPG 22 | 1/4 | 1/8 |
| TPG 32 | 3/8 | 1/8 |
| TPG 43 | 1/2 | 3/16 |

| (inch) | IC | T |
|---|---|---|
| TPGE 52 | 5/32 | .063 |
| TPGE 73 | 7/32 | .094 |




| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 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 | | | | | | | | | | | ● | | | | |

## VNG

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

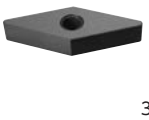



| | | |
|---|---|---|
| Steel | P | |
| Stainless Steel | M | |
| Cast Iron | K | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | |
| Heat Resistant Alloy | S | ● ● ● ● ● |
| Hardened Material | H | ● ● ● ● ● ● |

| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | |
| | | | | JX1 | 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 | ● ● ● ● ● ● |

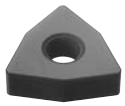
| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | |
| | | | | JX1 | SX7 | SX9 | SX5 | WA1 | SX6 | SP9 | 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 | | | | | ● | | | | | | | | | | |

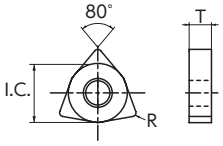
Holders ➡ F12・F13

● : 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 |





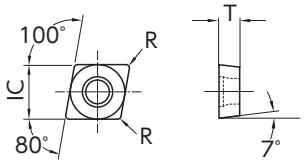

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | |
| Cast Iron | K | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | |
| Heat Resistant Alloy | S | ● ● ● ● ● |
| Hardened Material | H | ● ● ● ● ● ● |

| Item Number | ISO Item Number | IC | R | BIDEMICS | Ceramics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SiAlON | | | Whisker | Silicon Nitride | | Alumina | | Alumina - TiC | | | | | |
| | | | | JX1 | 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 | | | | | | ● | | | | | | | | | |

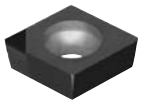
Holders ➡ F15
Boring bars ➡ G6

## CC. W

| (inch) | IC | T |
|---|---|---|
| CC.. 21 | 1/4 | .094 |
| CC.. 32 | 3/8 | 5/32 |




| | | JP2 | B99 | B5K | B52 | B6K | B36 | B40 | B23 | B30 | PD1 | PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | | |
| Cast Iron | K | | ● | ● | ● | | | | ● | ● | | |
| Non-Ferrous Material | N | | | | | | | | | | ● | ● |
| Heat Resistant Alloy | S | ● | | | | | | | | | | |
| Hardened Material | H | | ● | ● | ● | ● | ● | ● | | | | |

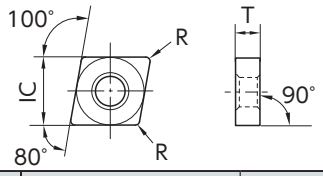
| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | JP2 | B99 | B5K | B52 | B6K | B36 | B40 | B23 | B30 | PD1 | PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | **CCGW 21.51 PD** | CCGW 060204 PD | S0415 | 1/4 | .016 | 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 | | | | ● | | | | | | | |
| | **CCGW 32.52 PD** | CCGW 09T308 PD | S0635 | 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 | — | | | | | | | | | | ○ | |
| NEW  with chipbreaker | **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 ➡ K36
Boring bars ➡ K174

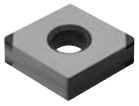
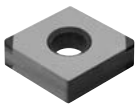
● : 1st Choice ● : Alternate choice
● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

# CN. A 43

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




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

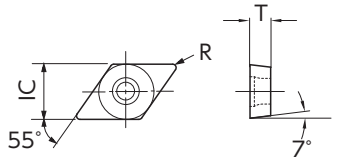
| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | BIDEMICS Coated JP2 | Solid CBN B99 | CBN (Brazed) Coated B5K | CBN (Brazed) B52 | CBN (Brazed) Coated B6K | CBN (Brazed) B36 | CBN (Brazed) B40 | CBN (Brazed) B23 | CBN (Brazed) B30 | PCD PD1 | PCD PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW  | **CNGA 431 BQ** | CNGA 120404 BQ | T0220 | 1/2 | .016 | 4 | .157 | ● | | | | | | | | | | |
| | **CNGA 432 BQ** | CNGA 120408 BQ | T0220 | 1/2 | .031 | 4 | .157 | ● | | | | | | | | | | |
| | **CNGA 433 BQ** | CNGA 120412 BQ | T0220 | 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 | | | | | | | ● | | | | |
|  with wiper | **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  with chipbreaker | **CNMX 431 PF** | CNMX 120404 PF | None | 1/2 | .016 | 1 | — | | | | | | | | | | | ● |
| | **CNMX 432 PF** | CNMX 120408 PF | None | 1/2 | .031 | 1 | — | | | | | | | | | | | ● |

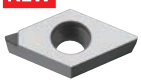
Holders ➡ F6 • F7 • K63
Boring bars ➡ G5

# BIDEMICS (Brazed) / CBN / PCD

## DC. W

| (inch) | IC | T |
|---|---|---|
| DC.. 21 | 1/4 | .094 |
| DC.. 32 | 3/8 | 5/32 |

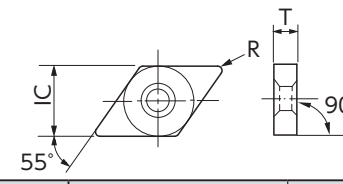


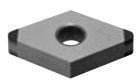

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Steel | P | | | | | | | | | | | |
| | | | | | | | | | Stainless Steel | M | | | | | | | | | | | |
| | | | | | | | | | Cast Iron | K | | ● | ● | ● | | | | ● | ● | | |
| | | | | | | | | | 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 Coated | Solid CBN | CBN (Brazed) Coated | | CBN (Brazed) Coated | | | | | PCD | | | | |
| | | | | | | | | JP2 | B99 | B5K | B52 | B6K | B36 | B40 | B23 | B30 | PD1 | PD2 | | | |
|  | 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 | — | | | | | | | | | | | ○ | | | |
| NEW  with chipbreaker | DCMT 32.508 PF | DCMT 11T302 PF | None | 3/8 | .008 | 1 | — | | | | | | | | | | | | ● | | |
| | DCMT 32.51 PM | DCMT 11T304 PF | None | 3/8 | .016 | 1 | — | | | | | | | | | | | | ● | | |

Holders ➡ K42 • K43 • K44 • K45

## DN. A 43

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



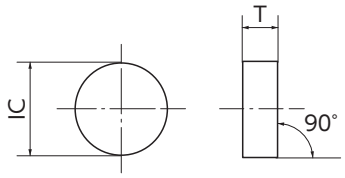

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Steel | P | | | | | | | | | | | |
| | | | | | | | | | Stainless Steel | M | | | | | | | | | | | |
| | | | | | | | | | Cast Iron | K | | ● | ● | ● | | | | ● | ● | | |
| | | | | | | | | | 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 Coated | Solid CBN | CBN (Brazed) Coated | | CBN (Brazed) Coated | | | | | PCD | | | | |
| | | | | | | | | JP2 | B99 | B5K | B52 | B6K | B36 | B40 | B23 | B30 | PD1 | PD2 | | | |
| NEW  | DNGA 431 BQ | DNGA 150404 BQ | T0220 | 1/2 | .016 | 4 | .157 | ● | | | | | | | | | | | | | |
| | DNGA 432 BQ | DNGA 150408 BQ | T0220 | 1/2 | .031 | 4 | .157 | ● | | | | | | | | | | | | | |
| | DNGA 433 BQ | DNGA 150412 BQ | T0220 | 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 | | | | | | | ● | | | | | | | |
| NEW  with chipbreaker | DNMX 431 PF | DNMX 150404 PF | None | 1/2 | .016 | 1 | — | | | | | | | | | | | | ● | | |
| | DNMX 432 PF | DNMX 150408 PF | None | 1/2 | .031 | 1 | — | | | | | | | | | | | | ● | | |

Holders ➡ F8 • F9 • K64

Boring bars ➡ G5

## RNM

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

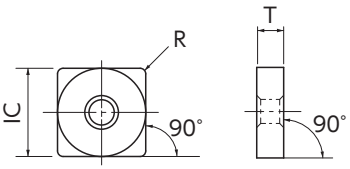


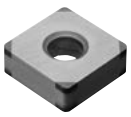

| | | | | | | | | | BIDEMICS Coated | Solid CBN | CBN (Brazed) | | | | | | PCD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Coated | | Coated | | | | | |
| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of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

Holders ➡ F16
Boring bars ➡ G4

## SN. A 43

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

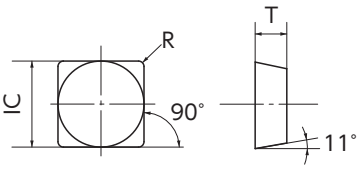


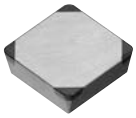

| | | | | | | | | | BIDEMICS Coated | Solid CBN | CBN (Brazed) | | | | | | PCD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Coated | | Coated | | | | | |
| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | | JP2 | B99 | B5K | B52 | B6K | B36 | B40 | B23 | B30 | PD1 | PD2 |
| | | | | | | | | Steel | P | | | | | | | | | | |
| | | | | | | | | Stainless Steel | M | | | | | | | | | | |
| | | | | | | | | Cast Iron | K | | ● | ● | ● | | | | ● | ● | |
| | | | | | | | | Non-Ferrous Material | N | | | | | | | | | ● | ● |
| | | | | | | | | Heat Resistant Alloy | S | ● | | | | | | | | | |
| | | | | | | | | Hardened Material | H | | ● | ● | ● | ● | ● | ● | | | |
|  | **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 |

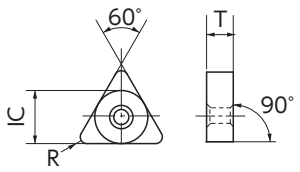



| | | | | | | | | | BIDEMICS Coated | Solid CBN | CBN (Brazed) | | | | | | PCD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Coated | | Coated | | | | | |
| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | | JP2 | B99 | B5K | B52 | B6K | B36 | B40 | B23 | B30 | PD1 | PD2 |
| | | | | | | | | Steel | P | | | | | | | | | | |
| | | | | | | | | Stainless Steel | M | | | | | | | | | | |
| | | | | | | | | Cast Iron | K | | ● | ● | ● | | | | ● | ● | |
| | | | | | | | | Non-Ferrous Material | N | | | | | | | | | ● | ● |
| | | | | | | | | Heat Resistant Alloy | S | ● | | | | | | | | | |
| | | | | | | | | Hardened Material | H | | ● | ● | ● | ● | ● | ● | | | |
|  | **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 | | | | | | | | | | ○ | | |

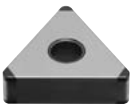
● : 1st Choice ● : Alternate choice
● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

## TN. A 33

| (inch) | IC | T |
|---|---|---|
| TN.. 33 | 3/8 | 1/8 |



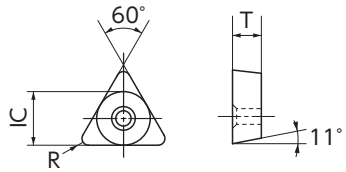

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | | | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | | | | | | | | | | | | |
| Cast Iron | K | | ● | ● | ● | | | | ● | ● | | | | | | | | | | | | |
| 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 Coated JP2 | Solid CBN B99 | CBN (Brazed) Coated B5K | CBN (Brazed) B52 | CBN (Brazed) Coated B6K | CBN (Brazed) B36 | CBN (Brazed) B40 | CBN (Brazed) B23 | CBN (Brazed) B30 | PCD PD1 | PCD 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 | | | | | | | ● | | | | |
| NEW  with chipbreaker | TNMX 331 PF | TNMX 160404 PF | None | 3/8 | .016 | 1 | — | | | | | | | | | | | ● |
| | TNMX 332 PF | TNMX 160408 PF | None | 3/8 | .031 | 1 | — | | | | | | | | | | | ● |

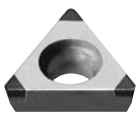
Holders ➡ F14 • K60

## TPG

| (inch) | IC | T |
|---|---|---|
| TP.. 22 | 1/4 | 1/8 |
| TP.. 32 | .094 | 1/8 |
| TP.. 73 | 7/32 | 3/32 |



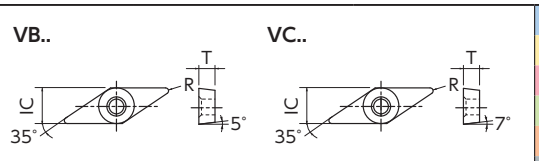

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | | | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | | | | | | | | | | | | |
| Cast Iron | K | | ● | ● | ● | | | |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

| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | BIDEMICS Coated JP2 | Solid CBN B99 | CBN (Brazed) Coated B5K | CBN (Brazed) B52 | CBN (Brazed) Coated B6K | CBN (Brazed) B36 | CBN (Brazed) B40 | CBN (Brazed) B23 | CBN (Brazed) B30 | PCD PD1 | PCD PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | .094 | .016 | 3 | .079 | | | | | | | ○ | | | | |
| | TPG 322 PT | TPGN 160308 PT | S0420 | .094 | .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 | | | | | | | ○ | | | | |
| 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 | — | | | | | | | | | | | ○ |

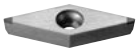
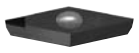
Holders (TPGW) ➡ K178

## 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 |



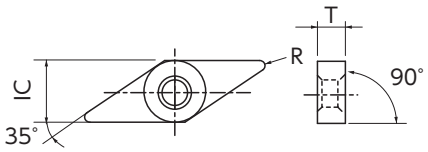

| Steel | P |
|---|---|
| Stainless Steel | M |
| Cast Iron | K |
| Non-Ferrous Material | N |
| Heat Resistant Alloy | S |
| Hardened Material | H |

| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | BIDEMICS Coated JP2 | Solid CBN B99 | CBN (Brazed) Coated B5K | CBN (Brazed) B52 | CBN (Brazed) Coated B6K | CBN (Brazed) B36 | CBN (Brazed) B40 | CBN (Brazed) B23 | CBN (Brazed) B30 | PCD PD1 | PCD 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 | | | | | | | ○ | | | | |
| | VCGW 332 PD | VCGW 160408 PD | S0415 | 3/8 | .031 | 2 | .063 | | | | ○ | | | | | | | |
| | VCGW 332 PD | VCGW 160408 PD | S0635 | 3/8 | .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 | — | | | | | | | | | | ○ | |

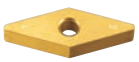
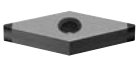
VBGW33 ➡ K50
VCGW22 ➡ K52 • K54

## VNGA 33

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




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

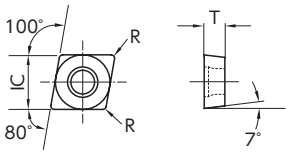
| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | BIDEMICS Coated JP2 | Solid CBN B99 | CBN (Brazed) Coated B5K | CBN (Brazed) B52 | CBN (Brazed) Coated B6K | CBN (Brazed) B36 | CBN (Brazed) B40 | CBN (Brazed) B23 | CBN (Brazed) B30 | PCD PD1 | PCD PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW  | VNGA 331 BQ | VNGA 160404 BQ | T0220 | 3/8 | .016 | 4 | .157 | ● | | | | | | | | | | |
| | VNGA 332 BQ | VNGA 160408 BQ | T0220 | 3/8 | .031 | 4 | .157 | ● | | | | | | | | | | |
| | VNGA 333 BQ | VNGA 160412 BQ | T0220 | 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 | | | | | | | ● | | | | |

Holders ➡ F12 • F13

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

## 80 degree Diamond Positive type (CC..)

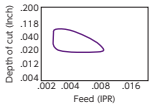
| (inch) | IC | T |
|---|---|---|
| CC..21.5 | 1/4 | 3/32 |
| CC..32.5 | 3/8 | 5/32 |

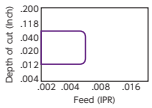


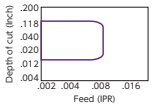

| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | |

● : 1st Choice
● : Alternate choice

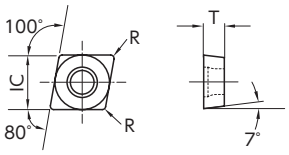
| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CCGT 21.501 FNAM3 | CCGT 060200 FNAM3 | 1/4 | .001 | | | | | | ● | ● | | | ○ | | | |
| | CCGT 21.504M FNAM3 | CCGT 060201M FNAM3 | 1/4 | .003 | | | | | | ● | | | | | | | |
| | CCGT 21.504 FNAM3 | CCGT 060201 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 3/8 | .016 | | ● | | | | | | | | | | | |
| | CCGT 32.52 FNAM3 | CCGT 09T308 FNAM3 | 3/8 | .031 | | | | | | ● | | | | | | | |
| | CCGT 32.52 FNXAM3 | CCGT 09T308 FNXAM3 | 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 | | ● | | | ○ | | | | | | | | |
| | 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 32.504M 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 | | | | | | | ● | | ● | | | | |



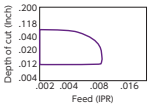

● : Stock ○ : 1-2 week delivery R : Stock (Right-hand only) L : Stock (Left-hand only)

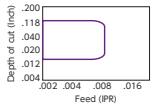


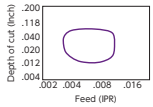

| | |
|---|---|
| Steel | P |
| Stainless Steel | M |
| Cast Iron | K |
| Non-Ferrous Material | N |
| Heat Resistant Alloy | S |
| Hardened Material | H |

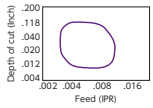
● : 1st Choice
● : Alternate choice

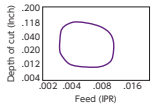
| Shape | Item Number | ISO Item Number | IC | R | Cermet | | | | | Carbide | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PVD Coated | | PVD Coated | | | | | | | CVD |
| | | | | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|  | CCGT 21.501 FNAZ7 | CCGT 060200 FNAZ7 | 1/4 | .001 | | | | | | ○ | | | | | | | |
| | CCGT 21.504M FNAZ7 | CCGT 060201M FNAZ7 | 1/4 | .003 | | | | | | ○ | | | | | | | |
| | CCGT 21.508M FNAZ7 | CCGT 060202M FNAZ7 | 1/4 | .007 | | | | | | ○ | | | | | | | |
| | CCGT 32.501 FNAZ7 | CCGT 09T300 FNAZ7 | 3/8 | .001 | | | | | | ● | ○ | | ○ | | ○ | | |
| | CCGT 32.504M FNAZ7 | CCGT 09T301M FNAZ7 | 3/8 | .003 | | | | | | ● | ○ | | ○ | | ○ | | |
| | CCGT 32.508M FNAZ7 | CCGT 09T302M FNAZ7 | 3/8 | .007 | | | | | | ● | ○ | | ○ | | ○ | | |
| | CCGT 32.51M FNAZ7 | CCGT 09T304M FNAZ7 | 3/8 | .015 | | | | | | ● | ○ | | ○ | | ○ | | |
|  | CCGT 21.508 FN1L | CCGT 060202 FN1L | 1/4 | .008 | | | | | | ○ | | | | | | | |
| | CCGT 32.51 FN1L | CCGT 09T304 FN1L | 3/8 | .016 | | | | | | ○ | | | | | | | |
|  | 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 | | ○ | | | ○ | | | | | | | | |

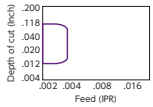


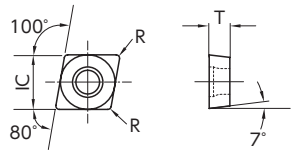




Holders ➡ K36
Boring bars ➡ K174

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

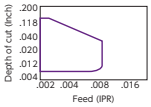
| (inch) | IC | T |
|---|---|---|
| CC..21.5 | 1/4 | 3/32 |
| CC..32.5 | 3/8 | 5/32 |

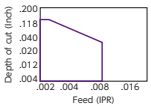


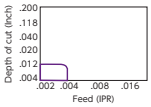

| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | |

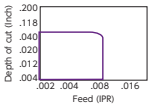
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CCGT 21.501 R/L S | CCGT 060200 R/L S | 1/4 | .001 | | | | | | R | Ⓡ | | | Ⓡ Ⓛ | Ⓡ L | | |
| | CCGT 21.504M R/L S | CCGT 060201M R/L S | 1/4 | .003 | | | | | | R | Ⓡ | | | | | | |
| | CCGT 21.504 R/L S | CCGT 060201 R/L S | 1/4 | .004 | | Ⓡ Ⓛ | | | | | | | | Ⓡ Ⓛ | R Ⓛ | | |
| | CCGT 21.508M R/L S | CCGT 060202M R/L S | 1/4 | .007 | | | | | | R | | | | | | | |
| | CCGT 21.508 R/L S | CCGT 060202 R/L S | 1/4 | .008 | | Ⓡ Ⓛ | | | | | | | | Ⓡ Ⓛ | Ⓡ Ⓛ | | |
| | CCGT 21.51 R/L S | CCGT 060204 R/L S | 1/4 | .016 | | | | | | R | | | | | | | |
| | CCGT 32.501 R/L S | CCGT 09T300 R/L S | 3/8 | .001 | | | | | | R | R | | R | Ⓡ Ⓛ | Ⓡ | | |
| | CCGT 32.504M R/L S | CCGT 09T301M R/L S | 3/8 | .003 | | | | | | Ⓡ | R | | R | | | | |
| | CCGT 32.504 R/L S | CCGT 09T301 R/L S | 3/8 | .004 | | | | | | R | | | | Ⓡ Ⓛ | Ⓡ Ⓛ | | |
| | CCGT 32.508M R/L S | CCGT 09T302M R/L S | 3/8 | .007 | | | | | | Ⓡ | R | | R | | | | |
| | CCGT 32.508 R/L S | CCGT 09T302 R/L S | 3/8 | .008 | | | | | | R | | | | Ⓡ Ⓛ | Ⓡ | | |
| | CCGT 32.51M R/L S | CCGT 09T304M R/L S | 3/8 | .015 | | | | | | Ⓡ | | | R | | | | |
| | CCGT 32.51 R/L S | CCGT 09T304 R/L S | 3/8 | .016 | | | | | | R | | | | | | | |
| | CCMT 21.504 T R/L AS | CCMT 060201 T R/L AS | 1/4 | .004 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | CCMT 21.508 T R/L AS | CCMT 060202 T R/L AS | 1/4 | .008 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | CCMT 21.51 T R/L AS | CCMT 060204 T R/L AS | 1/4 | .016 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | CCMT 32.504 T R/L AS | CCMT 09T301 T R/L AS | 3/8 | .004 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | CCMT 32.508 T R/L AS | CCMT 09T302 T R/L AS | 3/8 | .008 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | CCMT 32.51 T R/L AS | CCMT 09T304 T R/L AS | 3/8 | .016 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | CCGT 21.501 R/L U | CCGT 060200 R/L U | 1/4 | .001 | | | | | | | Ⓡ | | | | Ⓡ | | |
| | CCGT 21.504 R/L U | CCGT 060201 R/L U | 1/4 | .004 | | | | | | | Ⓡ | | | | Ⓡ Ⓛ | | |
| | CCGT 21.508 R/L U | CCGT 060202 R/L U | 1/4 | .008 | | | | | | | Ⓡ | | | | Ⓡ Ⓛ | | |
| | CCGT 32.501 R/L U1 | CCGT 09T300 R/L U1 | 3/8 | .001 | | | | | | | | | Ⓡ | | Ⓡ Ⓛ | | |
| | CCGT 32.504 R/L U1 | CCGT 09T301 R/L U1 | 3/8 | .004 | | | | | | | Ⓡ | | Ⓡ | | Ⓡ Ⓛ | | |
| | CCGT 32.508 R/L U1 | CCGT 09T302 R/L U1 | 3/8 | .008 | | | | | | | Ⓡ | | Ⓡ | | Ⓡ Ⓛ | | |
| | CCGT 32.51 R/L U1 | CCGT 09T304 R/L U1 | 3/8 | .016 | | | | | | | | | Ⓡ | | Ⓡ Ⓛ | | |
| | CCET 21.502 R/L KHG | CCET 0602005 R/L KHG | 1/4 | .002 | | | | | | | | | | Ⓡ Ⓛ | | | |
| | CCET 21.503 R/L KHG | CCET 0602008 R/L KHG | 1/4 | .003 | | | | | | | | | | Ⓡ Ⓛ | | | |
| | CCET 21.507 R/L KHG | CCET 0602018 R/L KHG | 1/4 | .007 | | | | | | | | | | Ⓡ Ⓛ | | | |
| | CCET 21.508 R/L KHG | CCET 060202 R/L KHG | 1/4 | .008 | | | | | | | | | | Ⓡ Ⓛ | | | |
| | CCET 32.502 R/L KHG | CCET 09T3005 R/L KHG | 3/8 | .002 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | |
| | CCET 32.503 R/L KHG | CCET 09T3008 R/L KHG | 3/8 | .003 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | |
| | CCET 32.507 R/L KHG | CCET 09T3018 R/L KHG | 3/8 | .007 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | |
| | CCET 32.508 R/L KHG | CCET 09T302 R/L KHG | 3/8 | .008 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | |
| | CCGT 21.508 F R/L F1 | CCGT 060202 F R/L F1 | 1/4 | .008 | | | | | | | | | Ⓡ | | | | |
| | CCGT 21.51 F R/L F1 | CCGT 060204 F R/L F1 | 1/4 | .016 | | | | | | | | | Ⓡ | | | | |
| | CCGT 32.508 F R/L F1 | CCGT 09T302 F R/L F1 | 3/8 | .008 | | | | | | | | | Ⓡ | | | | |
| | CCGT 32.51 F R/L F1 | CCGT 09T304 F R/L F1 | 3/8 | .016 | | | | | | | | | Ⓡ | | | | |
| | CCGW 21.501 FN | CCGW 060200 FN | 1/4 | .001 | | | | | | | | | | | ○ | | |
| | CCGW 21.501 H Ⓜ | CCGW 060200 H | 1/4 | .001 | | | | | | | | | | | | ○ | |
| | CCGW 21.504 FN | CCGW 060201 FN | 1/4 | .004 | | | | | | | | | | | ○ | | |
| | CCGW 21.504 H Ⓜ | CCGW 060201 H | 1/4 | .004 | | | | | | | | | | | | ○ | |
| | CCGW 21.508 H Ⓜ | CCGW 060202 H | 1/4 | .008 | | | | | | | | | | | | ○ | |
| | CCGW 21.51 FN | CCGW 060204 FN | 1/4 | .016 | | | | | | | | | | | ○ | | |
| | CCGW 21.52 FN | CCGW 060208 FN | 1/4 | .031 | | | | | | | | | | | ■ | | |
| | CCGW 32.500 V Ⓜ | CCGW 09T30 V | 3/8 | 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 | | | | | | | | | | ○ | | | |



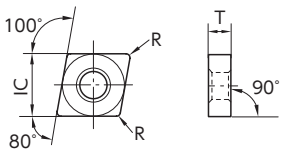

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Holders ➡ K36
Boring bars ➡ K174

● : 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)

# 80 degree Diamond Negative type (CN..)

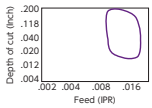
| (inch) | IC | T |
|---|---|---|
| CN..43 | 1/2 | 3/16 |




| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cermet | | | PVD Coated | | Carbide PVD Coated | | | | | | | CVD |
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | |

● : 1st Choice
● : Alternate choice

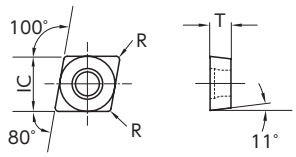
| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | CNMG 432 G | CNMG 120408 G | 1/2 | .031 | | | | | | | | | | | | | ○ |
| | CNMG 433 G | CNMG 120412 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 | | | | ○ | | | | | | | | | |
| | CNMG 433 G | CNMG 120412 ENBG | 1/2 | .047 | ● | | ○ | | | | | | | | | | |
| | CNMG 433 TNG | CNMG 120412 TNG | 1/2 | .047 | | | | ○ | | | | | | | | | |
|  | CNGG 4304 R/L N1 | CNGG 120401 R/L N1 | 1/2 | .004 | ● | | | | | | | | | | | | |
| | CNGG 4308 R/L N1 | CNGG 120402 R/L N1 | 1/2 | .008 | R | | | | | | | | | | | | |
| | CNGG 431 R/L N1 | CNGG 120404 R/L N1 | 1/2 | .016 | ● | | | | | | | | | | | | |
| | CNGG 432 R/L N1 | CNGG 120408 R/L 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 | ● | | | | | | | | | | | | |




Holders ➡ F6 • F7 • K63
Boring bars ➡ G5

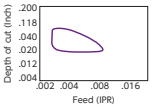
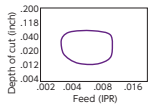
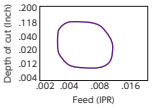
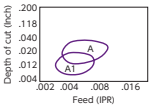
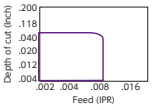
## 80 degree Diamond Positive type (CP..)

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




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

● : 1st Choice
● : Alternate choice

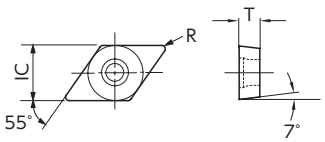
| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide KM1 | Carbide CVD CP1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 FR/L A1 | CPGH 040102 FR/L A1 | .187 | .008 | | | | | | | | | Ⓛ | | | Ⓛ | |  |
| | CPGP 621 FR/L A1 | CPGH 040104 FR/L A1 | .187 | .016 | | | | | | | | | Ⓛ | | | Ⓛ | | |
| | CPGP 21.508 FR/L A | CPGH 060202 FR/L A | 1/4 | .008 | | | | | | | | | Ⓛ | | | Ⓛ | | |
| | CPGP 21.51 FR/L A | CPGH 060204 FR/L A | 1/4 | .016 | | | | | | | | | Ⓛ | | | Ⓛ | | |
| | CPGH 2.51.508 FR/L A | CPGH 080202 FR/L A | 5/16 | .008 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | CPGH 2.51.51 FR/L A | CPGH 080204 FR/L A | 5/16 | .016 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | CPGP 6208 R/L A1 | CPGH 040102 TR/L A1 | .187 | .008 | Ⓛ | Ⓛ | | | | | | | | | | | | |
| | CPGP 621 R/L A1 | CPGH 040104 TR/L A1 | .187 | .016 | Ⓛ | Ⓛ | | | | | | | | | | | | |
| | CPGP 21.508 R/L A | CPGH 060202 TR/L A | 1/4 | .008 | Ⓛ | Ⓛ | | | | | | | | | | | | |
| | CPGP 21.51 R/L A | CPGH 060204 TR/L A | 1/4 | .016 | Ⓛ | Ⓛ | | | | | | | | | | | | |
| | CPGH 2.51.51 TR/L A | CPGH 080204 TR/L A | 5/16 | .016 | Ⓛ | Ⓛ | | | | | | | | | | | | |
|  | CPGP 6204 FRF1 | CPGH 040101 FR/L F1 | .187 | .004 | | | | | | | | | R | | | | |  |
| | CPGP 6208 FRF1 | CPGH 040102 FR/L F1 | .187 | .008 | | | | | | | | | R | | | | | |
| | CPGP 621 FRF1 | CPGH 040104 FR/L F1 | .187 | .016 | | | | | | | | | R | | | | | |
| | CPGP 21.504 FR/L F1 | CPGH 060201 FR/L F1 | 1/4 | .004 | | | | | | | | | Ⓡ | | | | | |
| | CPGP 21.508 FRF1 | CPGH 060202 FR/L F1 | 1/4 | .008 | | | | | | | | | R | | | | | |
| | CPGP 21.51 FRF1 | CPGH 060204 FR/L F1 | 1/4 | .016 | | | | | | | | | R | | | | | |

Boring bars ➡ K173

● : 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)

# 55 degree Diamond Positive type (DC..)

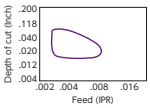
| (inch) | IC | T |
|---|---|---|
| DC..21.5 | 1/4 | 3/32 |
| DC..32.5 | 3/8 | 5/32 |

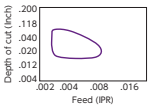


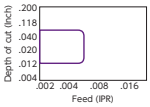

| | | Cermet | | | | | Carbide | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PVD Coated | | PVD Coated | | | | | | | CVD |
| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | |

● : 1st Choice
● : Alternate choice

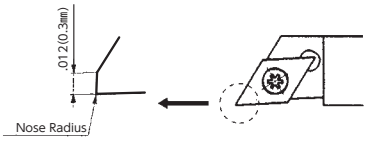
| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | DCGT 21.501 FNAM3 | DCGT 070200 FNAM3 | 1/4 | .001 | | | | | | ● | ● | | | ○ | ○ | | |
| | DCGT 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  wiper insert | DCGT 32.502 AM3-WP* | TFD 11FR05AM3 | 3/8 | .002 | | | | | | | ● | | | | | | |
| | 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 | | | | | | | | ● | ○ | | | | |



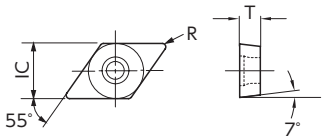

Holders ➡ K42 • K43 • K44 • K45




*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.

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

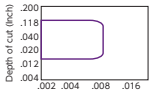
| (inch) | IC | T |
|---|---|---|
| DC..21.5 | 1/4 | 3/32 |
| DC..32.5 | 3/8 | 5/32 |

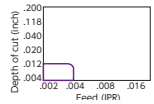


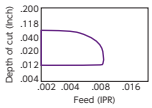

| | | Cermet | | | | | Carbide | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PVD Coated | | PVD Coated | | | | | | | CVD | |
| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 | |
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | | |

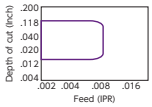
● : 1st Choice
● : Alternate choice

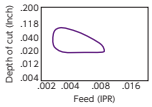
| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | DCGT 21.504M CL | DCGT 070201M CL | 1/4 | .003 | | | | | | | ● | | ○ | | | | |
| | DCGT 21.508M CL | DCGT 070202M CL | 1/4 | .007 | | | | | | | ● | | ○ | | | | |
| | 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 FNAZ7 | DCGT 070200 FNAZ7 | 1/4 | .001 | | | | | | ○ | | | | | | | |
| | DCGT 21.504M FNAZ7 | DCGT 070201M FNAZ7 | 1/4 | .003 | | | | | | ○ | | | | | | | |
| | DCGT 21.508M FNAZ7 | DCGT 070202M FNAZ7 | 1/4 | .007 | | | | | | ○ | | | | | | | |
| | DCGT 32.501 FNAZ7 | DCGT 11T300 FNAZ7 | 3/8 | .001 | | | | | | ● | ○ | | ○ | | ○ | | |
| | DCGT 32.504M FNAZ7 | DCGT 11T301M FNAZ7 | 3/8 | .003 | | | | | | ● | ○ | | ○ | | ○ | | |
| | DCGT 32.508M FNAZ7 | DCGT 11T302M FNAZ7 | 3/8 | .007 | | | | | | ● | ○ | | ○ | | ○ | | |
| | DCGT 32.51M FNAZ7 | DCGT 11T304M FNAZ7 | 3/8 | .015 | | | | | | ● | ○ | | ○ | | ○ | | |
| | DCGT 32.52 FNAZ7 | DCGT 11T308 FNAZ7 | 3/8 | .031 | | | | | | ● | ○ | | | | ○ | | |
|  | DCGT 21.51 FN1L | DCGT 070204 FN1L | 1/4 | .016 | | | | | | ○ | | | | | | | |
| | DCGT 32.508 FN1L | DCGT 11T302 FN1L | 3/8 | .008 | | | | | | ○ | | | | | | | |
| | DCGT 32.51 FN1L | DCGT 11T304 FN1L | 3/8 | .016 | | | | | | ○ | | | | | | | |
|  | 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 | | | | Ⓡ Ⓛ | R Ⓛ | | |
| | 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 | | Ⓡ | | | | | | | | Ⓡ Ⓛ | 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 | | Ⓡ Ⓛ | | | | | | | | Ⓡ Ⓛ | R Ⓛ | | |
| | DCGT 21.51 R/L S | DCGT 070204 R/L S | 1/4 | .016 | | | | | | R | | | | Ⓡ | | | |
| | DCGT 32.501 R/L S | DCGT 11T300 R/L S | 3/8 | .001 | | | | | | R | R | | R | Ⓡ Ⓛ | 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 | | |
| | DCGT 32.508M R/L S | DCGT 11T302M R/L S | 3/8 | .007 | | | | | | Ⓡ | R | | Ⓡ | | | | |
| | DCGT 32.508 R/L S | DCGT 11T302 R/L S | 3/8 | .008 | | | | | | R | | | | Ⓡ Ⓛ | 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 TR/L AS | DCMT 070201 TR/L AS | 1/4 | .004 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | DCMT 21.508 TR/L AS | DCMT 070202 TR/L AS | 1/4 | .008 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | DCMT 21.51 TR/L AS | DCMT 070204 TR/L AS | 1/4 | .016 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | DCMT 32.504 TR/L AS | DCMT 11T301 TR/L AS | 3/8 | .004 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | DCMT 32.508 TR/L AS | DCMT 11T302 TR/L AS | 3/8 | .008 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | DCMT 32.51 TR/L AS | DCMT 11T304 TR/L AS | 3/8 | .016 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |

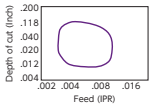


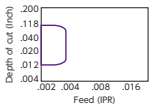



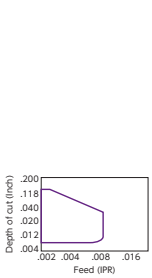



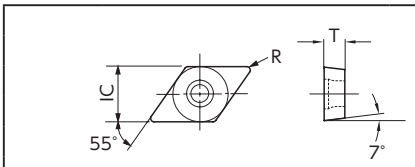



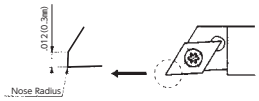

● : Stock ○ : 1-2 week delivery Ⓜ : Mirror finish
R : Stock (Right-hand only) L : Stock (Left-hand only) Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only)




| | | |
|---|---|---|
| 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 | |
| wiper insert | DCGT 21.502 R/L S-WP* | TFD 07FR/L05 | 1/4 | .002 | | | | | | R | | | | Ⓡ | ⓇⓁ | | | |
| | DCGT 21.506 R/L S-WP* | TFD 07FR/L15 | 1/4 | .006 | | | | | | R | | | | | ⓇⓁ | | | |
| | DCGT 32.502 R/L S-WP* | TFD 11FR/L05 | 3/8 | .002 | | | | | | R | | | | Ⓡ | Ⓡ | | | |
| | DCGT 32.506 R/L S-WP* | TFD 11FR/L15 | 3/8 | .006 | | | | | | R | | | | | Ⓡ | | | |
| | DCGT 21.501 R/L U | DCGT 070200 R/L U | 1/4 | .001 | | | | | | | | | | Ⓡ | Ⓡ | | | |
| | DCGT 21.504 R/L U | DCGT 070201 R/L U | 1/4 | .004 | | | | | | | | | | Ⓡ | Ⓡ | | | |
| | DCGT 21.508 R/L U | DCGT 070202 R/L U | 1/4 | .008 | | | | | | | | | | Ⓡ | ⓇⓁ | | | |
| | DCGT 32.501 R/L U1 | DCGT 11T300 R/L U1 | 3/8 | .001 | | | | | | | | | Ⓡ | Ⓡ | ⓇⓁ | | | |
| | DCGT 32.504 R/L U1 | DCGT 11T301 R/L U1 | 3/8 | .004 | | | | | | | Ⓡ | | Ⓡ | Ⓡ | ⓇⓁ | | | |
| | DCGT 32.508 R/L U1 | DCGT 11T302 R/L U1 | 3/8 | .008 | | | | | | | Ⓡ | | Ⓡ | Ⓡ | ⓇⓁ | | | |
| | DCGT 32.51 R/L U1 | DCGT 11T304 R/L U1 | 3/8 | .016 | | | | | | | | | Ⓡ | Ⓡ | ⓇⓁ | | | |
| wiper insert | DCGT 21.502 R/L U-WP* | TFD 07FR/L05U | 1/4 | .002 | | | | | | Ⓡ | | | | Ⓡ | Ⓡ | | | |
| | DCGT 21.506 R/L U-WP* | TFD 07FR/L15U | 1/4 | .006 | | | | | | Ⓡ | | | | | Ⓡ | | | |
| | DCGT 32.502 R/L U1-WP* | TFD 11FR/L05U1 | 3/8 | .002 | | | | | | Ⓡ | | | | Ⓡ | Ⓡ | | | |
| | DCGT 32.506 R/L U1-WP* | TFD 11FR/L15U1 | 3/8 | .006 | | | | | | Ⓡ | | | | | Ⓡ | | | |
| | DCET 21.502 R/L KHG | DCET 0702005 R/L KHG | 1/4 | .002 | | | | | | | | | | ⓇⓁ | | | | |
| | DCET 21.503 R/L KHG | DCET 0702008 R/L KHG | 1/4 | .003 | | | | | | | | | | ⓇⓁ | | | | |
| | DCET 21.507 R/L KHG | DCET 0702018 R/L KHG | 1/4 | .007 | | | | | | | | | | ⓇⓁ | | | | |
| | DCET 21.508 R/L KHG | DCET 070202 R/L KHG | 1/4 | .008 | | | | | | | | | | ⓇⓁ | | | | |
| | DCET 32.502 R/L KHG | DCET 11T3005 R/L KHG | 3/8 | .002 | | | | | | | | | Ⓡ | ⓇⓁ | | | | |
| | DCET 32.503 R/L KHG | DCET 11T3008 R/L KHG | 3/8 | .003 | | | | | | | | | Ⓡ | ⓇⓁ | | | | |
| | DCET 32.507 R/L KHG | DCET 11T3018 R/L KHG | 3/8 | .007 | | | | | | | | | Ⓡ | ⓇⓁ | | | | |
| | DCET 32.508 R/L KHG | DCET 11T302 R/L KHG | 3/8 | .008 | | | | | | | | | Ⓡ | ⓇⓁ | | | | |
| | DCET 21.503 UHG | DCET 0702008 R/L UHG | 1/4 | .003 | | | | | | | | | | Ⓡ | | | | |
| | DCET 32.503 UHG | DCET 11T3008 R/L UHG | 3/8 | .003 | | | | | | | | | | Ⓡ | | | | |
| | 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 | | | | | | | | | | | | ○ | | |
| wiper insert | DCGW 21.502RH-WP* Ⓜ | TFD 07FR05H | 1/4 | .002 | | | | | | | | | | | | ○ | | |
| | DCGW 32.502RH-WP* Ⓜ | TFD 11FR05H | 3/8 | .006 | | | | | | | | | | | | ○ | | |

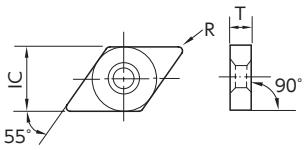



*Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.3mm (.012") flat on the cutting edge when the insert is set into the toolholder.
The flat on the cutting edge ensures a superior surface when feed rates are increased.
WP style inserts can be used in toolholders: SDJC, CH-SDUL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

Holders ➡ K42 • K43 • K44 • K45

## 55 degree Diamond Negative type (DN..)

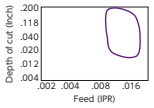
| (inch) | IC | T |
|---|---|---|
| DN..43 | 1/2 | 3/16 |
| DN..44 | 1/2 | 1/4 |




| | | 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 | | | | | | ● | ● | ● | | | | | | |

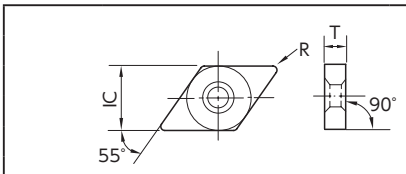
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | 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 441 G | DNMG 150604 ENBG | 1/2 | .016 | | | ○ | | | | | | | | | | |
|  | DNGG 432 R6 | DNGG 150408 ENBR6 | 1/2 | .031 | ● | | | | | | | | | | | | |
|  | DNGG 4304 R/L RN1 | DNGG 150401 TR/L RN1 | 1/2 | .004 | R L | | | | | | | | | | | | |
| | DNGG 431 R/L RN1 | DNGG 150404 TR/L RN1 | 1/2 | .016 | R L | | | | | | | | | | | | |
| | DNGG 432 R/L RN1 | DNGG 150408 TR/L 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 | ● | | ○ | | | | | | | | | | |



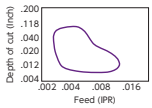
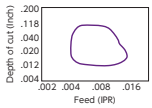
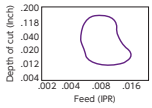

Holders ➡ F8 • F9 • K64
Boring bars ➡ G5

● : Stock ○ : 1-2 week delivery




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

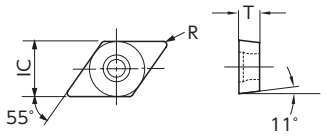
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet | | | | | Carbide | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PVD Coated | | PVD Coated | | | | | | | CVD | |
| | | | | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | 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 | ○ | | | | | | | | | | | | | |

Holders ➡ F8 • F9 • K64
Boring bars ➡ G5

## 55 degree Diamond Positive type (DP..)

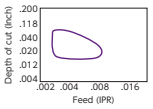
| (inch) | IC | T |
|---|---|---|
| DP..21.5 | 1/4 | 3/32 |
| DP..32.5 | 3/8 | 5/32 |

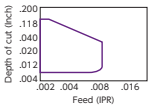



| | | |
|---|---|---|
| Steel | P | ● |
| Stainless Steel | M | ● |
| Cast Iron | K | ● |
| Non-Ferrous Material | N | ● |
| Heat Resistant Alloy | S | ● |
| Hardened Material | H | ● |

● : 1st Choice
● : Alternate choice

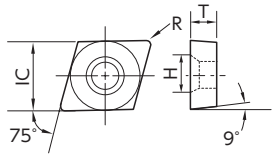
| Shape | Item Number | ISO Item Number | IC | R | Cermet | | | | | Carbide | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PVD Coated | | PVD Coated | | | | | | | CVD |
| | | | | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | 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 FNXAM3 | 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 | | | | | | | | | | | | |




## 75 degree Diamond Positive type (ER..)

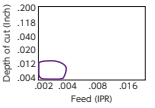
| (inch) | IC | T |
|---|---|---|
| ER..52 | 5/32 | .063 |

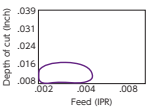



| | | |
|---|---|---|
| Steel | P | ● |
| Stainless Steel | M | ● |
| Cast Iron | K | ● |
| Non-Ferrous Material | N | ● |
| Heat Resistant Alloy | S | ● |
| Hardened Material | H | ● |

● : 1st Choice
● : Alternate choice

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



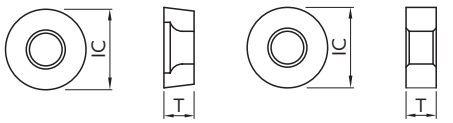

Holders ➡ K172

● : 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 |
|---|---|---|
| RC..43 | .472 | 3/16 |
| RN..32 | 3/8 | 1/8 |
| RN..43 | 1/2 | 3/16 |
| RP..06 | .236 | 3/32 |

| (inch) | IC | T |
|---|---|---|
| RP..08 | .315 | 3/22 |
| RP..10 | .394 | 7/64 |
| RP..12 | .472 | 1/8 |
| RP..16 | .630 | 3/16 |
| RP..20 | .787 | 3/16 |

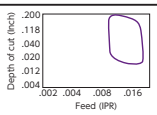


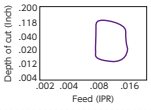

RC_ _, RP_ _ RN_ _

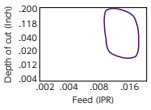
| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● ● ● |
| Hardened Material | H | ● ● ● ● |

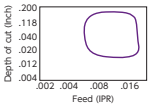
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide KM1 | Carbide CVD CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | RCMX 43M0 GM | RCMX 1204M0 ENBGM | .472 | — | | ○ | ○ | | | | | | | | | | |
| | RCMX 43M0 GB | RCMX 1204M0 GB | .472 | — | | ○ | ○ | | | | | | | | | | |
|  | 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 | — | | ○ | ○ | | | | | | | | | | |



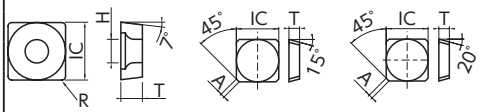




## 90 degree Square Positive type (SC.. / SD.. / SE..)

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

| (inch) | IC | T | H |
|---|---|---|---|
| SD..53 | 5/8 | 3/16 | — |
| SE..42 | 1/2 | 1/8 | — |
| SE..53 | 5/8 | 3/16 | — |



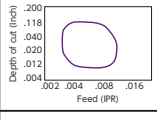

SCMT_ _ SD_ _ SECN_ _

| | | |
|---|---|---|
| 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 [A] | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide KM1 | Carbide CVD 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 | | ● | | | | | | | | | | | |

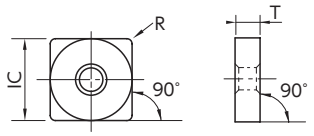
※AE, EE, and PE come with wipers.




Cutters (SDCW) ➡ I 17 • I 18 • I 19

## 90 degree Square Negative type (SN..)

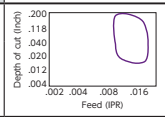
| (inch) | IC | T |
|---|---|---|
| SN..32 | 3/8 | 1/8 |
| SN..43 | 1/2 | 3/16 |




| | | 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

| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | 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 RLB | SNGG 090304 TRLB | 3/8 | .016 | Ⓛ | | | | | | | | | | | | |
| | SNGG 322 RLB | SNGG 090308 TRLB | 3/8 | .031 | ⓇⓁ | | | | | | | | | | | | |
| | SNGG 431 RLB | SNGG 120404 TRLB | 1/2 | .016 | ⓇⓁ | | | | | | | | | | | | |
|  | SNGG 322 RLN1 | SNGG 090308 RLN1 | 3/8 | .031 | R L | | | | | | | | | | | | |
| | SNGG 432 RLN1 | SNGG 120408 RLN1 | 1/2 | .031 | R | | | | | | | | | | | | |
|  | SNGG 432 RLC | SNGG 120408T RLC | 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 | | ● | | | | | | | | | | | |




—

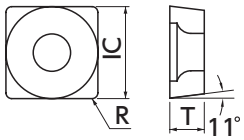
| | |
|---|---|
| Holders | ➡ F10 • F11 |
| Boring bars | ➡ G6 |
| Cutters (SNG) | ➡ I 10 • I 12 • I 14 |

● : 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)

# 90 degree Square Positive type (SP..)

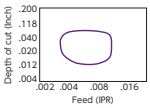
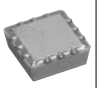
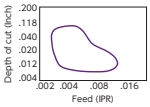
| (inch) | IC | T |
|---|---|---|
| SP..22 | 1/4 | 1/8 |
| SP..32 | 3/8 | 1/8 |
| SP..42 | 1/2 | 1/8 |

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




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

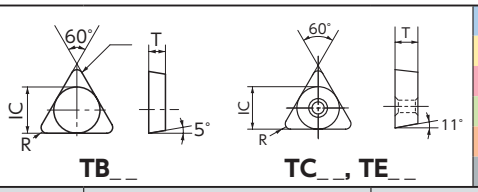
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide KM1 | Carbide CVD 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 TR/LBH1 | SPMH 090324 TR/LBH1 | 3/8 | .094 | Ⓛ | | | | | | | | | | | | | — |
| | SPMH 328 TR/LH1 | SPMH 090332 TR/LAH1 | 3/8 | .126 | Ⓛ | | | | | | | | | | | | | |
|  | SPMR 4310 R/LH2 | SPMR 120440 TR/LH2 | 1/2 | .157 | Ⓛ | | | | | | | | | | | | | — |
|  | 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 EDTR/L | SPKN 1203 EDTR/L | 1/2 | | | R L | | | | | | | | | | | | — |
| | SPKN 53 EDTR/L | SPKN 1504 EDTR/L | 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 | | | ○ | | | | | | | | | | | |

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

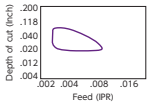
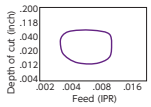
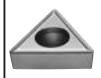
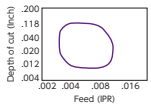
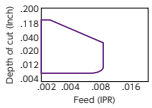
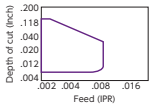
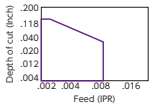
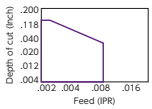
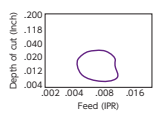
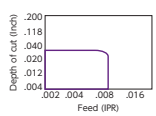
| (inch) | IC | T |
|---|---|---|
| TB..52 | 5/32 | 1/16 |
| TC..21 | 1/4 | 3/32 |
| TC..32 | 3/8 | 5/32 |

| (inch) | IC | T |
|---|---|---|
| TC..52 | 5/32 | 1/16 |
| TC..73 | 7/32 | 3/32 |
| TE..43 | 1/2 | 3/16 |



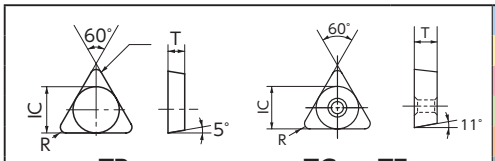

| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet | | | PVD Coated | | Carbide | | | PVD Coated | | | | CVD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 | |
|  | TBGE 521 | TBGE 060104 | 5/32 | .016 | ● | | | | | | | | | | | | | — |
| | TBGE 522 | TBGE 060108 | 5/32 | .031 | ○ | | | | | | | | | | | | | |
|  | TCGT 21.508 FNAM3 | TCGT 110202 FNXAM3 | 1/4 | .008 | | ○ | | | | | | | | | | | |  |
| | TCGT 32.508 AM3 | TCGT 16T302 ENBAM3 | 3/32 | .008 | ● | | | | | | | | | | | | | |
| | TCGT 32.51 AM3 | TCGT 16T304 ENBAM3 | 3/32 | .016 | ● | | | | | | | | | | | | | |
| | TCMT 21.51 AM3 | TCMT 110204 ENBAM3 | 1/4 | .016 | | ○ | | | | | | | | | | | | |
|  | TCGT 21.504 AF1 | TCGT 110201 AF1 | 1/4 | .004 | ● | | | | | | | | | | | | |  |
| | TCGT 21.51 AF1 | TCGT 110204 AF1 | 1/4 | .016 | ● | | | | | | | | | | | | | |
| | TCGT 21.52 AF1 | TCGT 110208 AF1 | 1/4 | .031 | ● | | | | | | | | | | | | | |
|  | TCMT 32.52 AM5 | TCMT 16T308 ENBAM5 | 3/8 | .031 | | | ○ | | | | | | | | | | |  |
|  | TCGT 7304 R/L S | TCGT 090201 R/L S | 7/32 | .004 | | Ⓡ | | | | | | | | ⓇⓁ | Ⓡ | | |  |
| | TCGT 7308 R/L S | TCGT 090202 R/L S | 7/32 | .008 | | ⓇⓁ | | | | | | | | | Ⓡ | | | |
| | TCGT 21.504 R/L S | TCGT 110201 R/L S | 1/4 | .004 | | | | | | | | | | ⓇⓁ | Ⓡ | | | |
|  wiper insert | TCGT 7302 R/L S-WP* | TFT 09FR/L05 | 7/32 | .002 | | | | | | | | | | | Ⓡ | | |  |
| | TCGT 7306 R/L S-WP* | TFT 09FR/L15 | 7/32 | .006 | | | | | | | | | | | Ⓡ | | | |
| | TCGT 21.502 R/L S-WP* | TFT 11FR/L05 | 1/4 | .002 | | | | | | | | | | | Ⓡ | | | |
| | TCGT 21.506 R/L S-WP* | TFT 11FR/L15 | 1/4 | .006 | | | | | | | | | | | Ⓡ | | | |
|  | TCGT 7304 R/L U | TCGT 090201 R/L U | 7/32 | .004 | | | | | | | | | | | Ⓡ | | |  |
| | TCGT 7308 R/L U | TCGT 090202 R/L U | 7/32 | .008 | | | | | | | | | | | Ⓡ | | | |
|  wiper insert | TCGT 7302 R/L U-WP* | TFT 09FR/L05U | 7/32 | .002 | | | | | | | | | | | Ⓡ | | |  |
| | TCGT 7306 R/L U-WP* | TFT 09FR/L15U | 7/32 | .006 | | | | | | | | | | | Ⓡ | | | |
| | TCGT 21.502 R/L U1-WP* | TFT 11FR/L05U1 | 1/4 | .002 | | | | | | | | | | | Ⓡ | | | |
| | TCGT 21.506 R/L U1-WP* | TFT 11FR/L15U1 | 1/4 | .006 | | | | | | | | | | | Ⓡ | | | |
|  | TCGH 5204 TR/L B1 | TCGH 060101 TR/L B1 | 5/32 | .004 | L | | | | | | | | | | | | |  |
| | TCGH 5208 FR/L B1 | TCGH 060102 FR/L B1 | 5/32 | .008 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | TCGH 5208 TR/L B1 | TCGH 060102 TR/L B1 | 5/32 | .008 | ⓇⓁ | | | | | | | | | | | | | |
| | TCGH 521 FR/L B1 | TCGH 060104 FR/L B1 | 5/32 | .016 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | TCGH 521 TR/L B1 | TCGH 060104 TR/L B1 | 5/32 | .016 | L | | | | | | | | | | | | | |
|  | TCGP 5204 FR/L F05 | TCGH 060101 FR/L F05 | 5/32 | .004 | | | | | | | | | R | | | | |  |
| | TCGP 5208 FR/L F05 | TCGH 060102 FR/L F05 | 5/32 | .008 | | | | | | | | | RⓁ | Ⓡ | ⓇⓁ | | | |
| | TCGP 5208 R/L F05 | TCGH 060102 TR/L F05 | 5/32 | .008 | | ⓇⓁ | | | Ⓡ | | | | | | | | | |
| | TCGP 521 FR/L F05 | TCGH 060104 FR/L F05 | 5/32 | .016 | | | | | | | | | R | Ⓡ | Ⓡ | | | |
| | TCGP 521 R/L F05 | TCGH 060104 TR/L F05 | 5/32 | .016 | | ⓇⓁ | | | Ⓡ | | | | | | | | | |



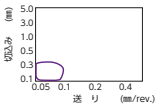
● : Stock ○ : 1-2 week delivery
R : Stock (Right-hand only) L : Stock (Left-hand only) Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only)

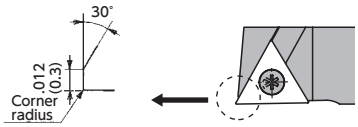



TB_ _ TC_ _, TE_ _

| | | |
|---|---|---|
| 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 XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide PVD Coated KM1 | Carbide CVD CP1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | TCGH 5208 F℞K | TCGH 060102 F℞K | 5/32 | .008 | | | | | | | | | Ⓛ | | | | |  |
| | TCGH 5521 F℞K | TCGH 060104 F℞K | 5/32 | .016 | | | | | | | | | Ⓛ | | | | | |
|  | TCGD 52Y | TCGB 060102 TN | 5/32 | .008 | ○ | | | | | | | | | | | | | — |
| | TCGD 521 | TCGB 060104 TN | 5/32 | .016 | ● | | | | | | | | | | | | | |
| | 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 | | | | | | | | | | | ○ | | | |
|  | TEEN 43 PR | TEEN 2204 PFTR | 1/2 | .016 | | ○ | | | | | | | | | | | | — |



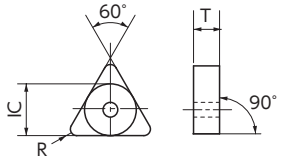

＊Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.3mm (.012") flat on the cutting edge when the insert is set into the toolholder.
The flat on the cutting edge ensures a superior surface when feed rates are increased.
WP style inserts can be used in toolholders: STAC

Holders (TC) ➡ K179



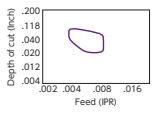
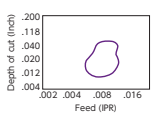
## 60 degree Triangle Negative type (TN..)

| (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 |




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

● : 1st Choice
● : Alternate choice

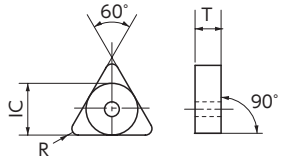
| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide PVD Coated KM1 | Carbide CVD CP1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | TNEG 3304M F℞D1 | TNEG 160401M F℞D1 | 3/8 | .003 | | | | | ⓇⓁ | | | | | | | | |  |
| | TNEG 3308 F℞D1 | TNEG 160402 F℞D1 | 3/8 | .008 | | | | | ⓇⓁ | | | | ⓇⓁ | | | | | |
| | TNEG 331 F℞D1 | TNEG 160404 F℞D1 | 3/8 | .016 | | | | | ⓇⓁ | | | | ⓇⓁ | | | | | |
| | TNEG 332 F℞D1 | TNEG 160408 F℞D1 | 3/8 | .031 | | | | | ⓇⓁ | | | | ⓇⓁ | | | | | |
|  | TNGA 222 | TNGA 110308 TN | 1/4 | .031 | ○ | | | | | | | | | | | | | — |
| | TNGA 322 | TNGA 160308 TN | 3/8 | .031 | ● | | | | | | | | | | | | | |
| | TNMA 322 | TNMA 160408 TN | 3/8 | .031 | | | ● | | | | | | | | | | | |
| | TNGA 332 | TNGA 160408 TN | 3/8 | .031 | ○ | | | | | | | | | | | | | |
| | TNGA 333 | TNGA 160412 TN | 3/8 | .047 | ○ | | | | | | | | | | | | | |
| | TNGA 432 | TNGA 220408 TN | 1/2 | .031 | ○ | | | | | | | | | | | | | |
| | TNGA 433 | TNGA 220412 TN | 1/2 | .047 | ● | | | | | | | | | | | | | |
|  | TNGG 221 ℞B | TNGG 110304 T℞B | 1/4 | .016 | ⓇL | | | | | | | | | | | | |  |
| | TNGG 222 ℞B | TNGG 110308 T℞B | 1/4 | .031 | Ⓛ | | | | | | | | | | | | | |
| | TNGG 322 ℞B | TNGG 160308 T℞B | 3/8 | .031 | Ⓛ | | | | | | | | | | | | | |
| | TNGG 331 ℞B | TNGG 160404 T℞B | 3/8 | .016 | ⓇⓁ | | | | | | | | | | | | | |
| | TNGG 332 ℞B | TNGG 160408 T℞B | 3/8 | .031 | ⓇⓁ | | | | | | | | | | | | | |

Holders ➡ F14 • K60

# 60 degree Triangle Negative type (TN..)

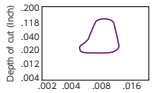
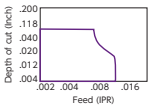
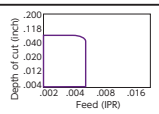
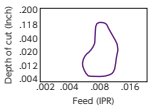
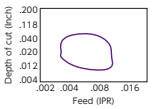
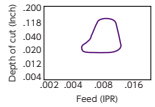
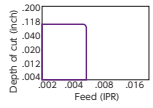
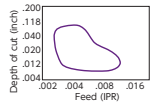
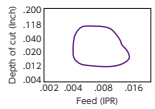
| (inch) | IC | T |
|---|---|---|
| TN..22 | 1/4 | 1/8 |
| TN..32 | 3/8 | 1/8 |

| (inch) | IC | T |
|---|---|---|
| TN..33 | 3/8 | 3/16 |
| TN..43 | 1/2 | 3/16 |



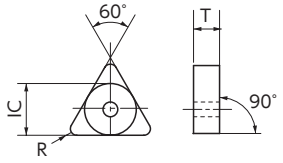

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● ● ● |
| Hardened Material | H | ● ● ● ● |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide KM1 | Carbide CVD CP1 | Depth of cut (inch) / Feed (IPR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | TNGG 3308 FR/LC | TNGG 160402 FR/LC | 3/8 | .008 | | | | | | | | | | | Ⓡ | | |  |
| | TNGG 332 TR/LC | TNGG 160408 TR/LC | 3/8 | .031 | ⓇⓁ | | | | | | | | | | | | | |
| | TNGG 431 R/LC | TNGG 220404 TR/LC | 1/2 | .016 | R L | | | | | | | | | | | | | |
| | TNGG 432 R/LC | TNGG 220408 TR/LC | 1/2 | .031 | R L | | | | | | | | | | | | | |
| | TNMG 331 R/LC | TNMG 160404 TR/LC | 3/8 | .016 | ⓇⓁ | | Ⓡ | | | | | | | | | | | |
| | TNMG 332 R/LC | TNMG 160408 TR/LC | 3/8 | .031 | ⓇⓁ | | | | | | | | | | | | | |
|  | TNGG 3304 FR/LDA | TNGG 160401 FR/LDA | 3/8 | .004 | Ⓡ | | | | | | | | | Ⓡ | Ⓡ | | |  |
|  | TNGG 331 R/L L2 | TNGG 160404 R/L L2 | 3/8 | .016 | R | | | | | | | | | | | | |  |
| | TNGG 332 R/L L2 | TNGG 160408 R/L L2 | 3/8 | .031 | R | | | | | | | | | | | | | |
|  | TNGG 321 R/L N1 | TNGG 160304 R/L N1 | 3/8 | .016 | R L | | | | | | | | | | | | |  |
| | TNGG 322 R/L N1 | TNGG 160308 R/L N1 | 3/8 | .031 | L | | | | | | | | | | | | | |
| | TNGG 3308 R/L N1 | TNGG 160402 TR/L N1 | 3/8 | .008 | ⓇⓁ | | | | | | | | | | | | | |
| | TNGG 331 R/L N1 | TNGG 160404 TR/L N1 | 3/8 | .016 | R L | | | | | | | | | | | | | |
| | TNGG 332 R/L N1 | TNGG 160408 TR/L N1 | 3/8 | .031 | R L | | | | | | | | | | | | | |
|  | TNGG 332 R1 | TNGG 160408 ENBR1 | 3/8 | .031 | ● | | | | | | | | | | | | |  |
|  | TNGG 3304 FR/LU2 | TNGG 160401 FR/LU2 | 3/8 | .004 | Ⓡ | | | | | | | | | Ⓡ | R | | |  |
| | TNGG 3308 FR/LU2 | TNGG 160402 FR/LU2 | 3/8 | .008 | ⓇⓁ | | | | | | | ⓇⓁ | | | RⓁ | | | |
| | TNGG 331 FR/LU2 | TNGG 160404 FR/LU2 | 3/8 | .016 | ⓇⓁ | | | | | | | ⓇⓁ | | | RⓁ | | | |
| | TNGG 332 FR/LU2 | TNGG 160408 FR/LU2 | 3/8 | .031 | | | | | | | | ⓇⓁ | | | RⓁ | | | |
|  | 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 • K60

● : 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)




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

● : 1st Choice
● : Alternate choice

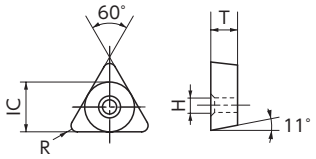
| Shape | Item Number | ISO Item Number | IC | R | Cermet | | | | | Carbide | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PVD Coated | | PVD Coated | | | | | | | CVD |
| | | | | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|  | 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 | | | ● | | | | | | | | | | |

Holders ➡ F14 • K60

# 60 degree Triangle Positive type (TP..)

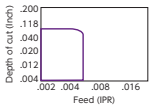
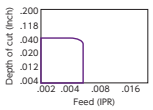
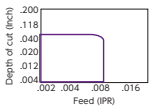
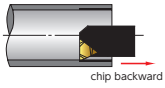
| (inch) | IC | T |
|---|---|---|
| TP..22 | 1/4 | 1/8 |
| TP..32 | 3/8 | 1/8 |
| TP..43 | 1/2 | 3/16 |

| (inch) | IC | T |
|---|---|---|
| TP..63 | 3/16 | 3/32 |
| TP..73 | 7/32 | 3/32 |



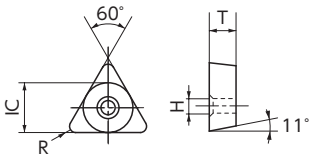

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● |
| Hardened Material | H | ● ● ● |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide KM1 | Carbide CVD 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 | | ● | | | | | | | | | | | | |
| | TPC 433 | 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 | | | | | | | | | Ⓛ | | Ⓛ | | |  |
| | TPGH 631 F R/L B3 | TPGH 080204 F R/L B3 | 3/16 | .016 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | 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 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | TPGH 731 F R/L B2 | TPGH 090204 F R/L B2 | 7/32 | .016 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | 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 | | | | | | | | | Ⓛ | | Ⓛ | | | |
| | 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 | | | | | | | | | Ⓡ | Ⓡ | Ⓡ | | |  |
| | TPGH 631 F R/L F1 | TPGH 080204 F R/L F1 | 3/16 | .016 | | | | | | | | | Ⓡ | Ⓡ | Ⓡ | | | |
| | TPGH 7304 F R/L F1 | TPGH 090201 F R/L F1 | 7/32 | .004 | | | | | | | | | Ⓡ | | | | | |
| | TPGH 7308 F R/L F1 | TPGH 090202 F R/L F1 | 7/32 | .008 | | | | | | | | | Ⓡ | Ⓡ | Ⓡ | | | |
| | TPGH 731 F R/L F1 | TPGH 090204 F R/L F1 | 7/32 | .016 | | | | | | | | | Ⓡ | Ⓡ | Ⓡ | | | |
| | TPGH 732 F R/L F1 | TPGH 090208 F R/L F1 | 7/32 | .031 | | | | | | | | | Ⓡ | | Ⓡ | | | |
| | TPGH 2208 F R/L F1 | TPGH 110302 F R/L F1 | 1/4 | .008 | | | | | | | | | Ⓡ | Ⓡ | Ⓡ | | |  |
| | TPGH 221 F R/L F1 | TPGH 110304 F R/L F1 | 1/4 | .016 | | | | | | | | | Ⓡ | Ⓡ | Ⓡ | | | |
| | TPGH 222 F R/L F1 | TPGH 110308 F R/L F1 | 1/4 | .031 | | | | | | | | | Ⓡ | | Ⓡ | | | |

Holders ➡ K179

● : 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)




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

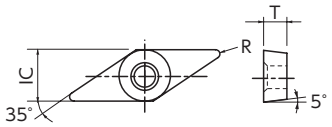
● : 1st Choice
● : Alternate choice

| 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 R/L F1 | TPGH 080202 T R/L F1 | 3/16 | .008 | | Ⓡ | | | Ⓡ | | | | | | | | |
| | TPGH 631 R/L F1 | TPGH 080204 T R/L F1 | 3/16 | .016 | | Ⓡ | | | Ⓡ | | | | | | | | |
| | TPGP 7308 R/L F1 | TPGH 090202 T R/L F1 | 7/32 | .008 | | Ⓡ | | | Ⓡ | | | | | | | | |
| | TPGP 731 R/L F1 | TPGHP 090204 T R/L F1 | 7/32 | .016 | | Ⓡ | | | Ⓡ | | | | | | | | |
| | TPGP 2208 R/L F1 | TPGH 110302 T R/L F1 | 1/4 | .008 | | Ⓡ | | | Ⓡ | | | | | | | | |
| | TPGP 221 R/L F1 | TPGH 110304 T R/L F1 | 1/4 | .016 | | Ⓡ | | | Ⓡ | | | | | | | | |
| | TPGP 222 R/L F1 | TPGH 110308 T R/L F1 | 1/4 | .031 | | Ⓡ | | | Ⓡ | | | | | | | | |
|  | TPGP 7308 R/L FG | TPGH 090202 R/L FG | 7/32 | .008 | | | | | Ⓡ | | | | R | | | | |
| | TPGP 731 R/L FG | TPGH 090204 R/L FG | 7/32 | .016 | | | | | Ⓡ | | | | R | | | | |
| | TPGH 2208 R/L FG | TPGH 110302 R/L FG | 1/4 | .008 | | | | | Ⓡ | | | | R | | | | |
| | TPGH 221 R/L FG | TPGH 110304 R/L FG | 1/4 | .016 | | | | | Ⓡ | | | | R | | | | |
|  | TPGP 7308 F R/L K | TPGH 090202 F R/L K | 1/4 | .008 | | | | | | | | | Ⓛ | | | | |
| | TPGP 7318 F R/L K | TPGH 090204 F R/L K | 1/4 | .016 | | | | | | | | | Ⓛ | | | | |
| | TPGP 7328 F R/L K | TPGH 090208 F R/L K | 1/4 | .031 | | | | | | | | | Ⓛ | | | | |
|  | 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 | ● | | | | | | | | | | | | |
| | TPGR 432 AF1 | TPGR 220408 ENBAF1 | 1/2 | .031 | ● | | | | | | | | | | | | |
|  | TPGS 731 R/L P1 | TPGS 090204 R/L P1 | 7/32 | .016 | R L | | | | | | | | | | | | |
| | TPGR 221 R/L P1 | TPGR 110304 R/L P1 | 1/4 | .016 | R L | | | | | | | | | | | | |
| | TPGR 321 R/L P1 | TPGR 160304 R/L P1 | 3/8 | .016 | R L | | | | | | | | | | | | |
| | TPGR 322 R/L P1 | TPGR 160308 R/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 ➡ K179

## 35 degree Diamond Positive type (VB..)

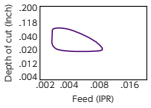
| (inch) | IC | T |
|---|---|---|
| VB..21 | 1/4 | 3/32 |
| VB..22 | 1/4 | 1/8 |
| VB..33 | 3/8 | 3/16 |

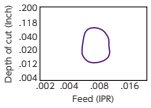


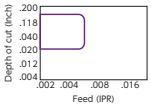

| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | ● | | | | | | | | | | | | |
| NEW  | VBGT 3308 YL* | VBGT 160402 YL | 3/8 | .008 | | | | | | ● | | ● | ○ | | | | |
| | VBGT 331 YL | VBGT 160404 YL | 3/8 | .016 | | | | | | ● | | ● | ○ | | | | |
| | VBGT 332 YL* | VBGT 160408 YL | 3/8 | .031 | | | | | | ● | | ● | ○ | | | | |



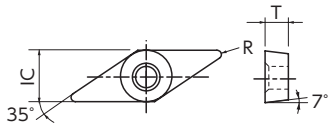

Holders ➡ K50



● : Stock ○ : 1-2 week delivery ■ : While stock lasts Ⓜ : Mirror finish ＊To be released in March 2015
R : Stock (Right-hand only) L : Stock (Left-hand only) Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only)

# 35 degree Diamond Positive type (VC..)

| (inch) | IC | T |
|---|---|---|
| VC..13 | .313 | .125 |
| VC..22 | 1/4 | 1/8 |

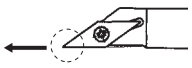



| | | Cermet | | | | | Carbide | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PVD Coated | | PVD Coated | | | | | | | CVD |
| | | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Cast Iron | K | ● | ● | | ● | ● | | | | | | | | ● |
| Non-Ferrous Material | N | ● | ● | | | ● | | | | ● | ● | ● | ● | |
| Heat Resistant Alloy | S | | | | | | ● | ● | ● | ● | | | | |
| Hardened Material | H | | | | | | ● | ● | ● | | | | | |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VCGT 21.508 FN1L | VCGT 110202 FN1L | 1/4 | .008 | | | | | | ○ | | | | | | | |
| | VCET 2203 ℞UHG | VCET 1103008 ℞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 FNXAM3 | 1/4 | .008 | | ○ | | | | | | | | | | | |
| | VCGT 221M FNAM3 | VCGT 110304M FNAM3 | 1/4 | .015 | | | | | | ● | ● | | ○ | | | | |
| | VCGT 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 FNAZ7 | VCGT 110300 FNAZ7 | 1/4 | .001 | | | | | | ● | | | | | ○ | | |
| | VCGT 2204M FNAZ7 | VCGT 110301M FNAZ7 | 1/4 | .003 | | | | | | ● | | | | | ○ | | |
| | VCGT 2208M FNAZ7 | VCGT 110302M FNAZ7 | 1/4 | .007 | | | | | | ● | | | | | ○ | | |
| | VCGT 221M FNAZ7 | VCGT 110304M FNAZ7 | 1/4 | .015 | | | | | | ● | | | | | ○ | | |
| | VCMT 2204 T℞AS | VCMT 110301 T℞AS | 1/4 | .004 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | VCMT 2208 T℞AS | VCMT 110302 T℞AS | 1/4 | .008 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| | VCMT 221 T℞AS | VCMT 110304 T℞AS | 1/4 | .016 | | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | | | | | | |
| wiper insert | VCGT 2202 ℞S-WP* | TFV 11F ℞05SX | 1/4 | .002 | | | | | | | | | | R | Ⓡ | | |
| wiper insert | VCGT 2204 ℞S-WP* | TFV 11F ℞10SX | 1/4 | .004 | | | | | | | | | | R | Ⓡ | | |
| | VCGT 2201 ℞U | VCGT 110300 ℞U | 1/4 | .001 | | | | | | | | | | Ⓡ | Ⓡ | | |
| | VCGT 2204M ℞U | VCGT 110301M ℞U | 1/4 | .003 | | | | | | | Ⓡ | | | | | | |
| | VCGT 2204 ℞U | VCGT 110301 ℞U | 1/4 | .004 | | | | | | | | | | Ⓡ | Ⓡ | | |
| | VCGT 2208M ℞U | VCGT 110302M ℞U | 1/4 | .007 | | | | | | | Ⓡ | | | | | | |
| | VCGT 2208 ℞U | VCGT 110302 ℞U | 1/4 | .008 | | | | | | | | | | Ⓡ | Ⓡ | | |
| wiper insert | VCGT 2202 ℞U-WP* | TFV 11F℞05U | 1/4 | .002 | | | | | | | | | | Ⓡ | Ⓡ | | |
| wiper insert | VCGT 2204 ℞U-WP* | TFV 11F℞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 | | | | | | | | | | | | ● | |



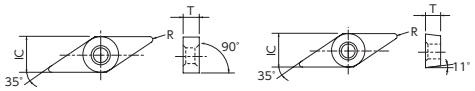
*Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.2mm (.008") flat on the cutting edge when the insert is set into the toolholder.
The flat on the cutting edge ensures a superior surface when feed rates are increased.
WP style inserts can be used in toolholders: SVAC

Holders ➡ K52 • K54

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

| (inch) | IC | T |
|---|---|---|
| VN..33 | 3/8 | 3/16 |
| VN..43 | 1/2 | .187 |

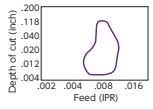
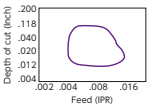
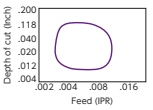
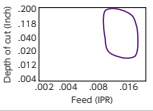
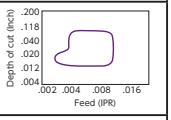
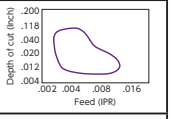
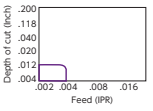
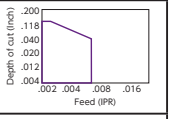
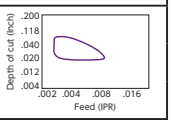
| (inch) | IC | T |
|---|---|---|
| VP..08 | 3/16 | 3/32 |
| VP..22 | 1/4 | 1/8 |




VN_ _ VP_ _

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

● : 1st Choice
● : Alternate choice

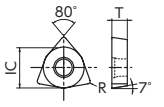
| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet PVD Coated Q15 | Cermet PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | Carbide CVD KM1 | Carbide CVD CP1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | VNGA 332 | VNGA 160408 | 3/8 | .031 | ● | | | | | | | | | | | | | — |
|  | VNGG 3304 R/L N1 | VNGG 160401 R/L N1 | 3/8 | .004 | R L | | | | | | | | | | | | |  |
| | VNGG 331 R/L N1 | VNGG 160404 R/L N1 | 3/8 | .016 | R L | | | | | | | | | | | | | |
| | VNGG 332 R/L N1 | VNGG 160408 R/L N1 | 3/8 | .031 | R L | | | | | | | | | | | | | |
|  | VNGG 3308 FNZP | VNGG 160402 FNZP | 3/8 | .008 | | | | | | ● | | ○ | | | | | |  |
| | VNMP 331 ZP | VNMM 160404 ENBZP | 3/8 | .016 | ● | | | | | | | | | | | | | |
| | VNGG 331 FNZP | VNGG 160404 FNZP | 3/8 | .016 | | | | | | ● | | ○ | | | | | | |
| | VNGG 332 FNZP | VNGG 160408 FNZP | 3/8 | .031 | | | | | | ● | | ○ | | | | | | |
|  | VNMG 331 GE | VNMG 160404 GE | 3/8 | .016 | | | ● | | | | | | | | | | |  |
| | VNMG 331 AM1 | VNMG 160404 ENAM1 | 3/8 | .016 | | ● | | | ○ | | | | | | | | | |
| | VNMG 331 AM1 | VNMG 160404 ENBAM1 | 3/8 | .016 | ● | | ○ | ○ | | | | | | | | | | |
| | VNMG 331 AM1 | VNMG 160404 TNBAM1 | 3/8 | .016 | | | | | | ○ | | ○ | | | | | | |
| | VNMG 332 AM1 | VNMG 160408 ENAM1 | 3/8 | .031 | | ● | | | ○ | | | | | | | | | |
| | VNMG 332 AM1 | VNMG 160408 ENBAM1 | 3/8 | .031 | ● | | ○ | ○ | | | | | | | | | | |
| | VNMG 332 AM1 | VNMG 160408 TNBAM1 | 3/8 | .031 | | | | | | ○ | | ○ | | | | | | |
| | VNMG 333 AM1 | VNMG 160412 ENBAM1 | 3/8 | .047 | ● | | | | | | | | | | | | | |
| | VNMG 431 AM1 | VNMG 220404 AM1 | 1/2 | .016 | ● | | | | | | | | | | | | | |
| | VNMG 432 AM1 | VNMG 220408 AM1 | 1/2 | .031 | ● | | | | | | | | | | | | | |
|  | VNMG 331 G | VNMG 160404 G | 3/8 | .016 | | | | | | | | | | | | | ○ |  |
| | VNMG 332 G | VNMG 160408 G | 3/8 | .031 | | | | | | | | | | | | | ○ | |
| | VNMG 333 G | VNMG 160412 G | 3/8 | .047 | | | | | | | | | | | | | ○ | |
|  | VNMG 332 WM | VNMG 160408 ENWM | 3/8 | .031 | | ● | | | ○ | | | | | | | | |  |
|  | VNMG 331 ZF1 | VNMG 160404 ENBZF1 | 3/8 | .016 | | | ● | | | | | | | | | | |  |
|  | VPET 0802005 R/L KHG | VPET 0802005 R/L KHG | .187 | .002 | | | | | | | | | | Ⓡ Ⓛ | | | |  |
| | VPET 0802008 R/L KHG | VPET 0802008 R/L KHG | .187 | .003 | | | | | | | Ⓡ | | Ⓡ | Ⓡ Ⓛ | | | | |
| | VPET 0802018 R/L KHG | VPET 0802018 R/L KHG | .187 | .007 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | | |
| | VPET 080202 R/L KHG | VPET 080202 R/L KHG | .187 | .008 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | | |
| | VPET 2202 R/L KHG | VPET 1103005 R/L KHG | 1/4 | .002 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | | |
| | VPET 2203 R/L KHG | VPET 1103008 R/L KHG | 1/4 | .003 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | | |
| | VPET 2207 R/L KHG | VPET 1103018 R/L KHG | 1/4 | .007 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | | |
| | VPET 2208 R/L KHG | VPET 110302 R/L KHG | 1/4 | .008 | | | | | | | | | Ⓡ | Ⓡ Ⓛ | | | | |
|  | VPET 0802008 R/L UHG | VPET 0802008 R/L UHG | .187 | .003 | | | | | | | Ⓡ Ⓛ | | | | | | |  |
|  | 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 | | | | | | ● | ● | | ○ | | | | | |

Holders (VN) ➡ F12 • F13
Holders (VP) ➡ K56 • K57

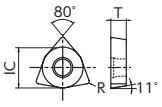
● : Stock ○ : 1-2 week delivery
R : Stock (Right-hand only) L : Stock (Left-hand only) Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only)

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

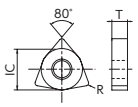
| (inch) | IC | T |
|---|---|---|
| WC..52 | 5/32 | 1/16 |
| WC..21 | 1/4 | 3/32 |
| WN..43 | 1/2 | 3/16 |
| WP..21 | 1/4 | 3/32 |



WC_ _



WP_ _



WN_ _

| | | 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

| Shape | Item Number | ISO Item Number | IC | R | XT3 | C7X | XN4 | Q15 | C7Z | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | CP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | WCGT 521 QB | WCGT 020104 QB | 5/32 | .016 | | ○ | | | | | | | | | | | |
| | WCGT 21.504 FNAM3 | WCGT 040201 FNXAM3 | 1/4 | .004 | | ● | | | | | | | | | | | |
| | WCGT 21.508 FNAM3 | WCGT 040202 FNXAM3 | 1/4 | .008 | | ● | | | | | | | | | | | |
| | WCGT 21.51 FNAM3 | WCGT 040204 FNXAM3 | 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 | | | | | | ● | | ● | | | ○ | | |
| NEW  | WNGG 431 FNUL | WNGG 080404 FNUL | 1/2 | .016 | | | | | | | | ● | ○ | | | | |
| | WNGG 432 FNUL | WNGG 080408 FNUL | 1/2 | .031 | | | | | | | | ● | ○ | | | | |
|  | WPGT 21.504 FNAM3 | WPGT 040201 FNXAM3 | 1/4 | .004 | | ● | | | | | | | | | | | |
| | WPGT 21.508 FNAM3 | WPGT 040202 FNXAM3 | 1/4 | .008 | | ● | | | | | | | | | | | |
| | WPGT 21.51 FNAM3 | WPGT 040204 FNXAM3 | 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

### ❶ Clamping System

| | |
|---|---|
| B, C, V | Clamp-on |
| W | Multi-clamp |
| P | Lever-lock |
| H | Bolt-clamp |
| S | Screw-on |

### ❷ Insert Shape

| C | D | R | S |
|---|---|---|---|
| 80° Diamond | 55° Diamond | Round | Square |

| T | V | W |
|---|---|---|
| Triangluar | 35° Diamond | Trigon |

### ❸ Approach Angle

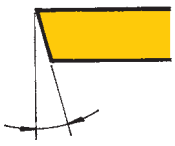
| A | B | D | F | G |
|---|---|---|---|---|
| 91° | 75° | 45° | 91° | 91° |

| H | J | K | L | N |
|---|---|---|---|---|
| 107° 30′ | 93° | 75° | 95° | 62° 30′ |

| P | R | S | V | X |
|---|---|---|---|---|
| 117° 30′ | 75° | 45° | 72° 30′ | Special Design |

| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | | ❼ | ❽ |
|---|---|---|---|---|---|---|---|---|
| C | C | L | N | R | 16 | – | 5 | D |

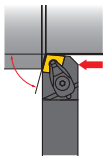
### ❹ Insert Relief Angle



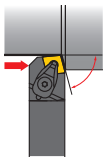
| | |
|---|---|
| N | 0° |
| B | 5° |
| C | 7° |
| P | 11° |
| D | 15° |
| E | 20° |

### ❺ Hand of Tool

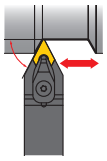
R



L

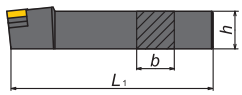


N



### ❻ Shank Size [Height ( *h* ) and Width ( *b* )] (inch)

| | 06 | 08 | 10 | 12 | 16 | 20 | 24 | 85 |
|---|---|---|---|---|---|---|---|---|
| *h* | .375 | .500 | .625 | .750 | 1.000 | 1.250 | 1.500 | 1.250 |
| *b* | .375 | .500 | .625 | .750 | 1.000 | 1.250 | 1.500 | 1.000 |




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

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

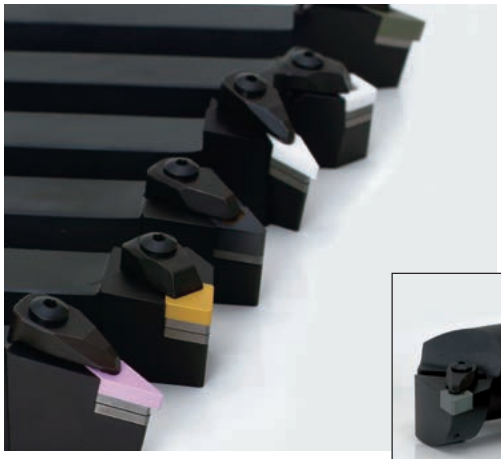
### ❼ Insert Size

| IC (inch) | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
|---|---|---|---|---|---|---|
| T | 2 | 3 | 4 | 5 | 6 | 8 |
| S R | 2 | 3 | 4 | 5 | 6 | 8 |
| W | 2 | 3 | 4 | 5 | 6 | |
| 80° C | | 3 | 4 | 5 | 6 | 8 |
| 55° D | | 3 | 4 | 5 | 6 | 8 |
| 35° V | 2 | 3 | | | | |

### ❽ Length of toolholder ( $L_1$ ) (inch)

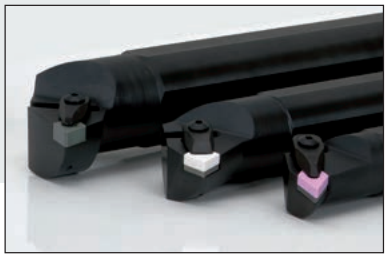
| B | C | D | E |
|---|---|---|---|
| 4.500 | 5.000 | 6.000 | 7.000 |

# Multi Clamp Toolholders

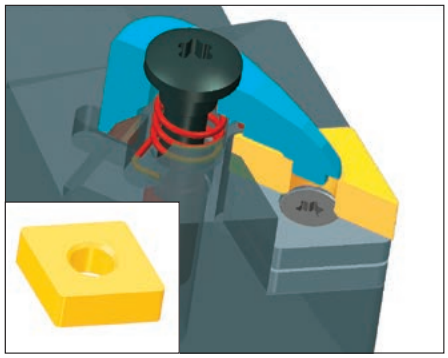


## Features

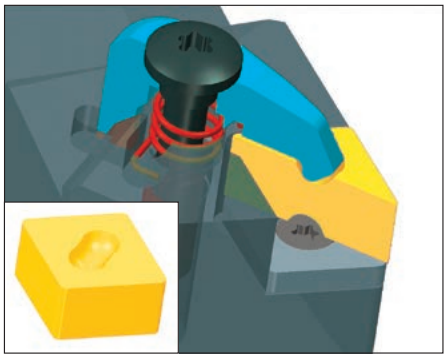
- *Three clamping configurations available with one toolholder just by changing a clamp*
- *Clamp screw also accessible from bottom of the toolholder Dramatically improved accessibility when using toolholder up-side down*



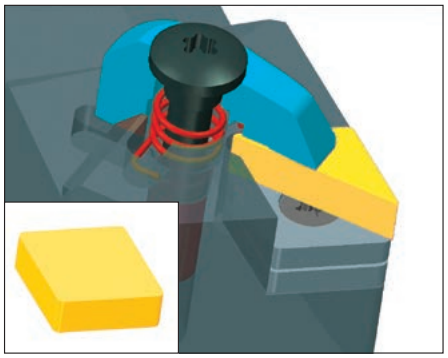
■ Double-clamp type



■ Dimple-clamp type

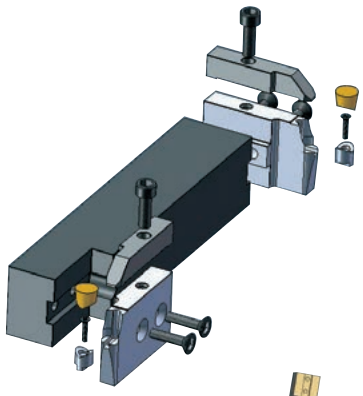


■ Clamp-on type





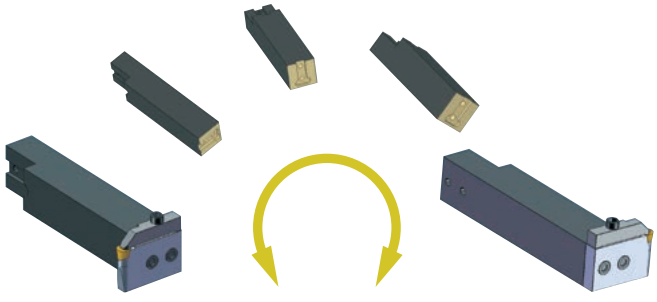
# BRV Toolholder System



## Features

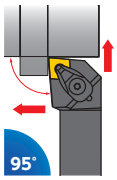
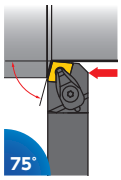
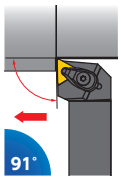
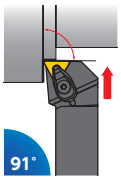
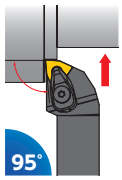
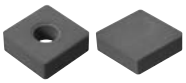
- *BRV toolholder is a modular tooling system designed for ceramic V-bottom inserts for profiling*
  *This system provides excellent index repeatability and rigid clamping*
- *The BRV toolholder can be used in four configurations to cut the cost for preparing separate toolholders*

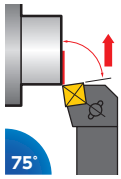
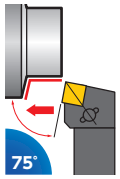
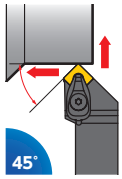
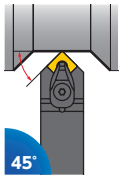
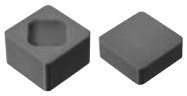
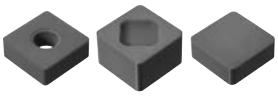


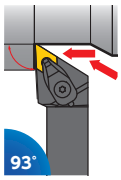
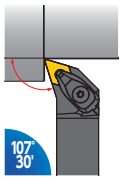
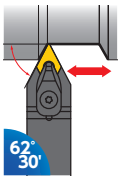
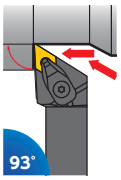
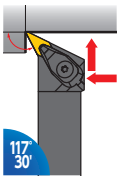
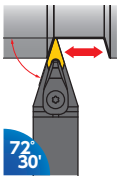
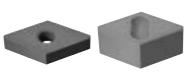


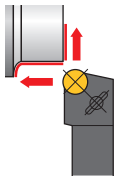
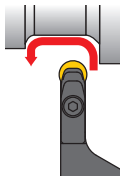
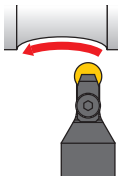
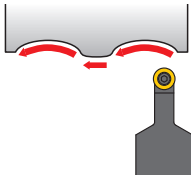
# Selection Guide

## For General Turning

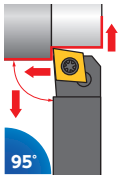
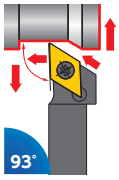
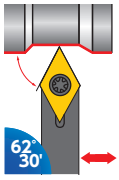
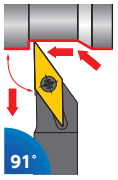
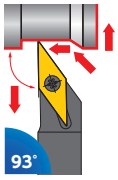
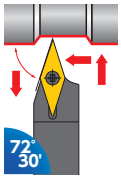
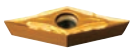
| Lead Angle | | 95° | 75° (Using 100° Corner) | 91° | 91° | 95° |
|---|---|---|---|---|---|---|
| Tooling | |  |  |  |  |  |
| Insert shape | | CNG / CNGX / CNGA | CNG / CNGA | TNG / TNGA | | WNGA |
| | |  |  |  | |  |
| Perfect for Ceramic Insert | Multi Clamp | WCLN →F6 | WCBN →F7 | WTGN →F14 | WTFN →F14 | WWLN<br>WWLN-2 →F15 |
| | Clamp On | CCLN →F6 | | | | |
| For Insert in General | Lever Lock | PCLN →K63 | | | | |

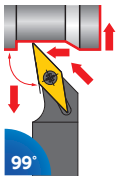
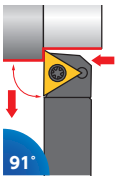
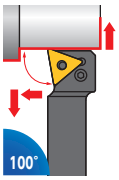
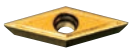
| Lead Angle | | 75° | 75° | 45° | 45° |
|---|---|---|---|---|---|
| Tooling | |  |  |  |  |
| Insert shape | | SNG / SNGX | | SNG / SNGX / SNGA | |
| | |  | |  | |
| Perfect for Ceramic Insert | Multi Clamp | | | WSSN →F11 | WSDN →F11 |
| | Clamp On | CSKN →F10 | CSRN →F10 | CSSN →F10 | CSDN →F11 |

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

| 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  | DC.T / DC.W | VC.T / VC.W  | VB.T / VC.T / VC.W | VC.T / VC.W |
| No offset | Screw On | SCLC ➡K36 | SDJC ➡K42 | SDNCN ➡K42 | SVAC-N ➡K52 | SVJC ➡K52<br>SVJB ➡K50 | SVVCR-N ➡K53 |

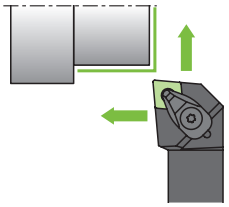
| Lead Angle | | 99° | 91° | 100° |
|---|---|---|---|---|
| Tooling | |  |  |  |
| Insert shape | | VP.T  | TC.T / TC.W  | TN..  |
| No offset | Screw On | SVXP-N ➡K57 | STAC-N ➡K59 | PTXN ➡K60 |

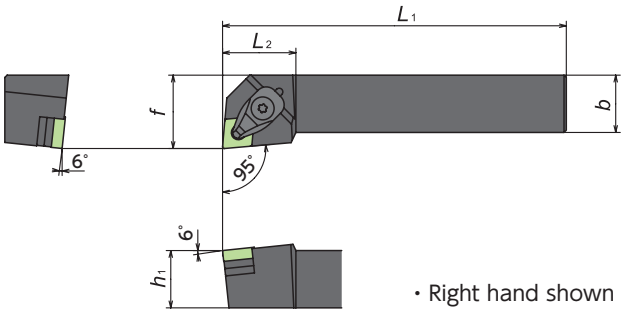
● *Coolant through, Y-axis and DS-holders are also available!*



# CN.. Inserts

## WCLN






・Right hand shown

● Inch / Metric Holders

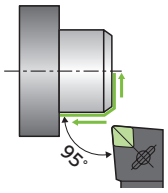
| Item Number | Stock | | h | | b | | $L_1$ | | $h_1$ | | f | | $L_2$ | | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | |
| WCLNR/L 16-4D | ● | ● | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.25 | — | CNGA 43<br>(CNGA 45)<br>(CNG 43)<br>(CNG 45)<br>(CNGX 43)<br>(CNGX 45) |
| WCLNR/L 20-4D | ● | ● | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.25 | — | |
| WCLNR/L 2525M12 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 32 | |
| WCLNR/L 3225P12 | ○ | ○ | — | 32 | — | 25 | — | 170 | — | 32 | — | 32 | — | 32 | |

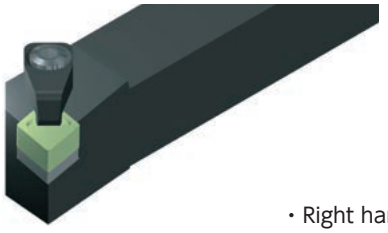
● Spare Parts

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

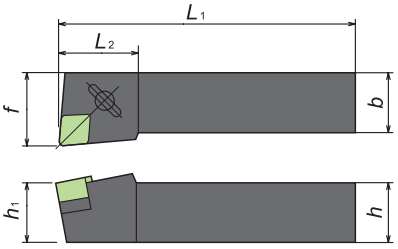
Inserts (CNG) ➡ E3
Inserts (CNGA) ➡ E4・E5・E23・E31
Inserts (CNGX) ➡ E6

## CCLN



・Right hand shown




● Inch Holders

| Item Number | Stock | | Dimensions (inch) | | | | | | Insert* |
|---|---|---|---|---|---|---|---|---|---|
| | R | L | h | b | $L_1$ | $h_1$ | f | $L_2$ | |
| CCLNR/L 164 CX | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.25 | 1.34 | CNGX 45<br>(CNGX 43)<br>(CNG 45)<br>(CNG 43) |
| CCLNR/L 204 CX | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.50 | 1.34 | |

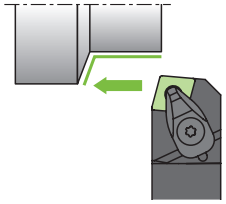
● Spare Parts

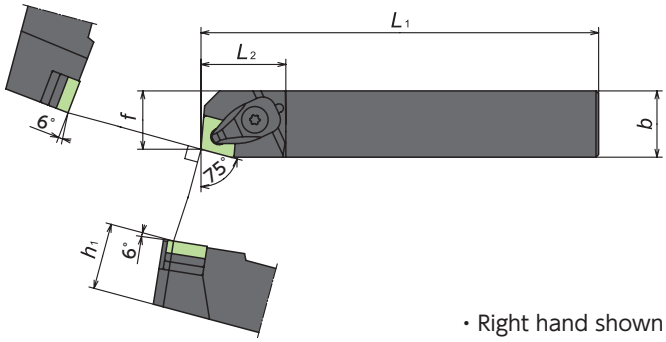
| | Insert | Clamp | Blade | Shim | Shim Screw | Wrench |
|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| | CNGX 43 | 2415 | — | ICSN454 (OP) | 1160 | LW-4 |
| Standard | CNGX 45 | | | ICSN434 | | |
| | CNG 43 | 2417 (OP) | 9414 (OP) | ICSN454 (OP) | | |
| | CNG 45 | | | INSN434 | | |

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

Inserts (CNG) ➡ E3
Inserts (CNGX) ➡ E6

## WCBN



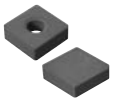



・Right hand shown

### Inch / Metric Holders

| Item Number | Stock R | Stock L | h (inch) | h (mm) | b (inch) | b (mm) | $L_1$ (inch) | $L_1$ (mm) | $h_1$ (inch) | $h_1$ (mm) | f (inch) | f (mm) | $L_2$ (inch) | $L_2$ (mm) | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WCBNR/L 16-4D** | | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | .88 | — | 1.25 | — | CNGA 43<br>(CNGA 45)<br>(CNG 43)<br>(CNG 45) |
| **WCBNR/L 20-4D** | | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.13 | — | 1.25 | — | |
| **WCBNR/L 2525M12** | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 22 | — | 32 | |

### Spare Parts

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

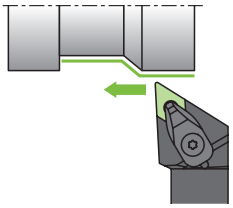
Inserts (CNG) ➡ E3
Inserts (CNGA) ➡ E4 • E5 • E23 • E31

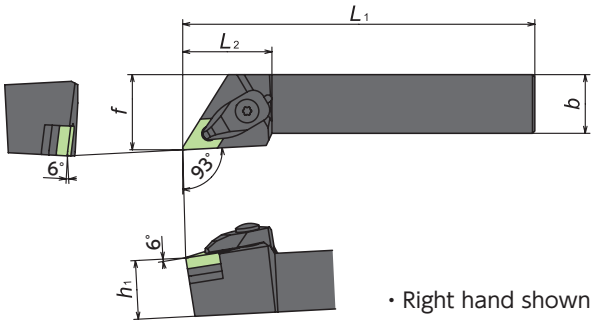


* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

# DN.. Inserts

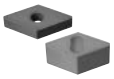
## WDJN



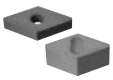
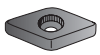



・Right hand shown

● Inch / Metric Holders

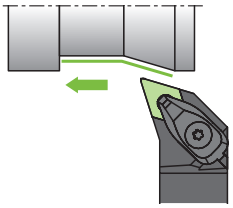
| Item Number | Stock | | h | | b | | $L_1$ | | $h_1$ | | f | | $L_2$ | | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | (inch) | (mm) | |
| WDJNR/L 16-4D | ● | ● | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.50 | — | DNGA 43 (DNGA 45) (DNGX 45)  |
| WDJNR/L 20-4D | ● | ● | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.50 | — | |
| WDJNR/L 2525M15 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 38 | |
| WDJNR/L 3225P15 | ○ | ○ | — | 32 | — | 25 | — | 170 | — | 32 | — | 32 | — | 38 | |

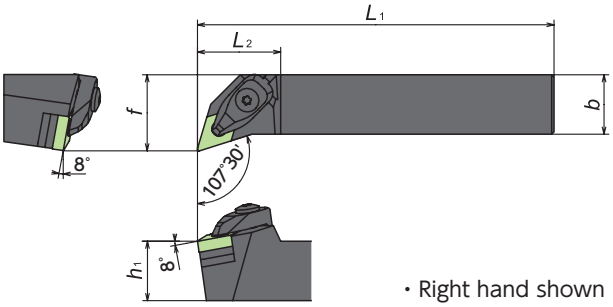
● Spare Parts

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

Inserts (DNGA) ➡ E7・E24
Inserts (DNGX) ➡ E8・E36・E37

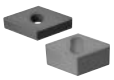
## WDHN



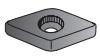



・Right hand shown

● 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) | |
| WDHNR/L 16-4D | | | 1.00 | — | 1.25 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.38 | — | DNGA 43 (DNGA 45) (DNGX 45)  |
| WDHNR/L 20-4D | | | 1.00 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.38 | — | |
| WDHNR/L 2525M15 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 35 | |

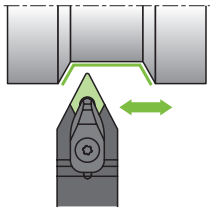
● Spare Parts

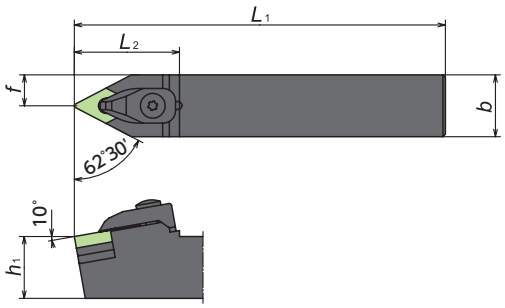
| | Insert | Clamp | Shim | Clamp Screw | Wrench (for Clamp Screw) | Shim Screw | Wrench (for Shim Screw) | Spring |
|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| Standard | DNGA 43 | DC6DN | ADN423×2 | AOS-6*30W | LLR-T20 | FSS15-3.0*12 | LLR-T10 | ASGL6-D |
| | DNGA 45 | | ADN423×1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

Inserts (DNGA) ➡ E7・E24
Inserts (DNGX) ➡ E8・E36・E37

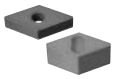
● : Stock　○ : 1-2 week delivery　OP : Optional parts

## WDNN

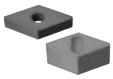





### Inch / Metric Holders

| Item Number | Stock | $h$ (inch) | $h$ (mm) | $b$ (inch) | $b$ (mm) | $L_1$ (inch) | $L_1$ (mm) | $h_1$ (inch) | $h_1$ (mm) | $f$ (inch) | $f$ (mm) | $L_2$ (inch) | $L_2$ (mm) | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WDNNN 16-4D** | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | .500 | — | 1.67 | — | DNGA 43 (DNGA 45) (DNGX 45)  |
| **WDNNN 20-4D** | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | .625 | — | 1.67 | — | |
| **WDNNN 2525M15** | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 12.5 | — | 42.5 | |

### Spare Parts

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

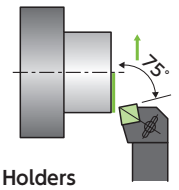

Inserts (DNGA) ➡ **E7 • E24**
Inserts (DNGX) ➡ **E8 • E36 • E37**

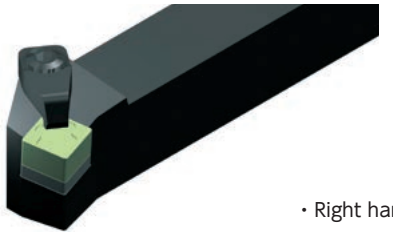



* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

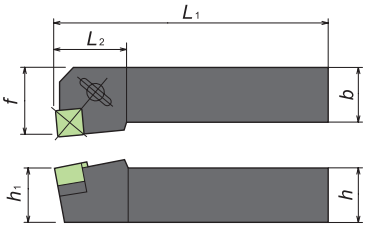
## SN.. Inserts

### CSKN



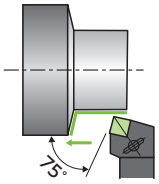
・Right hand shown

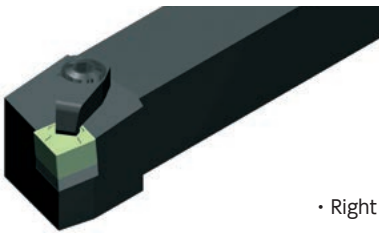



● Inch Holders

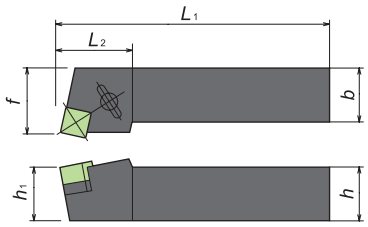
| Item Number | Stock | | Dimensions (inch) | | | | | | Insert* |
|---|---|---|---|---|---|---|---|---|---|
| | R | L | h | b | $L_1$ | $h_1$ | f | $L_2$ | |
| CSKNR/L 164 CX | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.25 | 1.34 | SNGX 45 (SNG 43) (SNG 45) |
| CSKNR/L 204 CX | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.50 | 1.34 | |
| CSKNR/L 165 CX | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.25 | 1.34 | SNGX 55 (SNG 55) |
| CSKNR/L 205 CX | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.50 | 1.34 | |

### CSRN



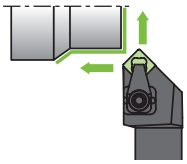
・Right hand shown




● Inch Holders

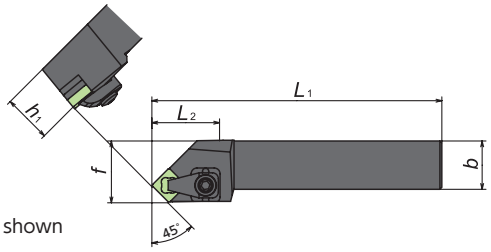
| Item Number | Stock | | Dimensions (inch) | | | | | | Insert* |
|---|---|---|---|---|---|---|---|---|---|
| | R | L | h | b | $L_1$ | $h_1$ | f | $L_2$ | |
| CSRNR/L 164 CX | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.13 | 1.34 | SNGX 45 (SNG 43) (SNG 45) |
| CSRNR/L 204 CX | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.38 | 1.34 | |
| CSRNR/L 165 CX | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.10 | 1.50 | SNGX 55 (SNG 55) |
| CSRNR/L 205 CX | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.35 | 1.50 | |
| CSRNR/L 245 CX | ● | ● | 1.50 | 1.50 | 8.00 | 1.50 | 1.75 | 1.65 | |

### CSSN





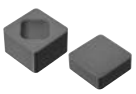
・Right hand shown




● Inch Holders

| Item Number | Stock | | Dimensions (inch) | | | | | | Insert* |
|---|---|---|---|---|---|---|---|---|---|
| | R | L | h | b | $L_1$ | $h_1$ | $L_2$ | f | |
| CSSNR/L 245 CD | ● | ● | 1.50 | 1.50 | 6.00 | 1.50 | 2.00 | 1.653 | SNGX 55 (SNG 55) |

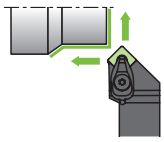
● Spare Parts

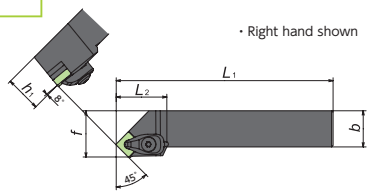
| | Insert | Clamp | Blade | Shim | Shim Screw | Wrench |
|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Standard | SNGX 45 | 2415 | — | ISSN 434 | 1160 | LW-4 |
| | SNG 43 | 2417 (OP) | 9414 (OP) | ISSN 454 (OP) | | |
| | SNG 45 | | | ISSN 434 | | |
| Standard | SNGX 55 | 2415 | — | ISSN534 |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

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

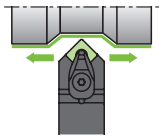
Inserts (SNG) ➡ E13・E40
Inserts (SNGX) ➡ E15

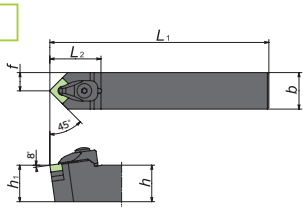
## WSSN






## 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 | |
| WSSNR/L 16-4D | | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.38 | — | SNGA 43 (SNGA 45) (SNG 43) (SNG 45) (SNGX 45) |
| WSSNR/L 20-4D | | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.38 | — | |
| WSSNR/L 2525M12 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 35 | |

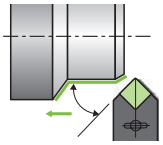
| Item Number | Stock | h | | b | | $L_1$ | | $h_1$ | | f | | $L_2$ | | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | |
| WSDNN 16-4D | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | .500 | — | 1.42 | — | SNGA 43 (SNGA 45) (SNG 43) (SNG 45) (SNGX 45) |
| WSDNN 20-4D | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | .625 | — | 1.42 | — | |
| WSDNN 2525M12 | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 12.5 | — | 35 | |
| WSDNN 3225P12 | ○ | — | 32 | — | 25 | — | 170 | — | 32 | — | 12.5 | — | 35 | |

● Spare Parts

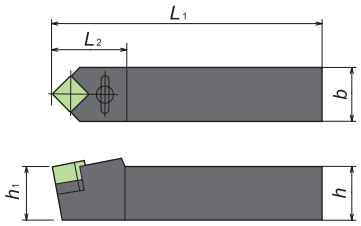
| | Insert | Clamp | Shim | Clamp Screw | Wrench (for Clamp Screw) | Shim Screw | Wrench (for Shim Screw) | Spring |
|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| Standard | SNGA 43 | DC6CN | ASN423×2 | AOS-6*30W | LLR-T20 | FSS15-3.0*12 | LLR-T10 | ASGL6-D |
| | SNGA 45 | | ASN423×1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

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

## CSDN



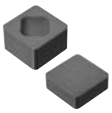





● Inch Holders

| 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 | SNGX 45 (SNG 43) (SNG 45) |
| 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 | SNGX 55 (SNG 55) |
| CSDNN 205 CX | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.65 | |

● Spare Parts

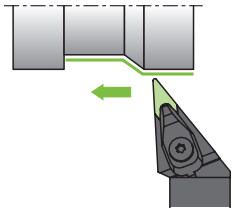
| | Insert | Clamp | Blade | Shim | Shim Screw | Wrench |
|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Standard | SNGX 45 | 2415 | — | ISSN 434 | 1160 | LW-4 |
| | SNG 43 | 2417 (OP) | 9414 (OP) | ISSN 454 (OP) | | |
| | SNG 45 | | | ISSN 434 | | |
| Standard | SNGX 55 | 2415 | — | ISSN534 |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

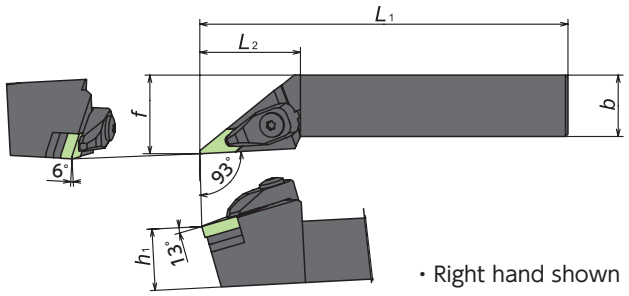
Inserts (SNG) ➡ E13 • E40
Inserts (SNGX) ➡ E15

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

# VN.. Inserts

## WVJN



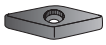



・Right hand shown

● Inch / Metric Holders

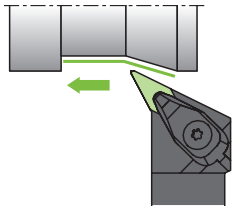
| Item Number | Stock | | h | | b | | $L_1$ | | $h_1$ | | f | | $L_2$ | | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | |
| WVJNR/L 16-3D | ● | ● | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.61 | — | VNGA 33 (VNGA 35) (VNGX 35) |
| WVJNR/L 20-3D | ● | ● | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.61 | — | |
| WVJNR/L 2525M16 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 41 | |
| WVJNR/L 3225P16 | ○ | ○ | — | 32 | — | 25 | — | 170 | — | 32 | — | 32 | — | 41 | |

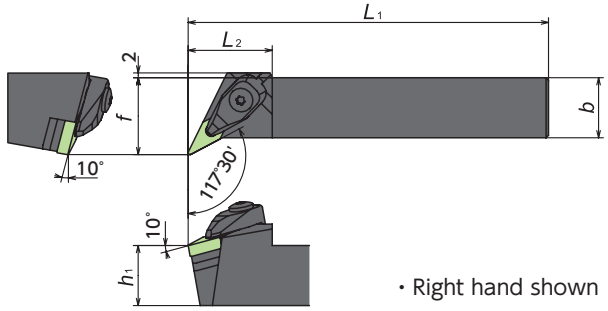
● Spare Parts

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

Inserts (VNGA) ➡ E20・E27・E50

## WVPN



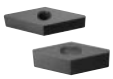
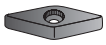



・Right hand shown

● 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 | |
| WVPNR/L 16-3D | | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.38 | — | VNGA 33 (VNGA 35) (VNGX 35) |
| WVPNR/L 20-3D | | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.38 | — | |
| WVPNR/L 2525M16 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 35 | |

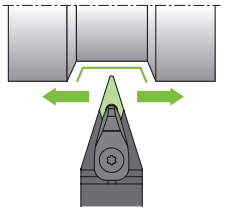
● Spare Parts

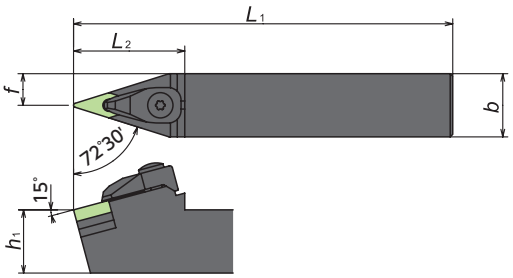
| | Insert | Clamp | Shim | Clamp Screw | Wrench (for Clamp Screw) | Shim Screw | Wrench (for Shim Screw) | Spring |
|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| Standard | VNGA 33 | DC6VN | AVN323×2 | AOS-6*30W | LLR-T20 | FSS15-3.0*12 | LLR-T10 | ASGL6-D |
| | VNGA 35 | | AVN323×1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

Inserts (VNGA) ➡ E20・E27・E50

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

## WVVN

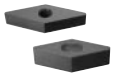
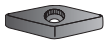





### Inch / Metric Holders

| Item Number | Stock | h | | b | | $L_1$ | | $h_1$ | | f | | $L_2$ | | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | |
| **WVVNN 16-3D** | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | .500 | — | 1.73 | — | VNGA 33 (VNGA 35) (VNGX 35)  |
| **WVVNN 20-3D** | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | .625 | — | 1.73 | — | |
| **WVVNN 2525M16** | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 12.5 | — | 44 | |

### Spare Parts

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

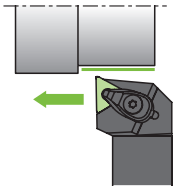
Inserts (VNGA) ➡ **E20 • E27 • E50**

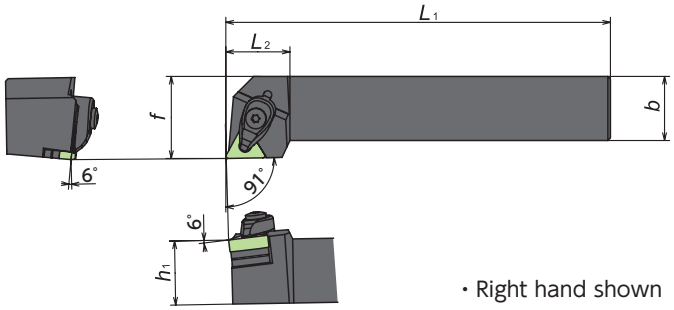


* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

# TN.. Inserts

## WTGN






・Right hand shown

● Inch / Metric Holders

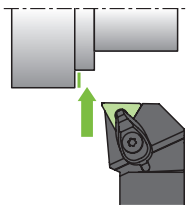
| Item Number | Stock | | h | | b | | $L_1$ | | $h_1$ | | f | | $L_2$ | | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | |
| WTGNR/L 16-3D | | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.00 | — | TNGA 33<br>(TNGA 35)<br>(TNG 33)<br>(TNG 35) |
| WTGNR/L 20-3D | | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.00 | — | |
| WTGNR/L 2525M16 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 35 | |

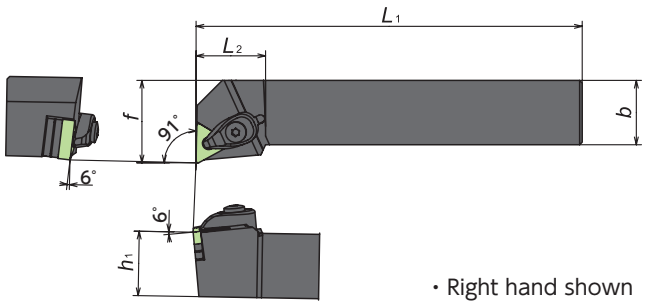
● Spare Parts

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

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 | |
| WTFNR/L 16-3D | | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.06 | — | TNGA 33<br>(TNGA 35)<br>(TNG 33)<br>(TNG 35) |
| WTFNR/L 20-3D | | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.06 | — | |
| WTFNR/L 2525M16 | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 27 | |

● Spare Parts

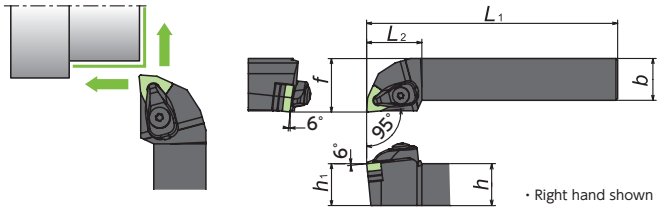
| | Insert | Clamp | Shim | Clamp Screw | Wrench (for Clamp Screw) | Shim Screw | Wrench (for Shim Screw) | Spring |
|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| Standard | TNGA 33 | DC5TN | ATN323×2 | AOS-5*26W | LLR-T15 | FSS15-3.0*12 | LLR-T10 | ASGL6-D |
| | TNGA 35 | | ATN323×1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

Inserts (TNG) ➡ E16
Inserts (TNGA) ➡ E18・E26・E43・E44・E45

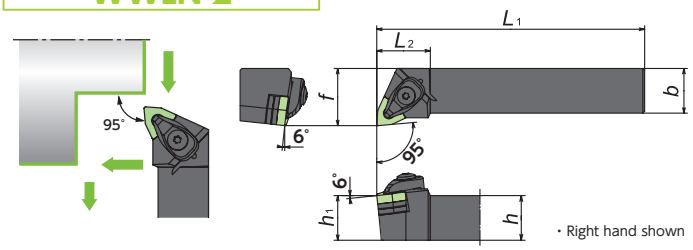
● : Stock ○ : 1-2 week delivery OP : Optional parts

# 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 | |
| **WWLNR/L 16-4D** | | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.30 | — | WNGA 43 (WNGA 45)  |
| **WWLNR/L 20-4D** | | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.30 | — | |
| **WWLNR/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 | |
| **WWLNR/L 16-4D-2** | | | 1.00 | — | 1.00 | — | 6.00 | — | 1.00 | — | 1.25 | — | 1.18 | — | WNGA 43 (WNGA 45)  |
| **WWLNR/L 20-4D-2** | | | 1.25 | — | 1.25 | — | 6.00 | — | 1.25 | — | 1.50 | — | 1.18 | — | |
| **WWLNR/L 2525M08-2** | ○ | ○ | — | 25 | — | 25 | — | 150 | — | 25 | — | 32 | — | 30 | |

● Spare Parts

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

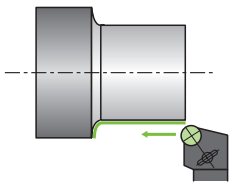
Inserts ➡ E21 • E51

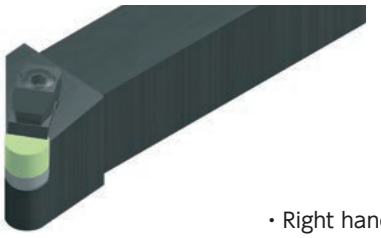


* Optional spare parts are required to use the inserts in parentheses. See spare parts lists for detail.

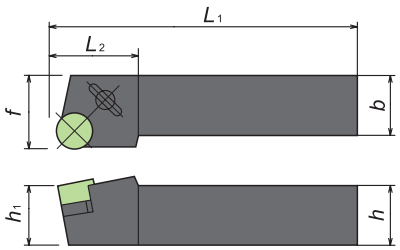
# RN.. Inserts

## CRGN





・Right hand shown




● Inch Holders

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



● Spare Parts

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

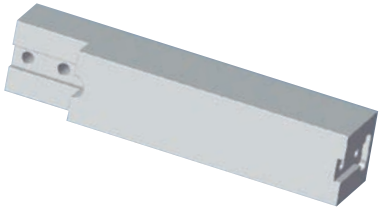
Inserts ➡ E10・E25

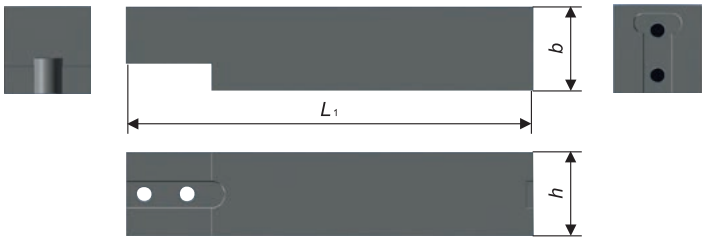


● : Stock ○ : 1-2 week delivery OP : Optional parts

# RC.. / RP.. Inserts

## BRV

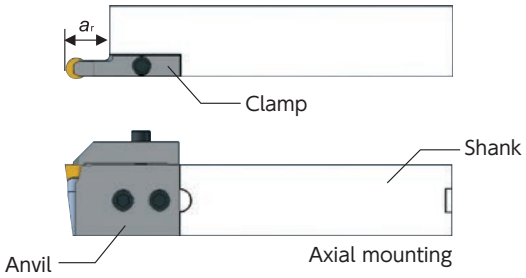


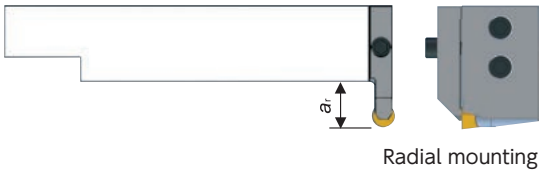



### Toolholder body

| 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.




・Right hand shown

### Anvils and Parts (Order each part separately)

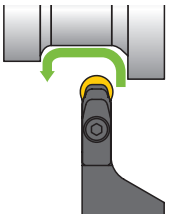
| Shank | Anvil | Stock | | Dimensions (inch) | Insert | | Clamp | Shim | Clamp Screw | Shim Screw |
|---|---|---|---|---|---|---|---|---|---|---|
| | | R | L | $a_r$ | | | | | | |
| **BS 20** | BRVR 6020-2V | ● | | .750 | **RCGX 23**<br>**RPGX 23** |  | BRCR-2V | BN-2V | BRCS 2V | BNS-2V |
| | BRVR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

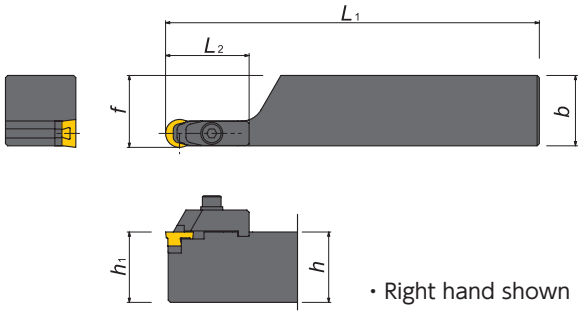
Inserts (RCGX) ➡ E9
Inserts (RPGX) ➡ E11

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

## RC.. / RP.. Inserts

VRAOR/L






・Right hand shown

● Inch Holders

| Item Number | Stock | | Dimensions (inch) | | | | | Insert |
|---|---|---|---|---|---|---|---|---|
| | R | L | *h* | *b* | $L_1$ | $h_1$ | $L_2$ | |
| VRAOR/L 16-2D | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.00 | RCGX 102<br>RCGX 23<br>RCGX 25<br>RPGX 23<br>RPGX 25 |
| VRAOR/L 20-2D | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.00 | |
| VRAOR/L 16-3D | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.25 | RCGX 103<br>RCGX 35<br>RPGX 35 |
| VRAOR/L 20-3D | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.25 | |
| VRAOR/L 24-3E | ● | ● | 1.50 | 1.50 | 7.00 | 1.50 | 1.25 | |
| VRAOR/L 16-4D | ● | ● | 1.00 | 1.00 | 6.00 | 1.00 | 1.50 | RCGX 104<br>RCGX 45<br>RPGX 45 |
| VRAOR/L 20-4D | ● | ● | 1.25 | 1.25 | 6.00 | 1.25 | 1.50 | |
| VRAOR/L 24-4E | ● | ● | 1.50 | 1.50 | 7.00 | 1.50 | 1.50 | |



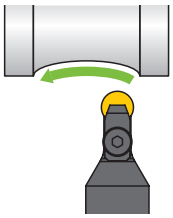
● Spare Parts

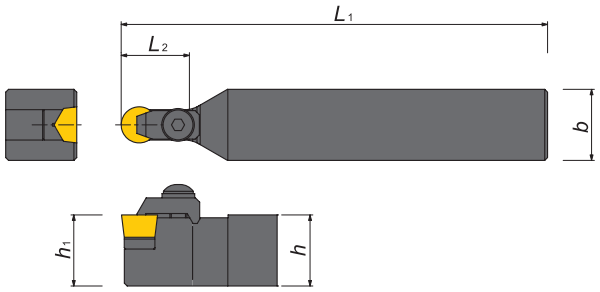
| Parts / Toolholder | Clamp | Shim | Clamp Screw | Shim Screw |
|---|---|---|---|---|
| |  |  |  |  |
| VRAOR/L 16-2D | CL2RV | SM2RV(RCGX10. / R.GX.5)<br>SM2RVS(R.GX23) (OP) | SC40F-16 | SC02C-08 |
| VRAOR/L 20-2D | | | | |
| VRAOR/L 16-3D | CL3RV | SM3RV | SC10F-10 | SC05C-08 |
| VRAOR/L 20-3D | | | | SC05C-10 |
| VRAOR/L 24-3E | | | | |
| VRAOR/L 16-4D | CL4RV | SM4RV | SC40F-12 | SC06C-08 |
| VRAOR/L 20-4D | | | | SC06C-10 |
| VRAOR/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<br>RCGX 23<br>RCGX 25<br>RPGX 23<br>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<br>RCGX 35<br>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<br>RCGX 45<br>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 | |





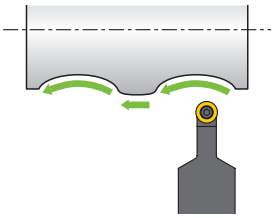
### Spare Parts

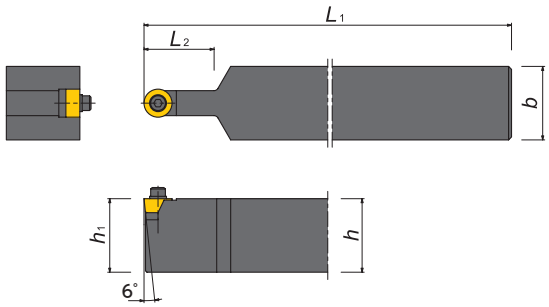
| Parts / Toolholder | Clamp | Shim | Clamp Screw | Shim Screw |
|---|---|---|---|---|
| |  |  |  |  |
| **VRAON 16-2D** | CL2RV | SM2RV (RCGX10. / R.GX.5)<br>SM2RVS (R.GX23) (OP) | SC40F-16 | SC02C-08 |
| **VRAON 20-2D** | | | | |
| **VRAON 16-3D** | CL3RV | SM3RV | SC10F-10 | SC05C-08 |
| **VRAON 20-3D** | | | | SC05C-10 |
| **VRAON 24-3E** | | | | |
| **VRAON 16-4D** | CL4RV | SM4RV | SC40F-12 | SC06C-08 |
| **VRAON 20-4D** | | | | SC06C-10 |
| **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

## CDH.. Inserts

### HRCD






● Inch Holders

| Item Number | Stock | Dimensions (inch) | | | | | Insert |
|---|---|---|---|---|---|---|---|
| | R | *h* | *b* | $L_1$ | $h_1$ | $L_2$ | |
| **HRCD-22-IN** | ● | 2.0 | 2.0 | 12.0 | 2.0 | 1.0 | CDH 22 |
| **HRCD-33-IN** | ● | 2.0 | 2.0 | 12.0 | 2.0 | 1.0 | CDH 33 |
| **HRCD-42-IN** | ● | 2.0 | 2.0 | 12.0 | 2.0 | 1.0 | CDH 42 |
| **HRCD-43-IN** | ● | 2.0 | 2.0 | 12.0 | 2.0 | 1.0 | CDH 43 |
| **HRCD-53-IN** | ● | 2.0 | 2.0 | 12.0 | 2.0 | 1.0 | CDH 53 / CDH 515 |



● Metric Holders

| Item Number | Stock | Dimensions (㎜) | | | | | Insert |
|---|---|---|---|---|---|---|---|
| | R | *h* | *b* | $L_1$ | $h_1$ | $L_2$ | |
| **HRCD-22** | ○ | 50 | 50 | 300 | 50 | 30 | CDH 22 |
| **HRCD-33** | ○ | 50 | 50 | 300 | 50 | 30 | CDH 33 |
| **HRCD-42** | | 50 | 50 | 300 | 50 | 30 | CDH 42 |
| **HRCD-43** | | 50 | 50 | 300 | 50 | 30 | CDH 43 |
| **HRCD-53** | | 50 | 50 | 300 | 50 | 30 | CDH 53 / CDH 515 |



● Spare Parts

| Parts / Toolholder | Clamp Screw | Washer | Shim | Wrench |
|---|---|---|---|---|
| |  |  |  |  |
| **HRCD-22-IN / HRCD-22** | CS0316 | W120 | HACDH22 | LW-2.5 |
| **HRCD-33-IN / HRCD-33** | CS0625 | W110 | HACDH33 | LW-5 |
| **HRCD-42-IN / HRCD-42** | 1/4-20UNC×11/4 | W106 | HACDH42 | LWU-4 |
| **HRCD-43-IN / HRCD-43** | 1/4-20UNC×11/2 | | HACDH43 | |
| **HRCD-53-IN / HRCD-53** | 3/8-16UNC×11/2 | W107 | HACDH53 [CDH53]<br>HACDH515 [CDH515] (OP) | LWU-5 |

Inserts ➡ E2

● : Stock ○ : 1-2 week delivery

# G



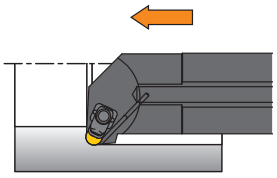
## ID Tooling

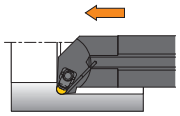
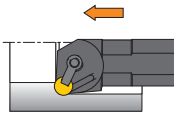

- Product Lines ····· G2
- For RN.. Inserts ····· G4
- For RP.. Inserts ····· G4
- For CN.. Inserts ····· G5
- For DN.. Inserts ····· G5
- For SN.. Inserts ····· G6
- For WN.. Inserts ····· G6

# NTK ID Tooling-Product Lines

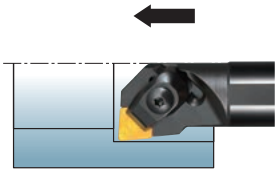
## For Conventional Lathes

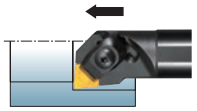
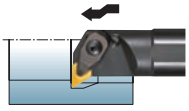
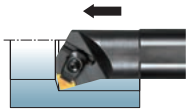
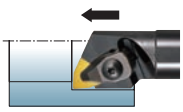
### For round inserts



| Insert | RN.. | RP.. |
|---|---|---|
| Holder | S50-CRGN | S12-CRGP |
| |  ➡G4 |  ➡G4 |
| Min. Bore Dia. | ϕ5.0" | ϕ1.25" |

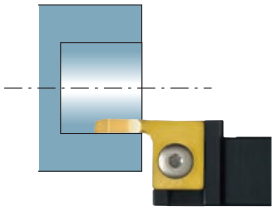
### Multi-clamp series



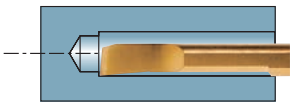
| Insert | CN.. | DN.. | SN.. | WN.. |
|---|---|---|---|---|
| Holder | S-WCLN | S-WDUN | S-WSKN | S-WWLN |
| |  ➡G5 |  ➡G5 |  ➡G6 |  ➡G6 |
| Min. Bore Dia. | ϕ1.299"~ (33㎜~) | ϕ1.654"~ (42㎜~) | ϕ.969" (50㎜) | ϕ1.299"~ (33㎜~) |

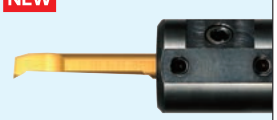
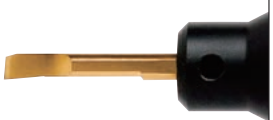
## For Swiss Type Lathes

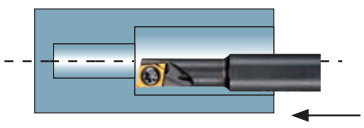
### ID Boring

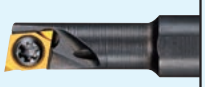


| Insert | LBM ➡K155 | | |
|---|---|---|---|
| Holder | LBMA | DS-LBMB | CH-LBM |
| |  ➡K154 |  ➡K154 |  ➡K154 |
| Min. Bore Dia. | ϕ.039" (1.0㎜) | | |

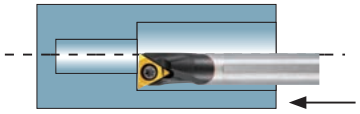


| Insert | SHFS • SHFB • SBFS • SBFB ➡K160 • K164 | | |
|---|---|---|---|
| Holder | HY-NBH-OH | HY-NBH | NBH |
| | NEW  ➡K157 STICK DUO HYPER with Coolant through |  ➡K159 STICK DUO HYPER |  ➡K162 |
| Min. Bore Dia. | ϕ.079" (2.0㎜) | | |



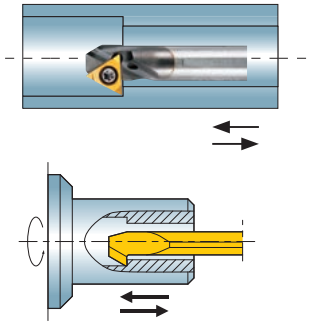
| Insert | MBL ➡K171 | | ERGP ➡K172 | |
|---|---|---|---|---|
| Holder | C-MBR (Carbide shank) | S-MBR (Steel shank) | C-SEXR (Carbide shank) | S-SEXR (Steel shank) |
| |  ➡K171 Coolant through |  ➡K171 Coolant through |  ➡K172 Coolant through |  ➡K172 Coolant through |
| Min. Bore Dia. | ϕ.197" (5.0㎜) | | ϕ.236" (6.0㎜) | |

ID Tooling



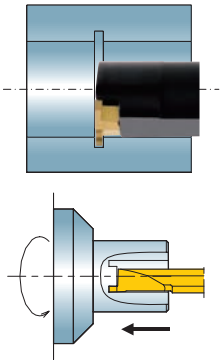
| Insert | CC/CP ➡K173・K174 | | TC/TP ➡K178 | |
|---|---|---|---|---|
| Holder | C-SCLC/P (Carbide shank) | S-SCLC/P (Steel shank) | C-STUC/P (Carbide shank) | S-STUC/P (Steel shank) |
| |  Coolant through ➡K173・K174 |  Coolant through ➡K173・K174 |  ➡K178 Coolant through |  ➡K178 Coolant through |
| Min. Bore Dia. | ϕ.276"(7.0mm) | | ϕ.315"(8.0mm) | |

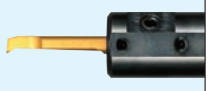
## ID Back Turning



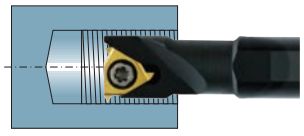
| Insert | NEW SBB ➡K165 | | TC/TP ➡K178 |
|---|---|---|---|
| Holder | HY-NBH-OH | NBH | C-STZP/C (Carbide shank) |
| | NEW  ➡K157 Coolant through |  ➡K162 |  ➡K178 |
| Min. Bore Dia. | ϕ.118"(3.0mm) | | ϕ.394"(10mm) |

## ID Grooving



| Insert | SBG ➡K166 | | SFG ➡K166 | GTG ➡K167 |
|---|---|---|---|---|
| Holder | HY-NBH-OH | NBH | NBH | S-BGR/BGR |
| | NEW  ➡K157 Coolant through |  ➡K162 |  ➡K162 |  ➡K167 |
| Min. Bore Dia. | ϕ.118"(3.0mm) | | ϕ.118"(3.0mm) | ϕ.394"(10mm) |

## ID Threading

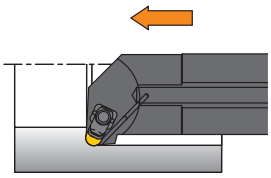


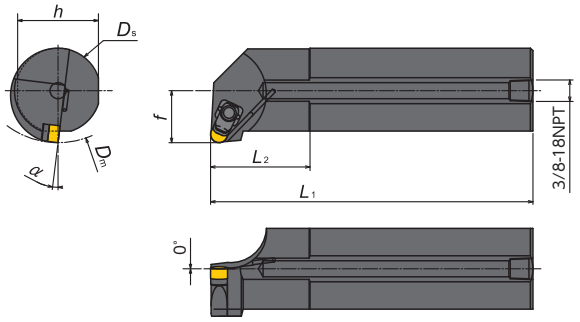
| Insert | SBT ➡K168 | | TMN ➡K170 |
|---|---|---|---|
| Holder | HY-NBH-OH | NBH | TGC/HN |
| | NEW  ➡K157 Coolant through |  ➡K162 |  ➡K170 |
| Min. Bore Dia. | ϕ.118"(3.0mm) | | ϕ.315"(8.0mm) |

## RN.. Inserts

### S-CRGN (Coolant through)

Min. Bore Diameter ϕ5.0" -






● Inch Holders

| Item Number | Stock R | Stock L | Min. Bore Dia. Dm (inch) | Dimensions (inch) Ds | h | L1 | f | L2 | α | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|
| S50-CRGNR/L-32-4 | ● | | 5.0 | 2.0 | 1.87 | 16.0 | 1.281 | 2.362 | 7 | RNG 45 (RNG 43) |
| S50-CRGNR/L-40-4 | ● | | 5.0 | 2.5 | 2.38 | 16.0 | 1.531 | 2.950 | 7 | |

● Spare Parts

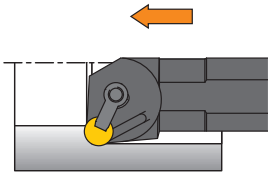
| | Insert | Clamp | Blade | Shim | Shim Screw | Wrench |
|---|---|---|---|---|---|---|
| Standard | **RNG 45** / **RNG 43** | 2413 | 9414 | IRSN 43 / IRSN 45 (OP) | 1161 | 5104 |

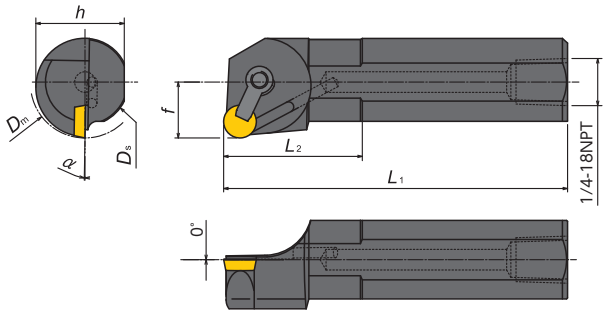
Inserts ➡ E10 • E25

## RP.. Inserts

### S-CRGP (Coolant through)

Min. Bore Diameter ϕ1.25" -






● Inch Holders

| Item Number | Stock R | Stock L | Min. Bore Dia. Dm (inch) | Dimensions (inch) Ds | h | L1 | f | L2 | α | Insert |
|---|---|---|---|---|---|---|---|---|---|---|
| S12-CRGPR/L-16-3 | ● | | 1.25 | 1.0 | 0.89 | 12.0 | .640 | 1.574 | 1 | RPG 32 |

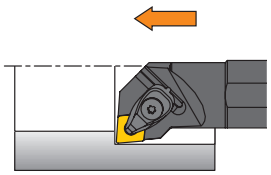
● Spare Parts

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

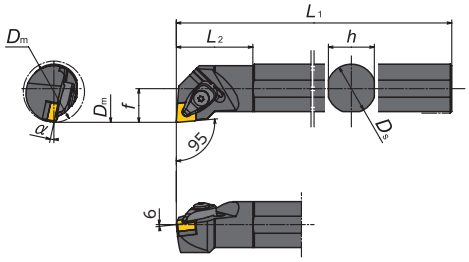
Inserts ➡ E11

# CN.. Inserts

## S-WCLN



Min. Bore Diameter $\phi$1.299" -




・Right hand shown

● Metric Holders

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

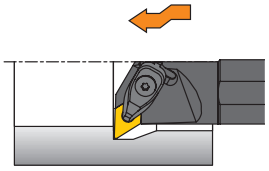
● Spare Parts

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

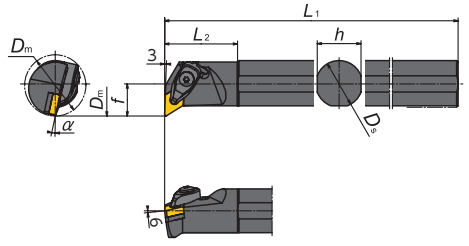
Inserts (CNG) ➡ E3
Inserts (CNGA) ➡ E4・E5・E23・E31
Inserts (CNGX) ➡ E6

# DN.. Inserts

## S-WDUN



Min. Bore Diameter $\phi$1.654" -

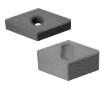



・Right hand shown

● Metric Holders

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

● Spare Parts

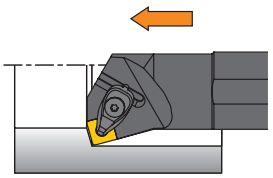
| | Insert | Clamp | Shim | Clamp Screw | Wrench (for Clamp Screw) | Shim Screw | Wrench (for Shim Screw) | Spring |
|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| Standard | **DNGA 43** | DC6DN | ADN423×1 | AOS-6*26W (S32S-WDUN$^{R}_{L}$15) AOS-6*30W (S40T-WDUN$^{R}_{L}$15) | LLR-T20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

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

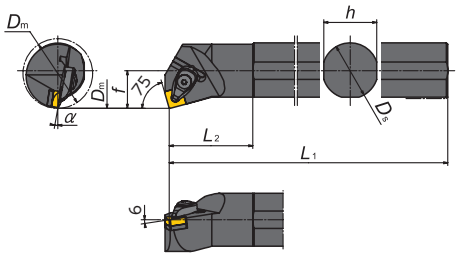
Inserts (DNGA) ➡ E7・E24
Inserts (DNGX) ➡ E8・E36・E37

# SN.. Inserts

## S-WSKN



Min. Bore Diameter ϕ1.969" -




・Right hand shown

● Metric Holder

| Item Number | Stock | | Min. Bore Dia. | Dimensions (mm) | | | | | | Insert* |
|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | $D_m$ (mm) | $D_s$ | $h$ | $L_1$ | $f$ | $L_2$ | $\alpha$ | |
| S40T-WSKNR/L12 | ○ | ○ | 50 | 40 | 38 | 300 | 27 | 60 | 10 | SNGA 43<br>(SNGA 45)<br>(SNG 43)<br>(SNG 45)<br>(SNGX 45) |

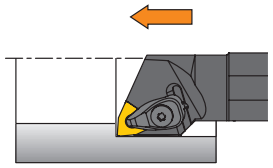
● Spare Parts

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

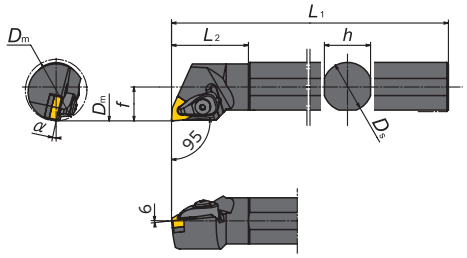
Inserts (SNG) ➡ E13・E40
Inserts (SNGA) ➡ E14・E25・E40
Inserts (SNGX) ➡ E15

# WN.. Inserts

## S-WWLN



Min. Bore Diameter ϕ1.299" -

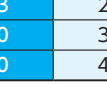
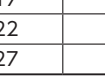
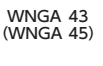
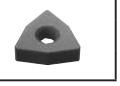



・Right hand shown

● Metric Holders

| Item Number | Stock | | Min. Bore Dia. | Dimensions (mm) | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | $D_m$ (mm) | $D_s$ | $h$ | $L_1$ | $f$ | $L_2$ | $\alpha$ | |
| S25R-WWLNR/L08 | ○ | ○ | 33 | 25 | 24 | 200 | 17 | 40 | 14 | WNGA 43<br>(WNGA 45) |
| S32S-WWLNR/L08 | ○ | ○ | 40 | 32 | 30 | 250 | 22 | 50 | 12 | |
| S40T-WWLNR/L08 | ○ | ○ | 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 | DC6CN | AWN423-W×1 | AOS-6*30W | LLR-T20 | FSS16-3.0*8 | LLR-T10 | ASGL6-D |
| | WNGA 45 | | — | | | — | — | |

Inserts ➡ E21・E51

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

# H

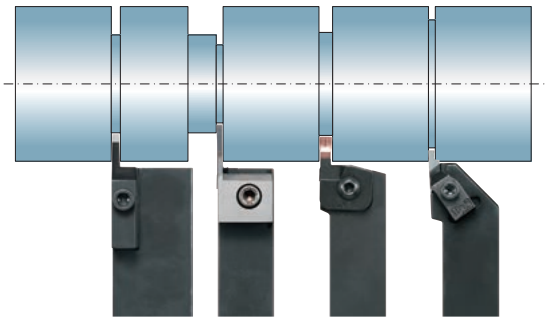


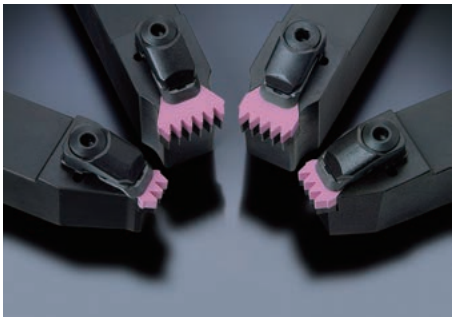
## Grooving / Side Turning


- 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

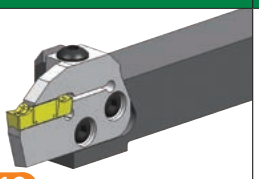
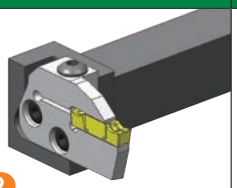
## OD Grooving



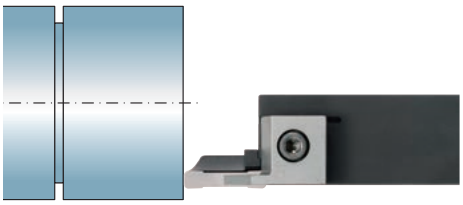


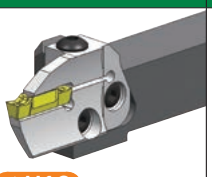
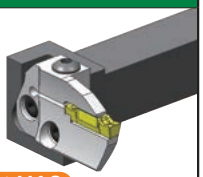
| Insert | Ceramic insert |
|---|---|
| | PTM.. ➡H19 |
| Holder | POLY-V |
| | NEW  ➡H19 |

| 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 | DB | NS | VGT |
| |  ➡H6 |  ➡H8 |  ➡H11 |  ➡H18 |
| Blade width | .125" - .375" | .125" - .375" | .031" - .189" | .115" - .398" |
| Depth of cut | ~1.125" | .750" | .210" | .470" |

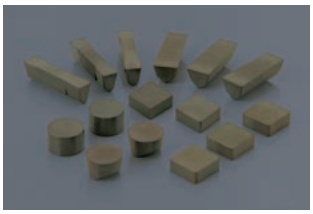
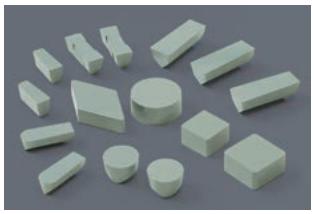
| Insert | Carbide insert | | | |
|---|---|---|---|---|
| | GWPG / GWPM ➡H15 | | | |
| Holder | GTWP-H | GKWP-H | GTWP | GKWP |
| |  ➡H12 |  ➡H12 |  ➡H16・17 |  ➡H16 |
| Blade width | .118" - .236" | | | |
| Depth of cut | ~.984" | | | |

## Face Grooving

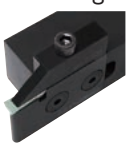


| Insert | Ceramic insert | Carbide insert | |
|---|---|---|---|
| | VDB ➡H9 | GWPFG / GWPG / GWPM ➡H15 | |
| Holder | DB | GTWP-H | GKWP-H |
| |  ➡H9 |  ➡H12 |  ➡H12 |
| Blade width | .156" - .375" | .118" - .236" | |
| Depth of cut | .750" | ~.984" | |
| Min diameter | 3" | 1.142" | |

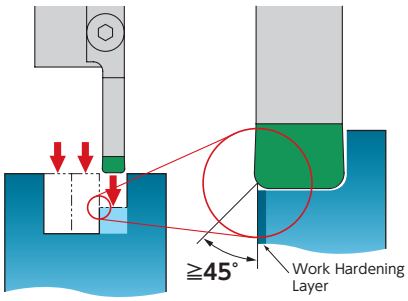
# Guideline for grooving heat resistant alloys

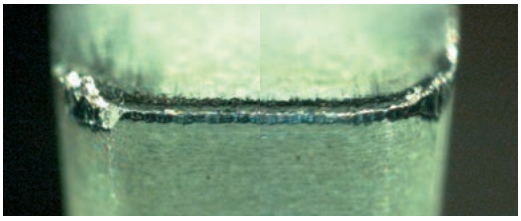
| | SiAlON Ceramic | | Whisker Ceramic |
|---|---|---|---|
| | SX5  | SX7  | WA1  |
| Toughness | better | | |
| Flank wear resistance | | | better |
| Notching resistance | | better | |

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

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

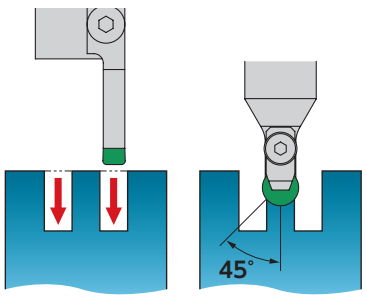
## Application Information

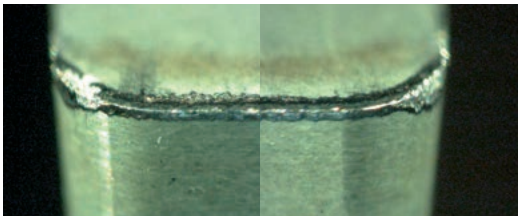


When machining a grooved area with multiple passes, during the last remaining plunge the insert radius engages a potentially work hardened area. This programming procedure sets up the potential of corner radius chipping or notching.

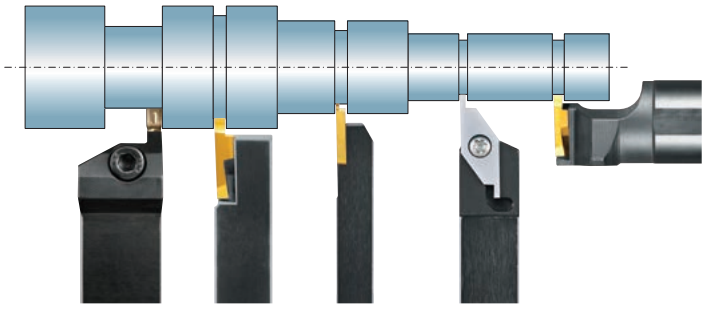
*Change to*



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.

# For Swiss Type Lathes

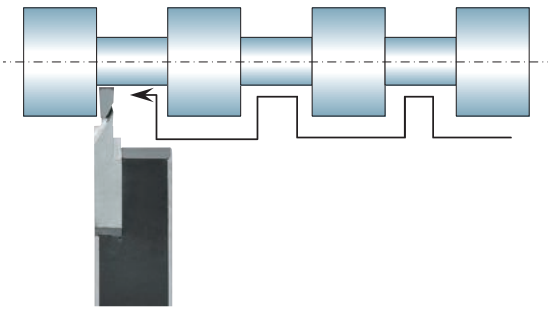


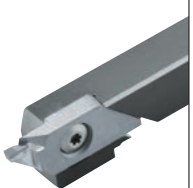
| Insert | CSVG ➡K109 | | GTPS ➡K110 |
|---|---|---|---|
| Holder | CSV | DS-CSV | CTPS |
| |  ➡K108 |  ➡K108 |  ➡K110 |
| Blade width | .010" - .059" (0.25 - 1.50mm) | | .030" - .079" (0.75 - 2.0mm) |
| Depth of cut | ~.102" (~2.59mm) | | ~.098" (~2.50mm) |

| Insert | GTMH32 / GTMX32 / GTM32 / TMG32 ➡K114 | | | | | |
|---|---|---|---|---|---|---|
| Holder | GTT | GTT-OH | Y-GTT | Y-GTT-OH | DS-GTT | CH-GTT |
| |  ➡K112 | NEW  ➡K112 Coolant Through |  ➡K112 Y-axis | NEW  ➡K112 Y-axis w/ Coolant through |  ➡K112 |  ➡K112 |
| Blade width | .012" - .118" (0.3 - 3.0mm) | | | | | |
| Depth of cut | ~.106" (~2.69mm) | | | | | |

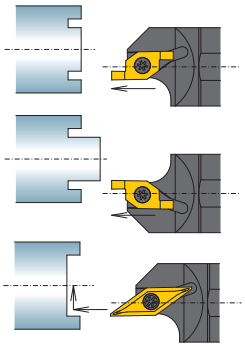
| Insert | GWP ➡K111 | GTM43 / GTMA43 / GTMT43 ➡K121 | | TWG ➡K119 |
|---|---|---|---|---|
| Holder | GTWP | NGTN | NGTB | TWG |
| | NEW  ➡K111 |  ➡K120 |  ➡K120 |  ➡K119 |
| Blade width | .118" - .236" (3.0 - 5.9mm) | .039" - .216" (1.0 - 5.49mm) | | .079" - .118" (2.0 - 3.0mm) |
| Depth of cut | ~.354" (~9.0mm) | .177" (4.50mm) | | ~.118" (~3.0mm) |

## Multifunctional Grooving for non-ferrous material



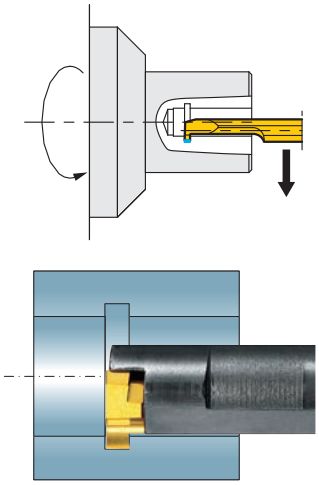
| Insert | GTPA ➡K126 | | |
|---|---|---|---|
| Holder | GTPA | Y-GTPA | Y-GTPA-OH |
| |  ➡K126 |  ➡K126 Y-axis | NEW  ➡K126 Y-axis w/ Coolant through |
| Blade width | .079" - .098" (2.0 - 2.50mm) | | |
| Depth of cut | ~.236" (~6.0mm) | | |

## Face Grooving



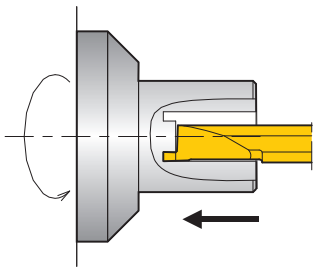
| Insert | FGV ➡K125 | FBV ➡K125 | |
|---|---|---|---|
| Holder | FGV | DS-FGV | CH-FGV |
| |  ➡K124 |  ➡K124 |  ➡K124 |
| Blade width | .039" - .079" (1.0㎜ - 2.0㎜) | | |
| Depth of cut | ~.118" (~3.0㎜) | FGV : ~.118" (~3.0㎜) | |
| | | FBV : ~.157" (~4.0㎜) | |

## ID Grooving



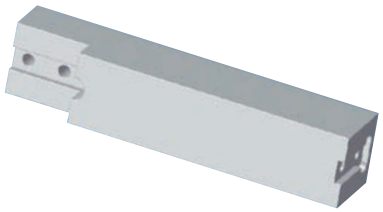
| Insert | SBG ➡K166 | GTG ➡K167 |
|---|---|---|
| Holder | NBH | S-BG / BG |
| |  ➡K162 |  ➡K167 |
| Blade width | .020" - .079" (0.5 - 2.0㎜) | .020" - .079" (0.5 - 2.0㎜) |
| Depth of cut | ~.079" (~2.0㎜) | ~.118" (~3.0㎜) |

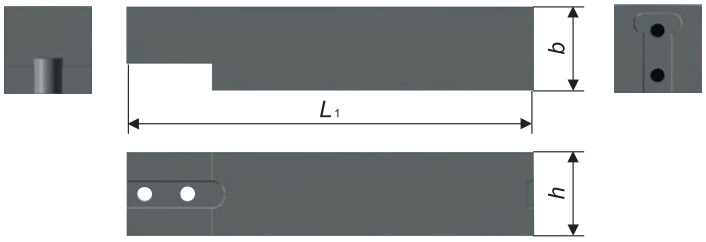
## ID Face Grooving



| Insert | SFG ➡K166 |
|---|---|
| Holder | NBH |
| |  ➡K162 |
| Blade width | .039" - .118" (1.0 - 3.0㎜) |
| Depth of cut | ~.110" (~2.79㎜) |

## BGV

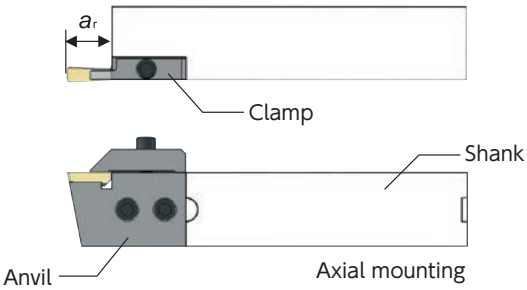


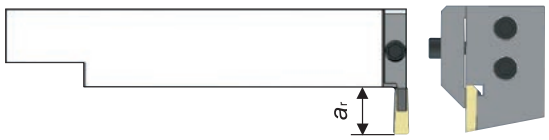



● Toolholder Body

| Item Number | Stock | Dimensions (inch) | | | Insert | Anvil Screw | Stock |
|---|---|---|---|---|---|---|---|
| | | *h* | *b* | $L_1$ | | | |
| **BS 20** | ● | 1.25 | 1.38 | 5.5 | VGW<br>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)

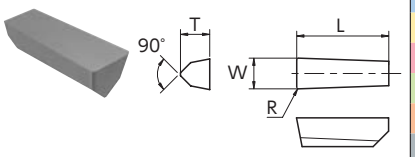
Right hand

| Shank | Item Number | Stock | | Dimensions (inch) | Insert | Clamp | Stock | Clamp Screw | Stock |
|---|---|---|---|---|---|---|---|---|---|
| | | R | L | $a_r$ | | | | | |
| BS 20 | **BGVR 043020** | ● | — | .375 | **VGW 4125<br>VGW 4156** | BGCR 04 | ● | BRCS 2V | ● |
| | **BGVR 054520** | ● | — | .562 | **VGW 4156<br>VGW 4187** | BGCR 05 | ● | | |
| | **BGVR 074520** | ● | — | .562 | **VGW 6218<br>VGW 6250** | BGCR 07 | ● | | |
| | **BGVR 086020** | ● | — | .750 | **VGW 6250<br>VGW 6281** | BGCR 08 | ● | | |
| | **BGVR 106020** | ● | — | .750 | **VGW 8312<br>VGW 8344** | BGCR 10 | ● | | |
| | **BGVR 119020** | ● | — | 1.125 | **VGW 8344<br>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<br>VGW4156** | BGCL 04 | ● | BRCS 2V | ● |
| | **BGVL 054520** | — | ● | .562 | **VGW4156<br>VGW4187** | BGCL 05 | ● | | |
| | **BGVL 074520** | — | ● | .562 | **VGW6218<br>VGW6250** | BGCL 07 | ● | | |
| | **BGVL 086020** | — | ● | .750 | **VGW6250<br>VGW6281** | BGCL 08 | ● | | |
| | **BGVL 106020** | — | ● | .750 | **VGW8312<br>VGW8344** | BGCL 10 | ● | | |
| | **BGVL 119020** | — | ● | 1.125 | **VGW8344<br>VGW8375** | BGCL 11 | ● | | |

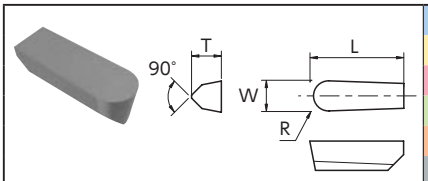
## VGW




| | | SiAlON | | | Whisker |
|---|---|---|---|---|---|
| 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 | 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

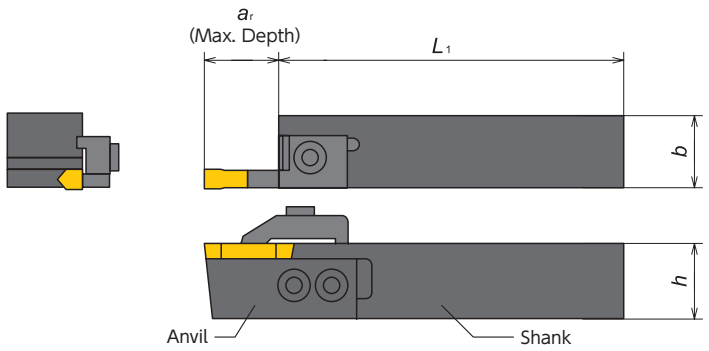


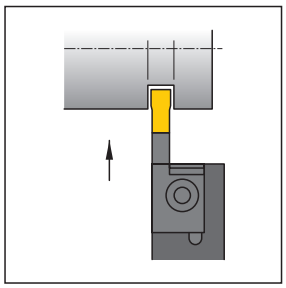

| | | SiAlON | | | Whisker |
|---|---|---|---|---|---|
| Steel | P | | | | |
| Stainless Steel | M | | | | |
| Cast Iron | K | ● | ● | ● | ● |
| Non-Ferrous Material | N | | | | |
| Heat Resistant Alloy | S | ● | ● | ● | ● |
| Hardened Material | H | | | | ● |

| Item Number | W | R | T | L | 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

# 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** | ● | ● | 1.00 | 1.00 | 6.00 | .750 | VDB<br>VDB..R | DAS41 | ● | SC40F10 | ● |
| **DB1-1-20** | ● | ● | 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

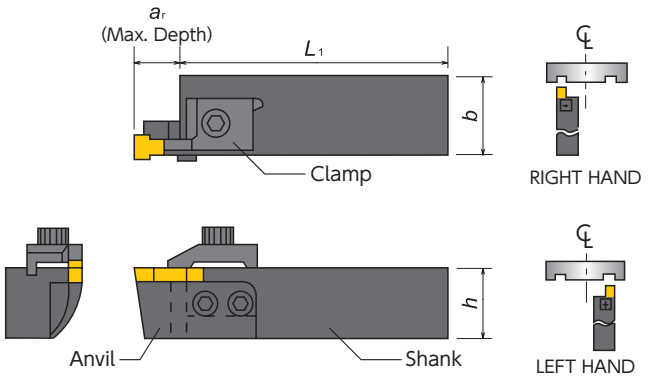
| Insert | DB-1-16R (Right hand) | | | | DB-1-16L (Left hand) | | | |
|---|---|---|---|---|---|---|---|---|
| | Anvil | Stock | Clamp | Stock | Anvil | Stock | Clamp | Stock |
| **VDB125** | R1E04 | ● | CR1-1-E04 | ● | L1E04 | ● | CL1-1-E04 | ● |
| **VDB156** | R1E05 | ● | CR1-1-E06 | ● | L1E05 | ● | 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

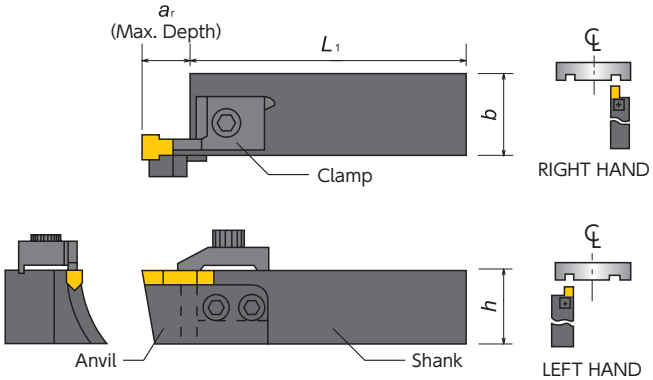
# DB Face Grooving

## 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* | $L_1$ | $a_r$ | | | | | |
| DB7-1-7-16R/L | ○ | ● | 1.00 | 1.00 | 6.00 | .750 | VDB<br>VDB..R  | DAS41 | ● | SC40F10 | ● |
| DB7-1-7-20R/L | ● | ● | 1.25 | 1.25 | 7.00 | .750 | | | | | |

Note: Toolholder body comes with anvil screw and clamp screw. Anvils and Clamps are soid 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<br>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 | ● |
| | 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<br>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 | ● |
| | 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 | ○ |

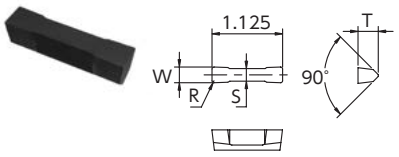
#### Curve Out

| Shank | Insert | O.D. range | | | | Clamp | Stock |
|---|---|---|---|---|---|---|---|
| | | 3" - 4 1/2" | 4 1/2" - 7" | 7" - 14" | 14" and over | | |
| DB7-1-7-16R<br>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 | ● |
| | 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<br>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 | ● |
| | 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

## VDB

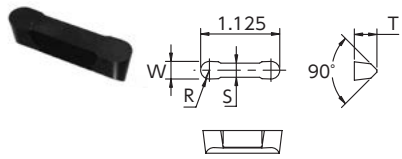



| | | SiAlON | | | Whisker | Alumina - TiC | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | |
| Cast Iron | K | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Non-Ferrous Material | N | | | | | | | | | | |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | |
| Hardened Material | H | | | | ● | | ● | ● | ● | ● | ● |

| Item Number | W | R | S | T | 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



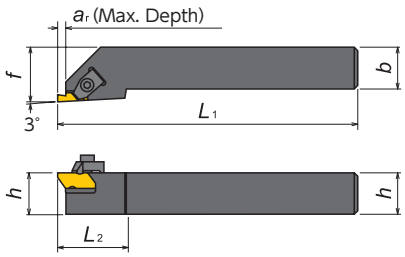

| | | SiAlON | | | Whisker | Alumina - TiC | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | |
| Cast Iron | K | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Non-Ferrous Material | N | | | | | | | | | | |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | |
| Hardened Material | H | | | | ● | | ● | ● | ● | ● | ● |

| Item Number | W | R | S | T | 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)

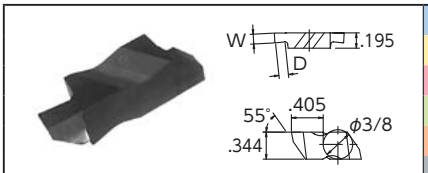
## NS




● 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<br>RKN3..R<br>GKP3..R |  | CM-72 | | S-412 | |
| **NSL16-3D** | ● | 1.00 | 1.00 | 6.00 | 1.25 | 1.25 | 0.210 | GKN3..L<br>RKN3..L<br>GKP3..L | | CM-73 | | S-412 | |

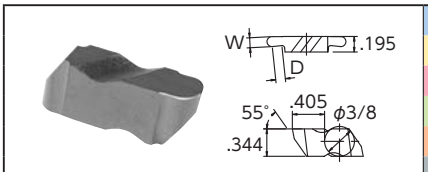
## GKN / GKP




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

| Item Number | W | R | D | Alumina - TiC | | | | | | Cermet | PVD-Carbide |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 | C7X | QM3 |
| **GKP 3031** R/L | .031 | .004 | .050 | | | | | | | R L | R L |
| **GKP 3047** R/L | .047 | .008 | .075 | | | | | | | R L | |
| **GKN 3062** R/L | .062 | .008 | .094 | | R L | | | | R L | | |
| **GKP 3062** R/L | .062 | .008 | .094 | | | | | | | R L | R L |
| **GKP 3088** R/L | .088 | .008 | .094 | | | | | | | R L | |
| **GKN 3094** R/L | .094 | .008 | .150 | | R L | | | | R L | | |
| **GKP 3094** R/L | .094 | .008 | .150 | | | | | | | R L | R L |
| **GKN 3125** R/L | .125 | .012 | .150 | | R L | | | | R L | | |
| **GKP 3125** R/L | .125 | .008 | .150 | | | | | | | R L | R L |
| **GKN 3156** R/L | .156 | .012 | .150 | | R L | | | | | | |
| **GKP 3156** R/L | .156 | .008 | .150 | | | | | | | R L | R L |
| **GKN 3189** R/L | .189 | .012 | .150 | | R L | | | | | | |
| **GKP 3189** R/L | .189 | .012 | .150 | | | | | | | R L | R L |

## RKN




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

| Item Number | W | R | D | Alumina - TiC | | | | | | Cermet | PVD-Carbide |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | HC6 | HC2 | HC5 | HC7 | ZC7 | ZC4 | C7X | QM3 |
| **RKN 3078** R/L | .078 | .039 | .150 | | | | | | R L | | |
| **RKN 3094** R/L | .094 | .047 | .150 | | | | | | R L | | |
| **RKN 3125** R/L | .125 | .063 | .150 | | | | | | R L | | |
| **RKN 3156** R/L | .156 | .078 | .150 | | | | | | R L | | |
| **RKN 3189** R/L | .189 | .095 | .150 | | | | | | R | | |

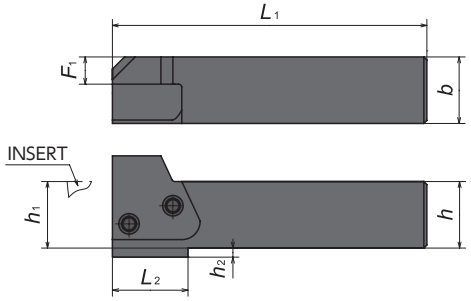
* Inserts with special width and R in both GKN and GKP are available upon requests.

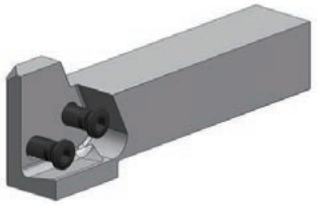
# Groove DUO

Modular system

To be released in May 2015

## GTWP-H Straight style toolholder



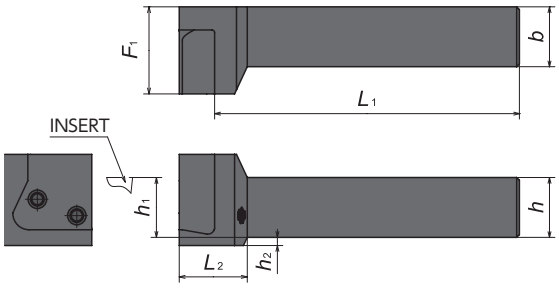



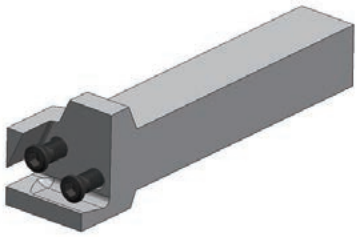
・Right-hand shown

● Toolholder Body

| Item Number | Stock | | Dimensions | | | | | | | | | | | | Applicable Blade | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | h | | b | | h1 | | L1 | | F1 | | h2 | | L2 | | | | |
| | R | L | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | | | |
| GTWP R/L 16-IN-H | ● | ● | 1.00 | 25.4 | 1.00 | 25.4 | 1.00 | 25.4 | 5.16 | 131 | .488 | 12.4 | – | – | – | – | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |
| GTWP R/L 20-IN-H | ● | ● | 1.25 | 31.8 | 1.25 | 31.8 | 1.25 | 31.8 | 6.18 | 157 | .740 | 18.8 | – | – | – | – | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |
| GTWP R/L 2020-H | ○ | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 4.09 | 104 | .276 | 7 | 1.97 | 5 | .984 | 25 | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |
| GTWP R/L 2525-H | ○ | ○ | .984 | 25 | .984 | 25 | .984 | 25 | 5.08 | 129 | .472 | 12 | – | – | – | – | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |

## GKWP-H L-style toolholder



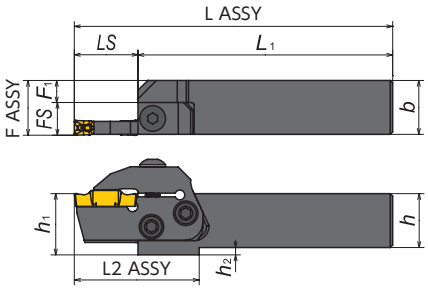



・Right-hand shown

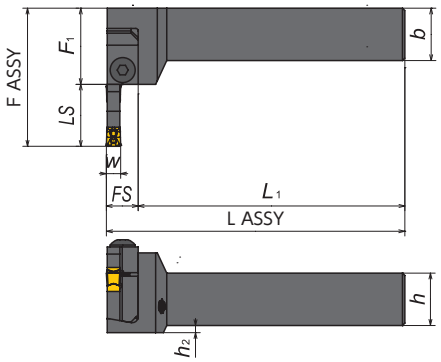
● Toolholder Body

| Item Number | Stock | | Dimensions | | | | | | | | | | | | Applicable Blade | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | h | | b | | h1 | | L1 | | F1 | | h2 | | L2 | | | | |
| | R | L | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | | | |
| GKWP R/L 16-IN-H | ● | ● | 1.00 | 25.4 | 1.00 | 25.4 | 1.00 | 25.4 | 5.47 | 139 | 1.26 | 32 | – | – | – | – | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |
| GKWP R/L 20-IN-H | ● | ● | 1.25 | 31.8 | 1.25 | 31.8 | 1.25 | 31.8 | 6.50 | 165 | 1.26 | 32 | – | – | – | – | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |
| GKWP R/L 2020-H | ○ | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 4.41 | 112 | 1.26 | 32 | 1.97 | 5 | .984 | 25 | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |
| GKWP R/L 2525-H | ○ | ○ | .984 | 25 | .984 | 25 | .984 | 25 | 5.39 | 137 | 1.26 | 32 | – | – | – | – | GBWP R/L GBWPF R/L | FSI28-6.0*18 | LW-4 |

### 〔Combination dimentions〕

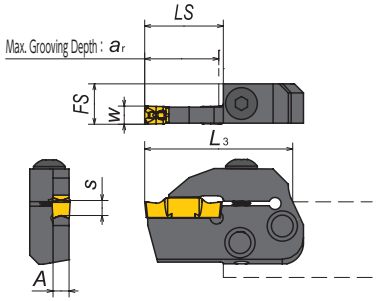


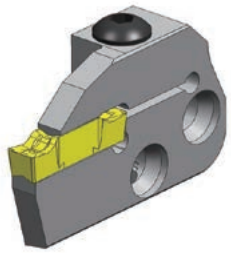

L ASSY = L1 (toolholder body) + LS (blade)
F ASSY = F1 (toolholder body) + FS (blade)
L2 ASSY = L2 (toolholder body) + LS (blade)




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

## GBWP Blade for OD Grooving



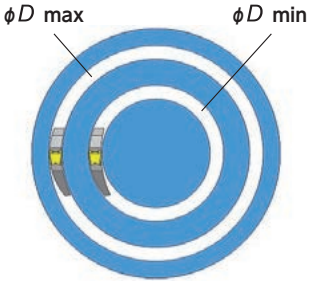



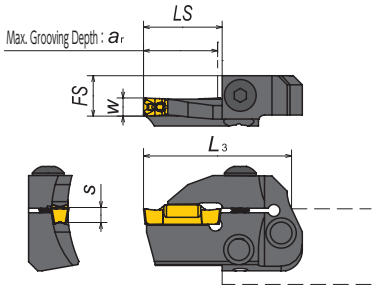
・Right-hand shown

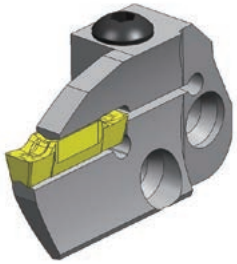
● Toolholder Body

| Item Number | Stock | | Groove Width w | | Max. Grooving Depth $a_r$ | | Dimensions | | | | | | | | Seat Size s | Applicable Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | LS | | FS | | $L_3$ | | A | | | |
| | R | L | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | | |
| GBWPR/L-3D14 | ● | ● | .118 | 3 | .551 | 14 | .591 | 15 | .520 | 13.2 | 1.496 | 38 | .098 | 2.5 | D | GWP○300 |
| GBWPR/L-4E16 | ● | ● | .157 | 4 | .630 | 16 | .669 | 17 | .524 | 13.3 | 1.575 | 40 | .138 | 3.5 | E | GWP○400 |
| GBWPR/L-5F20 | ● | ● | .197 | 5 | .787 | 20 | .827 | 21 | .524 | 13.3 | 1.732 | 44 | .177 | 4.5 | F | GWP○500 |
| GBWPR/L-6G25 | ● | ● | .236 | 6 | .984 | 25 | 1.024 | 26 | .526 | 13.35 | 1.929 | 49 | .209 | 5.3 | G | GWP○600 |

## GBWPF Blade for Face Grooving



・Right-hand shown

● Toolholder Body

| Item Number | Stock | | Groove Width w | | Max. Grooving Depth $a_r$ | | ϕD min | | ϕD max | | Dimensions | | | | | | Seat Size s | Applicable Insert * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | LS | | FS | | $L_3$ | | | |
| | R | L | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | | |
| GBWPFR/L-3D14-029 | ○ | ○ | .118 | 3 | .551 | 14 | 1.142 | 29 | 1.792 | 45 | .591 | 15 | .512 | 13 | 1.496 | 38 | D | GWP○300 GWPF○300 |
| GBWPFR/L-3D14-040 | ○ | ○ | .118 | 3 | .551 | 14 | 1.575 | 40 | 2.362 | 60 | .591 | 15 | .512 | 13 | 1.496 | 38 | D | GWP○300 GWPF○300 |
| GBWPFR/L-3D14-055 | ○ | ○ | .118 | 3 | .551 | 14 | 2.165 | 55 | 3.150 | 80 | .591 | 15 | .512 | 13 | 1.496 | 38 | D | GWP○300 GWPF○300 |
| GBWPFR/L-3D14-075 | ○ | ○ | .118 | 3 | .551 | 14 | 2.953 | 75 | 4.331 | 110 | .591 | 15 | .512 | 13 | 1.496 | 38 | D | GWP○300 GWPF○300 |
| GBWPFR/L-3D14-105 | ○ | ○ | .118 | 3 | .551 | 14 | 4.134 | 105 | 7.874 | 200 | .591 | 15 | .512 | 13 | 1.496 | 38 | D | GWP○300 GWPF○300 |
| GBWPFR/L-3D14-180 | ○ | ○ | .118 | 3 | .551 | 14 | 7.087 | 180 | 11.811 | 300 | .591 | 15 | .512 | 13 | 1.496 | 38 | D | GWP○300 GWPF○300 |
| GBWPFR/L-4E16-033 | ○ | ○ | .157 | 4 | .630 | 16 | 1.299 | 33 | 1.969 | 50 | .669 | 17 | .512 | 13 | 1.575 | 40 | E | GWP○400 GWPF○400 |
| GBWPFR/L-4E16-045 | ○ | ○ | .157 | 4 | .630 | 16 | 1.772 | 45 | 2.953 | 75 | .669 | 17 | .512 | 13 | 1.575 | 40 | E | GWP○400 GWPF○400 |
| GBWPFR/L-4E16-060 | ○ | ○ | .157 | 4 | .630 | 16 | 2.362 | 60 | 3.937 | 100 | .669 | 17 | .512 | 13 | 1.575 | 40 | E | GWP○400 GWPF○400 |
| GBWPFR/L-4E16-090 | ○ | ○ | .157 | 4 | .630 | 16 | 3.543 | 90 | 7.087 | 180 | .669 | 17 | .512 | 13 | 1.575 | 40 | E | GWP○400 GWPF○400 |
| GBWPFR/L-4E16-170 | ○ | ○ | .157 | 4 | .630 | 16 | 6.639 | 170 | 11.024 | 280 | .669 | 17 | .512 | 13 | 1.575 | 40 | E | GWP○400 GWPF○400 |
| GBWPFR/L-4E16-250 | ○ | ○ | .157 | 4 | .630 | 16 | 9.843 | 250 | ∞ | ∞ | .669 | 17 | .512 | 13 | 1.575 | 40 | E | GWP○400 GWPF○400 |
| GBWPFR/L-5F20-035 | ○ | ○ | .197 | 5 | .787 | 20 | 1.378 | 35 | 2.165 | 55 | .827 | 21 | .512 | 13 | 1.732 | 44 | F | GWP○500 GWPF○500 |
| GBWPFR/L-5F20-050 | ○ | ○ | .197 | 5 | .787 | 20 | 1.969 | 50 | 2.953 | 85 | .827 | 21 | .512 | 13 | 1.732 | 44 | F | GWP○500 GWPF○500 |
| GBWPFR/L-5F20-075 | ○ | ○ | .197 | 5 | .787 | 20 | 2.953 | 75 | 4.724 | 120 | .827 | 21 | .512 | 13 | 1.732 | 44 | F | GWP○500 GWPF○500 |
| GBWPFR/L-5F20-105 | ○ | ○ | .197 | 5 | .787 | 20 | 4.134 | 105 | 7.874 | 200 | .827 | 21 | .512 | 13 | 1.732 | 44 | F | GWP○500 GWPF○500 |
| GBWPFR/L-5F20-180 | ○ | ○ | .197 | 5 | .787 | 20 | 7.087 | 180 | 11.811 | 300 | .827 | 21 | .512 | 13 | 1.732 | 44 | F | GWP○500 GWPF○500 |
| GBWPFR/L-5F20-250 | ○ | ○ | .197 | 5 | .787 | 20 | 9.843 | 250 | ∞ | ∞ | .827 | 21 | .512 | 13 | 1.732 | 44 | F | GWP○500 GWPF○500 |
| GBWPFR/L-6G25-040 | ○ | ○ | .236 | 6 | .984 | 25 | 1.575 | 40 | 2.756 | 70 | 1.024 | 26 | .512 | 13 | 1.929 | 49 | G | GWP○600 GWPF○600 |
| GBWPFR/L-6G25-060 | ○ | ○ | .236 | 6 | .984 | 25 | 2.362 | 60 | 3.740 | 95 | 1.024 | 26 | .512 | 13 | 1.929 | 49 | G | GWP○600 GWPF○600 |
| GBWPFR/L-6G25-085 | ○ | ○ | .236 | 6 | .984 | 25 | 3.346 | 85 | 7.087 | 180 | 1.024 | 26 | .512 | 13 | 1.929 | 49 | G | GWP○600 GWPF○600 |
| GBWPFR/L-6G25-160 | ○ | ○ | .236 | 6 | .984 | 25 | 6.299 | 160 | 11.811 | 300 | 1.024 | 26 | .512 | 13 | 1.929 | 49 | G | GWP○600 GWPF○600 |
| GBWPFR/L-6G25-250 | ○ | ○ | .236 | 6 | .984 | 25 | 9.843 | 250 | ∞ | ∞ | 1.024 | 26 | .512 | 13 | 1.929 | 49 | G | GWP○600 GWPF○600 |

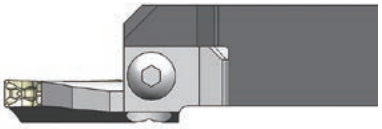
* Min. diameter depends on insert.

Inserts ➡ H15

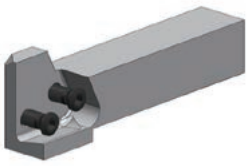
## Combination of toolholder and blade for Face Grooving

### GTWP-H Straight style toolholder

**Right-hand system**

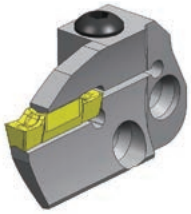


Toolholder



GTWP R-H

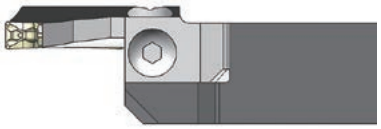
Blade



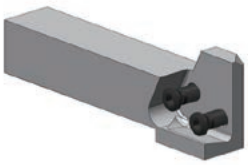
GBWP R
GBWPF R

* Right-hand toolholder takes Right-hand blade.

**Left-hand system**

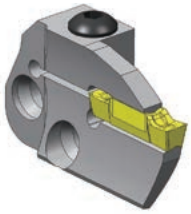


Toolholder



GTWP L-H

Blade

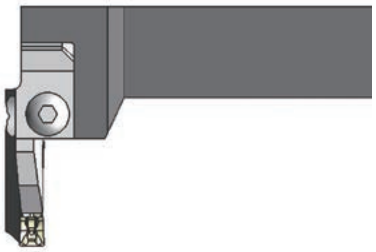


GBWP L
GBWPF L

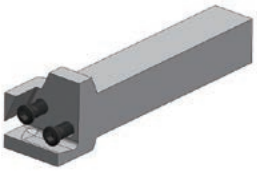
* Left-hand toolholder takes Left-hand blade.

### GKWP-H L-style toolholder

**Right-hand system**

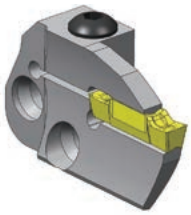


Toolholder



GKWP R-H

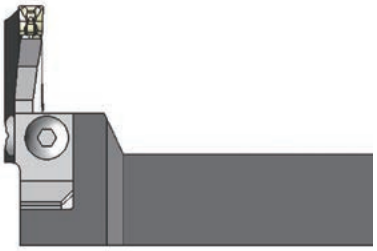
Blade



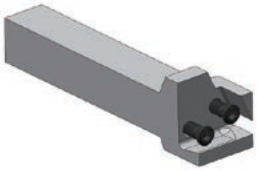
GBWP L
GBWPF L

* Right-hand toolholder takes Left-hand blade.

**Left-hand system**

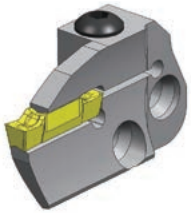


Toolholder



GKWP L-H

Blade

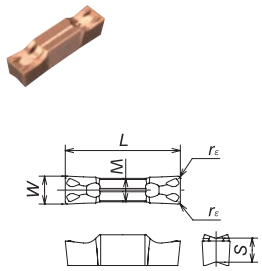
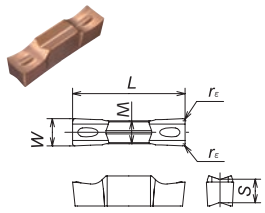


GBWP R
GBWPF R

* Left-hand toolholder takes Right-hand blade.

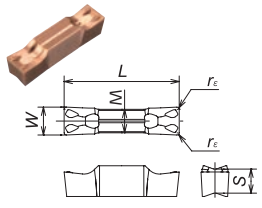
# Groove DUO Series - Inserts

## OD Grooving Inserts

| Shape | Item Number | W Groove Width (Inch) | W Groove Width (mm) | W Width Tolerance (Inch) | W Width Tolerance (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | M (Inch) | M (mm) | L (Inch) | L (mm) | Seat Size S | Coated Carbide DM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | ○ |
| GWPG: Outside ground<br>GWPM: Full-molded<br>●Excellent chip control<br>●Best for side turning | 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 | ○ |
| ●Less tool pressure design | GWPG600N04G-GV | .236 | 6.0 | .001 | ± 0.025 | .016 | 0.4 | .169 | 4.3 | 1.008 | 25.6 | G | ○ |

## Face Grooving Insert

**To be released in May 2015**

| Shape | Item Number | W Groove Width (Inch) | W Groove Width (mm) | W Width Tolerance (Inch) | W Width Tolerance (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | M (Inch) | M (mm) | L (Inch) | L (mm) | Seat Size S | Coated Carbide DM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | GWFPG300N02D-GW | .118 | 3.0 | .001 | ± 0.025 | .008 | 0.2 | .098 | 2.5 | .811 | 20.6 | D | ● |
| | GWFPG400N04E-GW | .157 | 4.0 | .001 | ± 0.025 | .016 | 0.4 | .134 | 3.4 | .811 | 20.6 | E | ● |
| | GWFPG500N04F-GW | .197 | 5.0 | .001 | ± 0.025 | .016 | 0.4 | .169 | 4.3 | .811 | 20.6 | F | ● |
| | GWFPG600N04G-GW | .236 | 6.0 | .001 | ± 0.025 | .016 | 0.4 | .205 | 5.2 | 1.008 | 25.6 | G | ● |

## Minimum Diameter for Face Grooving

| | | GWPFG | GWPM | GWPG |
|---|---|---|---|---|
| Groove Width (inch) | .118 | φ1.142" (φ29mm) | φ5.827" (φ148mm) | φ11.220" (φ285mm) |
| | .157 | φ1.299" (φ33mm) | φ3.583" (φ91mm) | φ9.843" (φ250mm) |
| | .197 | φ1.378" (φ35mm) | φ3.543" (φ90mm) | φ9.449" (φ240mm) |
| | .236 | φ1.575" (φ40mm) | φ4.094" (φ104mm) | φ8.661" (φ220mm) |

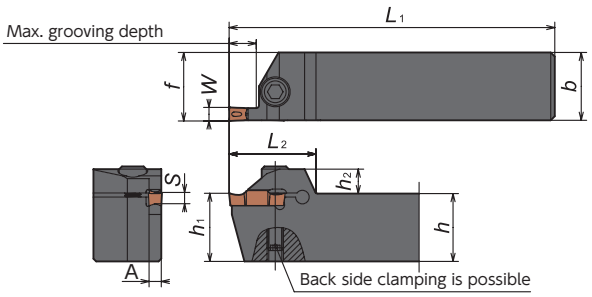
Holders➡ H13

● : Stock ○ : 1-2 week delivery

# Groove DUO

**Mono-shank style**

## GTWP





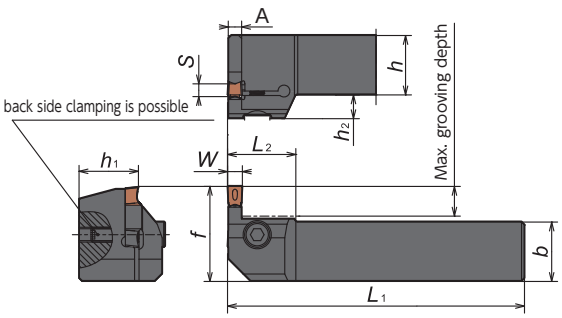

Recommended tightening torque 7.0[N・m]

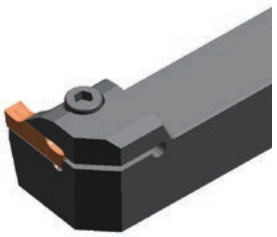
・Right-hand shown

● Toolholder Body

| Holder Number | Stock | | Width w | | Max. Grooving Depth $a_r$ | | Dimensions | | | | | | | | | | Seat Size s | Applicable Insert | Spare Parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | h | | b | | $h_1$ | | $h_2$ | | f | | $L_1$ | | $L_2$ | | A | | | | Bolt | Wrench |
| | R | L | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | | | | |
| GTWP□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○300 | CS0520W | LW-4 |
| GTWP□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○300 | CS0625W | LW-5 |
| GTWP□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○300 | CS0520W | LW-4 |
| GTWP□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○300 | CS0625W | LW-5 |
| GTWP□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○400 | CS0520W | LW-4 |
| GTWP□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○400 | CS0625W | LW-5 |
| GTWP□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○400 | CS0520W | LW-4 |
| GTWP□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○400 | CS0625W | LW-5 |
| GTWP□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○500 | CS0520W | LW-4 |
| GTWP□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○500 | CS0625W | LW-5 |
| GTWP□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○500 | CS0520W | LW-4 |
| GTWP□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○500 | CS0625W | LW-5 |
| GTWP□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○600 | CS0520W | LW-4 |
| GTWP□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○600 | CS0625W | LW-5 |
| GTWP□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○600 | CS0520W | LW-4 |
| GTWP□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○600 | CS0625W | LW-5 |

## GKWP



Recommended tightening torque 7.0[N・m]

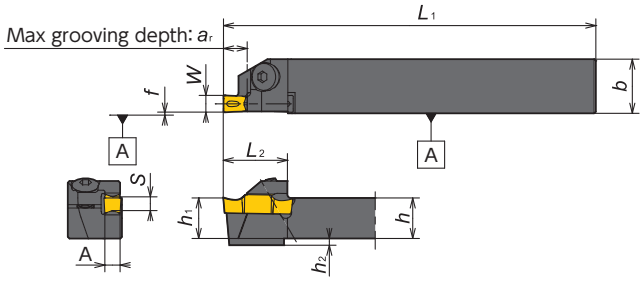
・L-hand shown

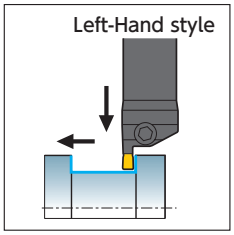
| Holder Number | Stock | | Width w | | Max. Grooving Depth $a_r$ | | Dimensions | | | | | | | | | | Seat Size s | Applicable Insert | Spare Parts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | h | | b | | $h_1$ | | $h_2$ | | f | | $L_1$ | | $L_2$ | | A | | | | Bolt | Wrench |
| | R | L | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | (Inch) | (mm) | | | | |
| GKWP□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○300 | CS0520W | LW-4 |
| GKWP□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○400 | CS0520W | LW-4 |
| GKWP□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○500 | CS0520W | LW-4 |
| GKWP□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○600 | CS0520W | LW-4 |

# Groove DUO

## GTWP

### For Swiss Style Machine



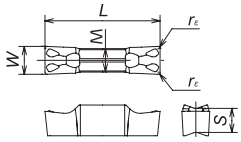
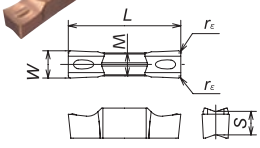




Right-Hand style shown

● Toolholder

| Gage Insert | Item Number | Figure | Stock R | Stock L | Groove Width w (Inch) | Groove Width w (mm) | $a_r$ (Inch) | $a_r$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | A (Inch) | A (mm) | Seat Size s | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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☐08-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☐08-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 |

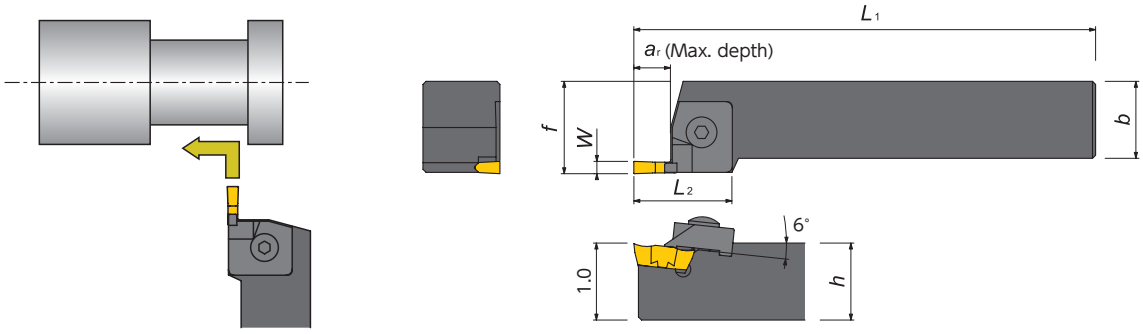
# Groove DUO Series - Inserts

| Shape | Item Number | w Groove Width (Inch) | w Groove Width (mm) | w Width Tolerance (Inch) | w Width Tolerance (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | M (Inch) | M (mm) | L (Inch) | L (mm) | Seat Size s | Coated Carbide DM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|    GWPG: Outside ground GWPM: Full-molded ●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 | ○ |
|    ●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 | ○ |

● : Stock ○ : 1-2 week delivery

# Grooving / Side Turning

## VGT Clamp-on type




・Right hand shown

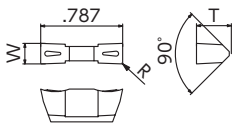
● Toolholders

| Item Number | Stock | | Groove size covered | Dimensions (inch) | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | Width | h | b | $L_1$ | $L_2$ | f | $a_r$ | |
| 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 | |  | Stock |  | Stock |  | Stock |
| | | R | L | | | | | | |
| VGT R/L 16-3 | CV R/L 3N | ○ | ○ | AOB-6N | ○ | ASG-6 | ○ | LW-4 | ● |
| VGT R/L 16-4 | CV R/L 4N | ○ | ● | | | | | | |
| VGT R/L 16-6 | CV R/L 6 | ○ | ○ | | | | | | |

## VGE


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

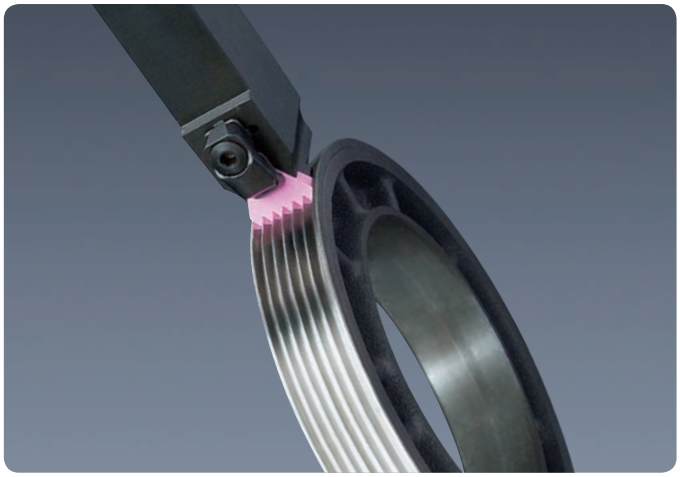
| Item Number | W | R | T | Cermet | | | | | Carbide | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | PVD Coated | | | PVD Coated | | | | | | CVD |
| | | | | XT3 | C7X | XN4 | Q15 | C7Z | KM1 | DM4 | DT4 | TM4 | QM3 | VM1 | ZM3 | CP1 |
| VGE 125N008 | .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 ● : Alternate choice
● : Stock ○ : 1-2 week delivery

# Machining Poly-V Pulley Profiles

## *Grooving With Ceramics*





### Features

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

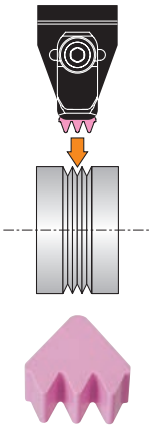


### Recommended Cutting Conditions

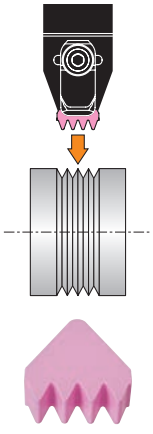
| Material | Grade | Cutting speed (SFM) | Feed (IPR) | DRY | WET |
|---|---|---|---|---|---|
| Gray cast iron | **HW2** | 1000–2000 | .002–.006 | ● | |



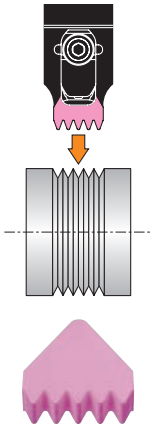
**3V** ➡H20



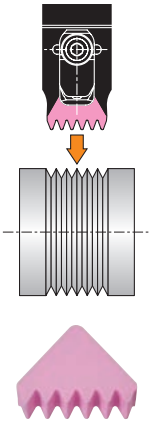
**4V** ➡H21



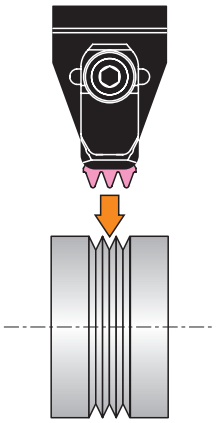
**5V** ➡H22

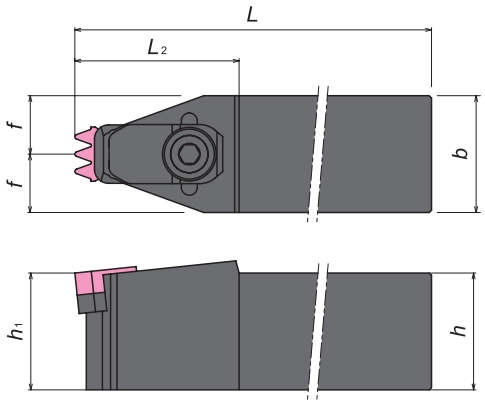


**6V** ➡H23



## POLY-V (3V) Clamp-on type





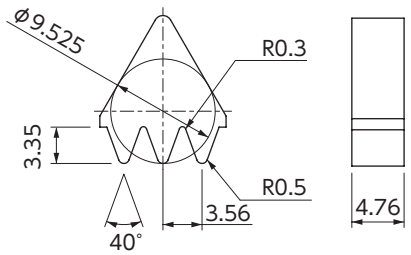
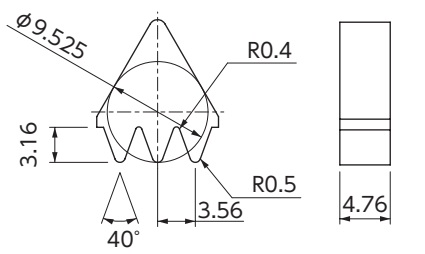

● Toolholders

| Item Number | Stock | Dimensions (inch) | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|
| | | *h* | *b* | $h_1$ | *L* | $L_2$ | *f* | |
| **POLY-V163** | ● | 1.00 | 1.00 | 1.00 | 6.00 | .50 | 1.40 | PTM33K30.. |

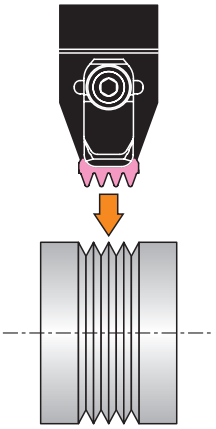
● Spare Parts

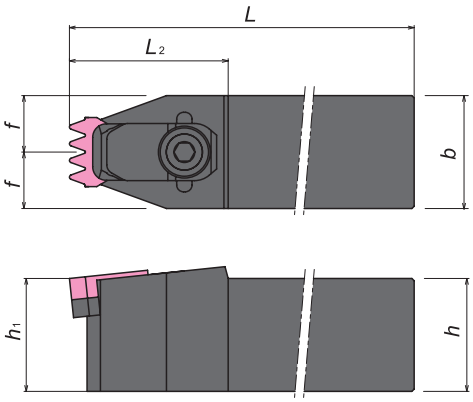
| Holder | Clamp | | Thrust Plate | | Shim | | Shim-Screw | |
|---|---|---|---|---|---|---|---|---|
| |  | Stock |  | Stock |  | Stock |  | Stock |
| **POLY-V163** | 2417-C | ● | 9414-C | ● | K3-C | ● | 1230-C | ● |

● Insert

| Shape | PTM33K305ENB | HW2 | PTM33K30504ENB | HW2 |
|---|---|---|---|---|
|  | (mm)   | ● | (mm)   | ● |

# POLY-V(4V) Face Grooving

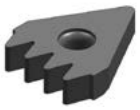




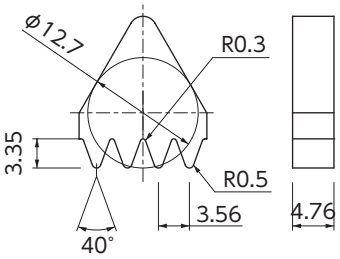
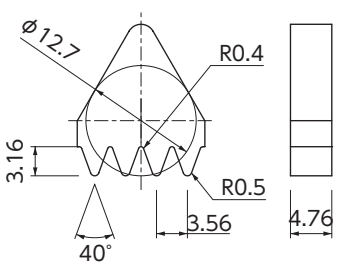

## Toolholders

| 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.. |

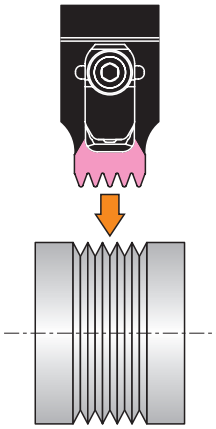
## Spare Parts

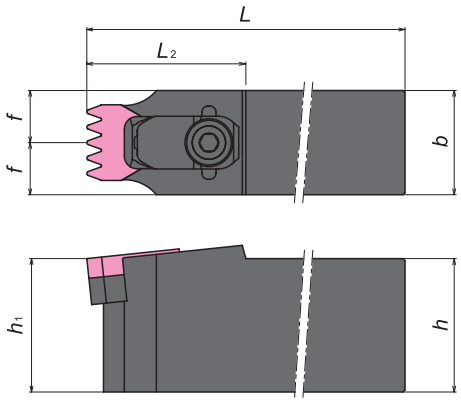
| Holder | Clamp | | Thrust Plate | | Shim | | Shim-Screw | |
|---|---|---|---|---|---|---|---|---|
| |  | Stock |  | Stock |  | Stock |  | Stock |
| **POLY-V164** | 2417-C | ● | 9414-C | ● | K4-C | ● | 1230-C | ● |

## Insert

| Shape | PTM43K405ENB | HW2 | PTM43K40504ENB | HW2 |
|---|---|---|---|---|
|  | (mm)   | ● | (mm)   | ● |

## POLY-V (5V) Clamp-on type





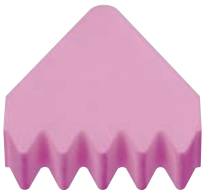
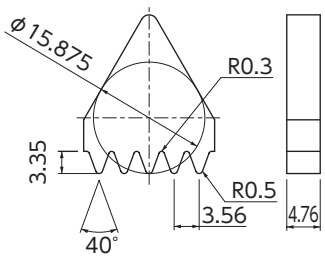
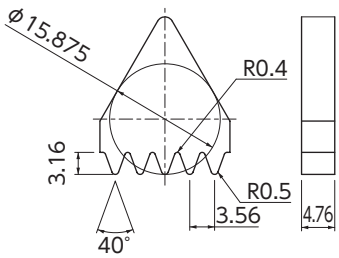

### Toolholders

| Item Number | Stock | Dimensions (inch) | | | | | | Insert |
|---|---|---|---|---|---|---|---|---|
| | | *h* | *b* | $h_1$ | *L* | $L_2$ | *f* | |
| **POLY-V205** | ● | 1.25 | 1.25 | 1.25 | 7.00 | .625 | 1.50 | PTM53K50.. |

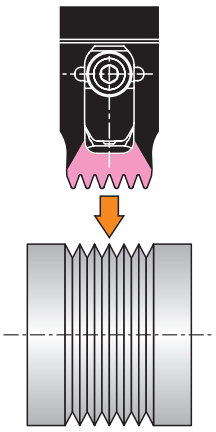
### Spare Parts

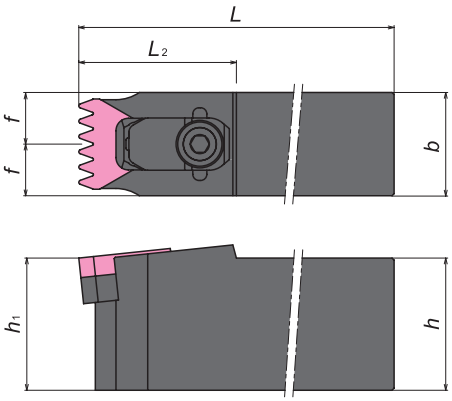
| Holder | Clamp | | Thrust Plate | | Shim | | Shim-Screw | |
|---|---|---|---|---|---|---|---|---|
| |  | Stock |  | Stock |  | Stock |  | Stock |
| **POLY-V205** | 2417-C | ● | 9414-C | ● | K5-C | ● | 1230-C | ● |

### Insert

| Shape | PTM53K505ENB | HW2 | PTM53K50504ENB | HW2 |
|---|---|---|---|---|
|  | (mm)   | ● | (mm)   | ● |

# POLY-V(6V) Face Grooving

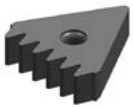




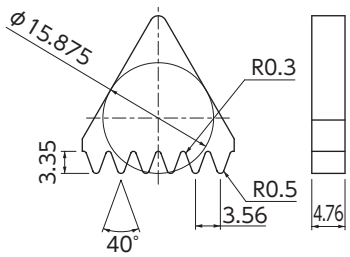
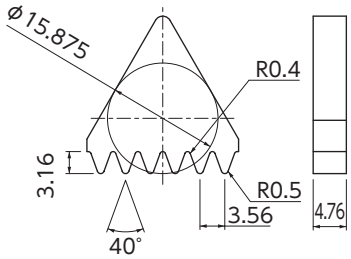

## Toolholders

| 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

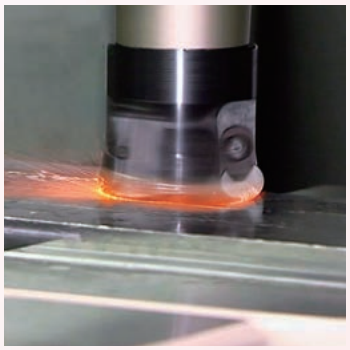
| Holder | Clamp | | Thrust Plate | | Shim | | Shim-Screw | |
|---|---|---|---|---|---|---|---|---|
| |  | Stock |  | Stock |  | Stock |  | Stock |
| **POLY-V164** | 2417-C | ● | 9414-C | ● | K6-C | ● | 1230-C | ● |

## Insert

| Shape | PTM53K605ENB | HW2 | PTM53K60504ENB | 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*







AHM Accel High Speed Mill series ➡ I 6 • I 7

# Gray / Ductile cast iron

XFM Extreme Feed Mill series ➡ I 8



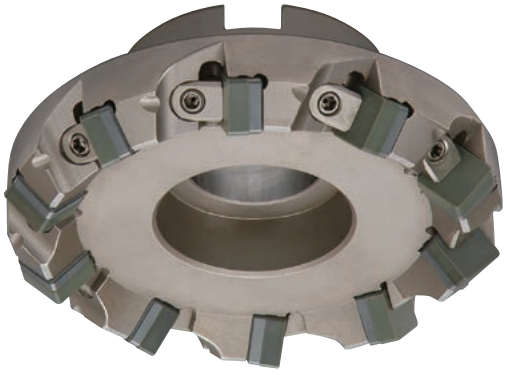
## Features

- *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*

88° Lead angle

**A.R.–4°**
**R.R.0°**

HVM High Velocity Mill series ➡ I 10, I 12, I 14



## Features

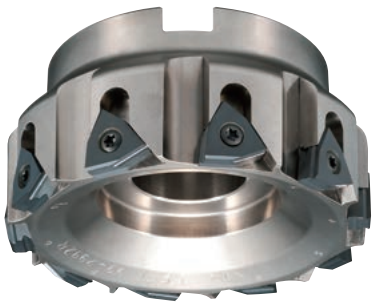
- *Extremely economical 8-corner inserts*
- *Covers various applications with 45, 75, and 88 degree angle milling cutter*
- *Ceramic inserts with chipbreaker and wiper are also available*

45° Lead angle　75° Lead angle　88° Lead angle

**A.R.–6°**
**R.R.–10°**

● : 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*

88°
Lead angle

**A.R. 5°**
**R.R. 4°, 7°, 10°**

## HSM High Speed Machining 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*

45°
Lead angle

75°
Lead angle

**A.R.+12°**
**R.R.0°**

## JQ series ➡ I 20



### Features

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

90°
Lead angle



# Aluminum

## HPC High Performance Cutter 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 |
| | | | Themal 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



➡ I 6



➡ I 6



➡ I 7

### 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 | .045" | 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*

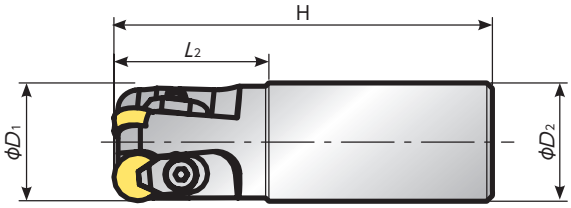
# AHM series

Accel High-speed Mill

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



A.R.+5°
R.R.-7°30'




● Inch size cutters

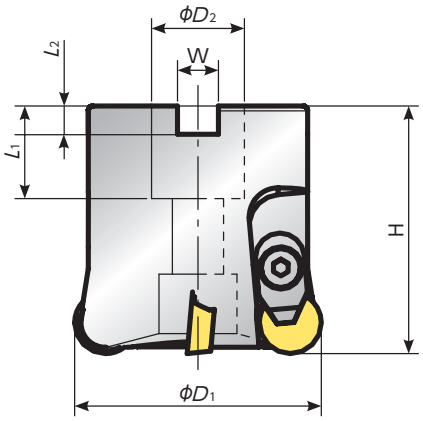
| Item Number | Stock | | Dimensions (inch) | | | | Clamp | Clamp Screw | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $\phi D_1$ | $D_2$ | $H$ | $L_2$ | | | | |
| **RPIW0625E0625R02** | ● | 2 | .625 | .625 | 3.160 | 1.250 | US6000926 | US6000927 | 0.2 | RPG 21.5 |
| **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 (㎜) | | | | Clamp | Clamp Screw | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $\phi D_1$ | $D_2$ | $H$ | $L_2$ | | | | |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $\phi D_1$ | $H$ | $D_2$ | $W$ | $L_1$ | $L_2$ | | | | | | | | |
| **RPIW200S075R04** | ● | 4 | 2.00 | 2.00 | .750 | .322 | .748 | .222 | ARP42A | M3*8 | AMS-5T | AOB-5S-T25 | +5° | +5° | 0.9 | RPG 43 |
| **RPIW300S100R05** | ● | 5 | 3.00 | 2.00 | 1.000 | .387 | .748 | .244 | | | | | +5° | +5° | 2.0 | |
| **RPIW400S125R06** | ● | 6 | 4.00 | 2.00 | 1.250 | .500 | .800 | .280 | | | | | +5° | +5° | 4.2 | |

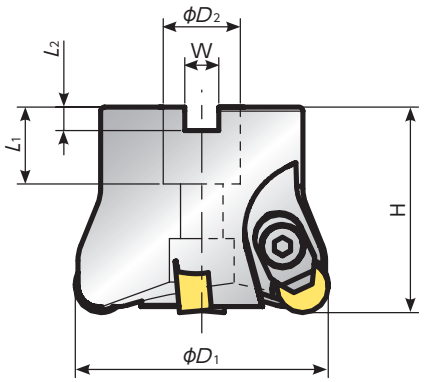
● Metric size cutters

| Item Number | Stock | | Dimensions (㎜) | | | | | | Shim | Shim Screw | Clamp | Clamp Screw | A.R. | R.R. | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $\phi D_1$ | $H$ | $D_2$ | $W$ | $L_1$ | $L_2$ | | | | | | | | |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | H | ϕD2 | W | L1 | L2 | | | | |
| RNIW200S075R03 | ● | 3 | 2.00 | 2.00 | .750 | .322 | .748 | .203 | AMS-6T | AOB-6S-T30 | 1.0 | RNG 45 |
| RNIW250S075R04 | ● | 4 | 2.50 | 2.00 | .750 | .322 | .748 | .222 | | | 1.3 | |
| RNIW300S100R05 | ● | 5 | 3.00 | 2.00 | 1.000 | .387 | .748 | .244 | | | 1.6 | |
| RNIW400S125R06 | ● | 6 | 4.00 | 2.00 | 1.250 | .500 | .800 | .280 | | | 4.2 | |

● Metric size cutters

| Item Number | Stock | | Dimensions (mm) | | | | | | Clamp | Clamp Screw | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | H | ϕD2 | W | L1 | L2 | | | | |
| 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) 200 700 1200 1700 2200 2700 3200 3700 | Feed (IPT) .002 .003 .004 .005 .006 .007 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|---|
| S | | SX7 | ● | | | | ~.150 |
| Heat Resistant Alloys | | SX9 | ● | | | | ~.150 |
| H | | WA1 | ● | ○ | | | ~.150 |
| Hardened Steel | HRC 45-55 | HC7 | ● | ○ | | | ~.150 |
| | HRC 55-65 | WA1 | ● | ○ | | | ~.150 |
| | | HC7 | ● | ○ | | | ~.150 |

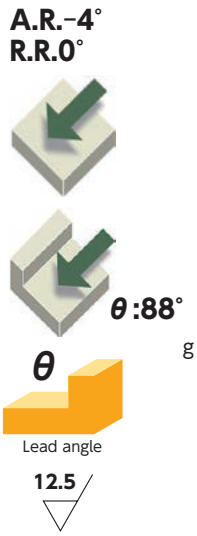
Milling Cutter

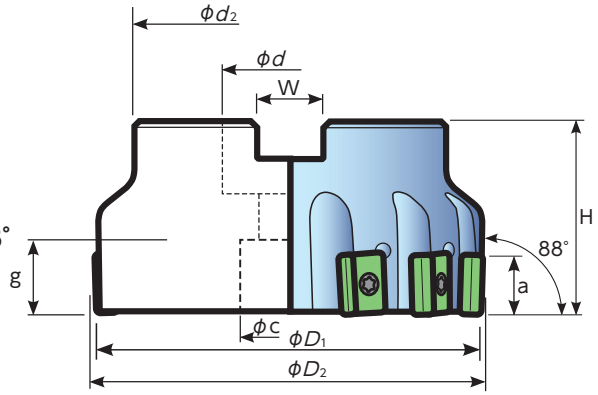
Inserts (RNG) ➡E10
Inserts (RPG) ➡E11

# XFM (Xtreme Feed Mill) series

## Lead angle 88 degress - LNX324 〈A.R.-4° ,R.R.0°〉






## Inch size cutters

| Item Number | Stock | | Dimensions (inch) | | | | | | | | | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕ$D_1$ | ϕ$D_2$ | $H$ | $a$ | ϕ $d$ | $W$ | ϕ $d_2$ | ϕ $c$ | $g$ | | |
| **JXTM15IN-88-4R** | ● | 4 | 1.50 | 1.55 | 1.75 | .551 | .750 | .375 | 1.350 | .610 | — | 1.0 |  LNX 324 |
| **JXTM20IN-88-6R** | ● | 6 | 2.00 | 2.05 | 2.00 | .551 | .750 | .375 | 1.770 | .610 | — | 1.0 | |
| **JXTM25IN-88-8R** | ● | 8 | 2.50 | 2.55 | 2.00 | .551 | 1.000 | .500 | 2.000 | .760 | — | 1.5 | |
| **JXTM30IN-88-10R** | ● | 10 | 3.00 | 3.04 | 2.00 | .551 | 1.000 | .387 | 2.362 | .827 | .539 | 2.4 | |
| **JXTM40IN-88-13R** | ● | 13 | 4.00 | 4.04 | 2.00 | .551 | 1.500 | .640 | 3.150 | 2.000 | .870 | 3.9 | |
| **JXTM50IN-88-16R** | ● | 16 | 5.00 | 5.04 | 2.00 | .551 | 1.500 | .640 | 3.740 | 2.000 | .870 | 6.5 | |
| **JXTM60IN-88-18R** | ● | 18 | 6.00 | 6.05 | 2.00 | .551 | 2.000 | .750 | 4.000 | 2.800 | 1.120 | 8.0 | |

## Metric size cutters

| Item Number | Stock | | Dimensions (㎜) | | | | | | | | | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕ$D_1$ | ϕ$D_2$ | $H$ | $a$ | ϕ $d$ | $W$ | ϕ $d_2$ | ϕ $c$ | $g$ | | |
| **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 |

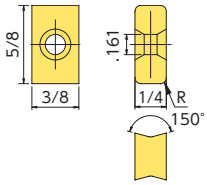
## Screw Drivers (OP)

| 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)

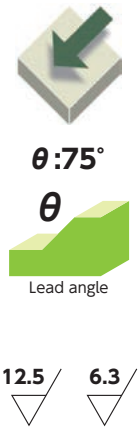
## Recommend Cutting Conditions

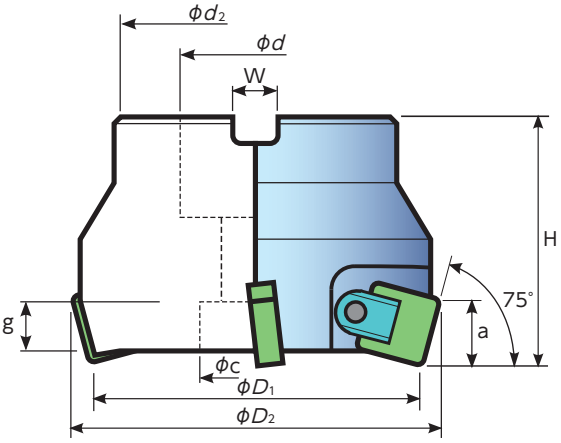
| Work Material | Grade | Dry | Wet | Cutting Speed (SFM) 700 1200 1700 2200 2700 3200 3700 4200 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K | | | | | | |
| Gray Cast Iron | **SX6** | ● | ● | | | ~.300 |
| Gray Cast Iron | **SP9** | ● | ○ | | |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

# HVM series

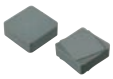
## Lead angle 75 degree -SN43〈A.R. -6° R.R. -10°〉



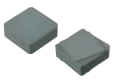


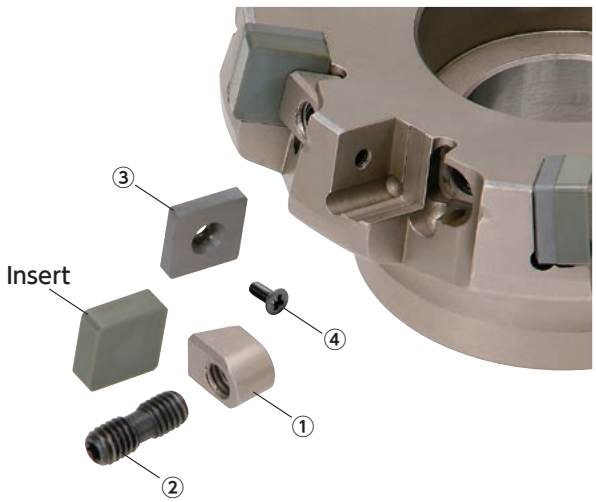




## Inch size cutters

| Item Number | Stock | | Dimensions (inch) | | | | | | | | | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| JFDX25IN-75-06R | ● | 6 | 2.50 | 2.732 | 2.00 | .472 | .750 | .315 | 2.362 | .669 | .760 | 2.0 |  SNG 43 |
| JFDX30IN-75-08R | ● | 8 | 3.00 | 3.232 | 2.00 | .472 | 1.000 | .387 | 2.362 | .827 | .760 | 2.2 | |
| JFDX40IN-75-10R | ● | 10 | 4.00 | 4.232 | 2.00 | .472 | 1.500 | .640 | 3.150 | 2.000 | .850 | 3.3 | |
| JFDX50IN-75-12R | ● | 12 | 5.00 | 5.232 | 2.00 | .472 | 1.500 | .640 | 3.740 | 2.000 | .850 | 5.7 | |
| JFDX60IN-75-16R | ● | 16 | 6.00 | 6.244 | 2.50 | .472 | 2.000 | .748 | 3.937 | 2.835 | .945 | 8.8 | |

## Metric size cutters

| Item Number | Stock | | Dimensions (mm) | | | | | | | | | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | 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 | |

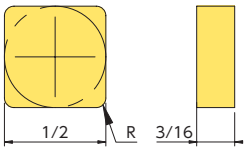
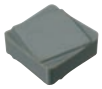
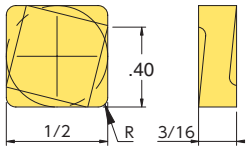
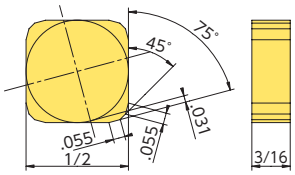



● : Stock ○ : 1-2 week delivery

## Spare Parts

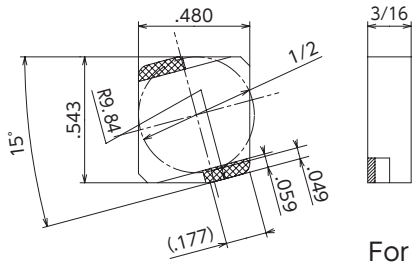
| Wedge | Wedge Screw | Torx Wrench | Shim | Shim Screw |
|---|---|---|---|---|
| ①  | ②  T15 |  T15 | ③  | ④  |
| HLW175 | WS0616-T15 | T-15A | ASN423 | M3×8 |

## Inserts

| Shape | Dimensions (inch) | Item Number | R | Silicon Nitride SX6 | Silicon Nitride SP9 | Whisker WA1 | Cermet C7X |
|---|---|---|---|---|---|---|---|
|  12.5 |  1/2 R 3/16 | **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 |  .40 1/2 R 3/16 | **SNGF 433 TRCC413** Reduce tool pressure | .047 | ● | | | |
| | | **SNGF 433 RT0425 C421** Reduce tool pressure | .047 | | ● | | |
|  6.3 with wiper |  45° 75° .055 1/2 .055 .031 3/16 | **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 | CBN B52 |
|---|---|---|---|---|
|  .480 3/16 1/2 .543 R9.84 15° .059 .049 (.177) For $\theta$ =75° | **FDX 1204-75-50R** | — | ● | ● |

## Recommend Cutting Conditions

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

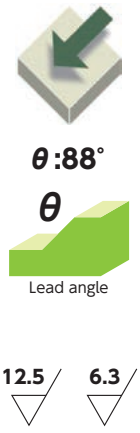
| Work Material | Grade | Dry | Wet | Cutting Speed (SFM) 200 400 600 800 1000 1200 1400 1600 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| P Stainless Steel | C7X | ● | ○ | | | ~.150 |
| M Carbon Steel Alloy Steel | C7X | ● | ○ | (-300 BHN) | | ~.120 |
| | | | | (300- BHN) | | ~.040 |

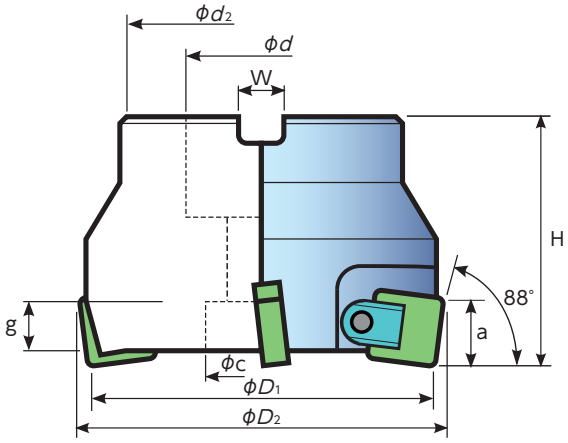
Inserts (SNG) ➡E13 • E40

# HVM series

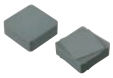
## Lead angle 88 degree -SN43〈A.R. -6° R.R. -10°〉



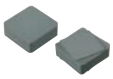


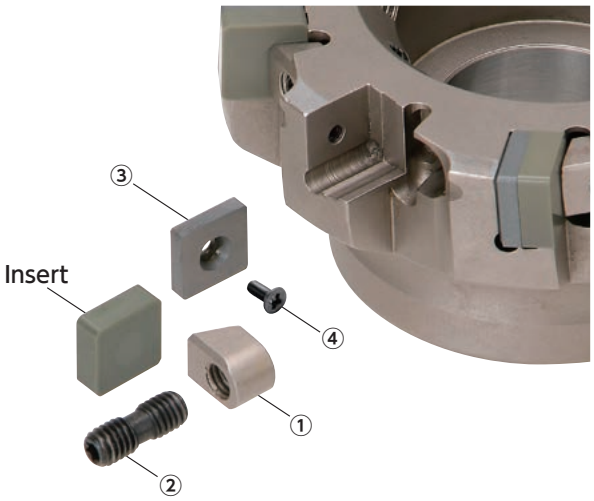




## Inch size cutters

| Item Number | Stock | | Dimensions (inch) | | | | | | | | | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| JFDX25IN-88-06R | ● | 6 | 2.50 | 2.531 | 2.00 | .472 | .750 | .315 | 2.362 | .669 | .760 | 1.8 |  SNG 43 |
| JFDX30IN-88-08R | ● | 8 | 3.00 | 3.031 | 2.00 | .472 | 1.000 | .387 | 2.362 | .827 | .760 | 2.1 | |
| JFDX40IN-88-10R | ● | 10 | 4.00 | 4.031 | 2.00 | .472 | 1.500 | .640 | 3.150 | 2.000 | .850 | 3.2 | |
| JFDX50IN-88-12R | ● | 12 | 5.00 | 5.031 | 2.00 | .472 | 1.500 | .640 | 3.740 | 2.000 | .850 | 5.8 | |

## Metric size cutters

| Item Number | Stock | | Dimensions (mm) | | | | | | | | | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| JFDX063-88-06R | ○ | 6 | 63 | 64 | 50 | 12 | 22.0 | 10.4 | 58 | 18 | 13 | 0.8 |  SNG 43 |
| JFDX080-88-08R | ○ | 8 | 80 | 81 | 50 | 12 | 25.4 | 9.5 | 62 | 36 | 13.5 | 1.0 | |
| JFDX080MM-88-08R | | 8 | 80 | 81 | 50 | 12 | 27.0 | 12.4 | 64 | 19 | 13.5 | 1.1 | |
| JFDX100-88-10R | ○ | 10 | 100 | 101 | 50 | 12 | 31.75 | 12.7 | 62 | 45 | 16.5 | 1.4 | |
| JFDX100MM-88-10R | | 10 | 100 | 101 | 50 | 12 | 32.0 | 14.4 | 64 | 45 | 23.5 | 1.3 | |
| JFDX125-88-12R | ○ | 12 | 125 | 126 | 58 | 12 | 38.1 | 15.9 | 83 | 55 | 21.5 | 2.6 | |
| JFDX125MM-88-12R | | 12 | 125 | 126 | 58 | 12 | 40.0 | 16.4 | 85 | 55 | 26.5 | 2.5 | |
| JFDX160-88-16R | | 16 | 160 | 156 | 60 | 12 | 50.8 | 19 | 100 | 72 | 20.5 | 4.1 | |

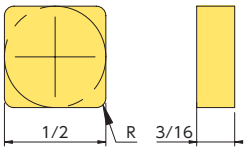
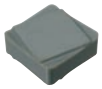
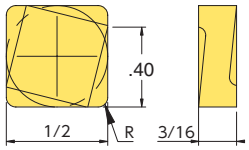
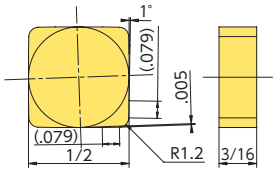



## Spare Parts

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

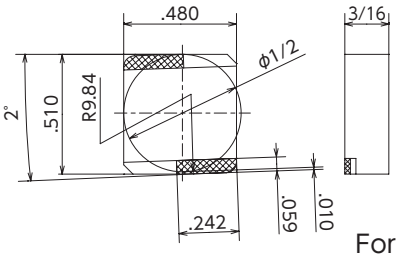
● : Stock ○ : 1-2 week delivery

## Inserts

| Shape | Dimensions (inch) | Item Number | R | Silicon Nitride SX6 | Silicon Nitride SP9 | Whisker WA1 | Cermet C7X |
|---|---|---|---|---|---|---|---|
|  12.5 |  1/2 R 3/16 | **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 |  .40 1/2 R 3/16 | **SNGF 433 TRCC413** Reduce tool pressure | .047 | ● | | | |
| | | **SNGF 433 RT0425 C421** Reduce tool pressure | .047 | | ● | | |
|  6.3 with wiper |  1° (.079) .005 (.079) 1/2 R1.2 3/16 | **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 | CBN B52 |
|---|---|---|---|---|
|  .480 3/16 φ1/2 2° .510 R9.84 .242 .059 .010 For $\theta = 88°$ | **FDX 1204-88-50R** | — | ● | ● |

## Recommend Cutting Conditions

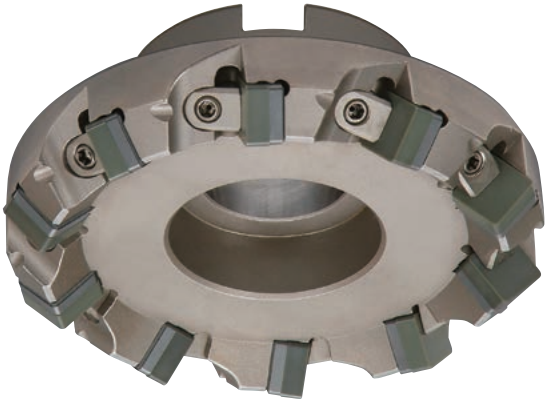
| Work Material | Grade | Dry | Wet | Cutting Speed (SFM) 700 1200 1700 2200 2700 3200 3700 4200 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K Gray Cast Iron | SX6 | ● | ● | | | ~.220 |
| | SP9 | ● | ○ | | | ~.220 |
| Ductile Iron | SP9 | ● | ○ |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

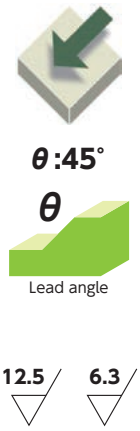
| Work Material | Grade | Dry | Wet | Cutting Speed (SFM) 200 400 600 800 1000 1200 1400 1600 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| P Stainless Steel | C7X | ● | ○ | | | ~.150 |
| M Carbon Steel Alloy Steel | C7X | ● | ○ | (~300 BHN) | | ~.120 |
| | | | | (300- BHN) | | ~.040 |

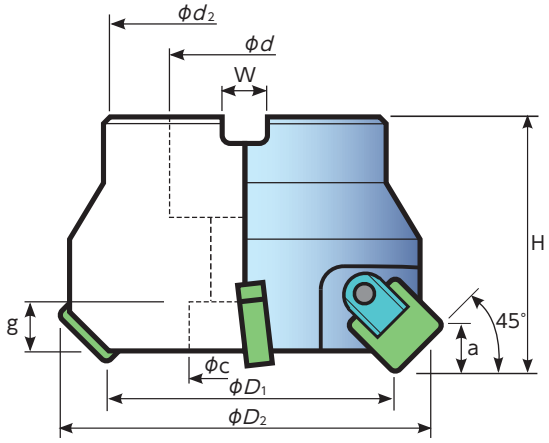
Inserts (SNG) ➡E13 • E40

# HVM series

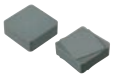
## Lead angle 45 degree -SN43〈A.R. -6° R.R. -10°〉



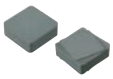


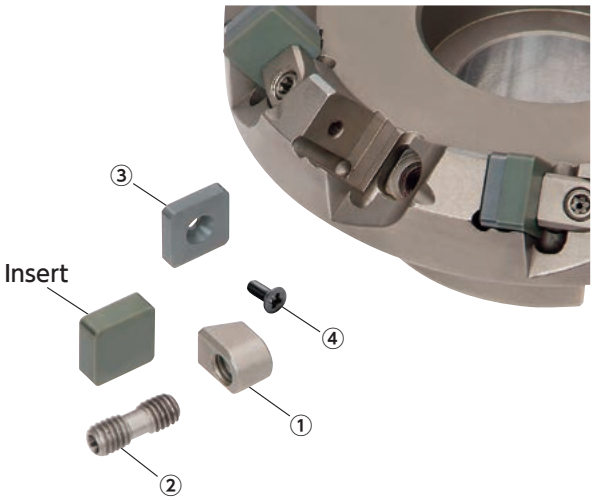




## Inch size cutters

| Item Number | Stock | | Dimensions (inch) | | | | | | | | | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| JFDX25IN-45-06R | ● | 6 | 2.50 | 3.129 | 2.00 | .315 | .750 | .315 | 2.362 | .669 | .445 | 2.2 |  SNG 43 |
| JFDX30IN-45-08R | ● | 8 | 3.00 | 3.629 | 2.00 | .315 | 1.000 | .387 | 2.362 | .827 | .445 | 2.8 | |
| JFDX40IN-45-10R | ● | 10 | 4.00 | 4.629 | 2.00 | .315 | 1.500 | .640 | 3.150 | 2.000 | .535 | 3.9 | |
| JFDX50IN-45-12R | | 12 | 5.00 | 5.629 | 2.00 | .315 | 1.500 | .640 | 3.740 | 2.000 | .535 | 4.1 | |

## Metric size cutters

| Item Number | Stock | | Dimensions (mm) | | | | | | | | | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| JFDX063-45-06R | ○ | 6 | 63 | 72 | 50 | 8 | 22.0 | 10.4 | 58 | 18 | 10.5 | 0.9 |  SNG 43 |
| 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 | |

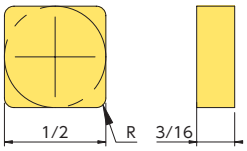
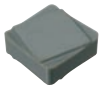
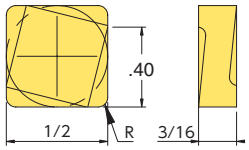
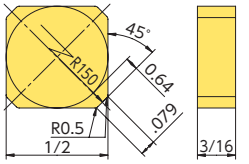



## Spare Parts

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

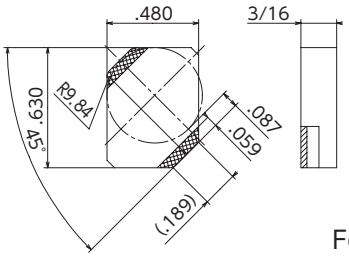
● : Stock ○ : 1-2 week delivery

## Inserts

| Shape | Dimensions (inch) | Item Number | R | Silicon Nitride SX6 | Silicon Nitride SP9 | Whisker WA1 | Cermet C7X |
|---|---|---|---|---|---|---|---|
|  12.5 |  1/2 R 3/16 | **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 |  .40 1/2 R 3/16 | **SNGF 433 TRCC413** Reduce tool pressure | .047 | ● | | | |
| | | **SNGF 433 RT0425 C421** Reduce tool pressure | .047 | | ● | | |
|  6.3 with wiper |  45° R1.50 .064 .079 R0.5 1/2 3/16 | **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 | CBN B52 |
|---|---|---|---|---|
|  .480 3/16 .630 R9.84 45° .087 .059 (.189) For $\theta = 45°$ | **FDX 1204-45-50R** | — | ● | ● |

## Recommend Cutting Conditions

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

| Work Material | Grade | Dry | Wet | Cutting Speed (SFM) 200 400 600 800 1000 1200 1400 1600 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| P Stainless Steel | C7X | ● | ○ | | | ~.150 |
| M Carbon Steel Alloy Steel | C7X | ● | ○ | (~300 BHN) | | ~.120 |
| | | | | (300- BHN) | | ~.040 |

Inserts (SNG) ➡E13 • E40

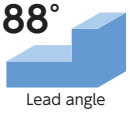
# TRI series

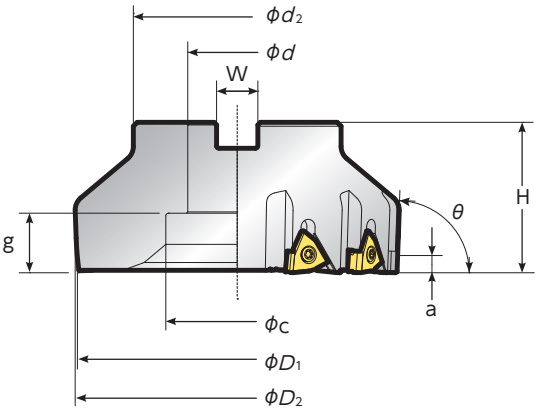
## Lead angle 88 degress



A. R. 5°

R. R. 4°, 7°, 10°



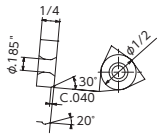
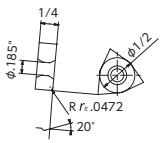




### Metric size cutters

| Item Number | Stock | | Dimensions (mm) | | | | | | | | | | Weight (kg) | Rake angle (°) | | Insert Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a *1 | a *2 | ϕd | W | ϕd2 | 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 rε | 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) 700 1200 1700 2200 2700 3200 3700 4200 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K | | | | | | |
| Gray Cast Iron | SX6 | ● | ● | | | ~.220 |
| Gray Cast Iron | SP9 | ● | ○ | | | ~.220 |
| Ductile Iron | SP9 | ● | ○ | | | ~.220 |

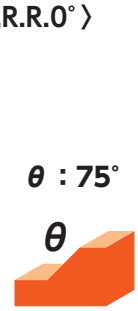
● : Stock ○ : 1-2 week delivery

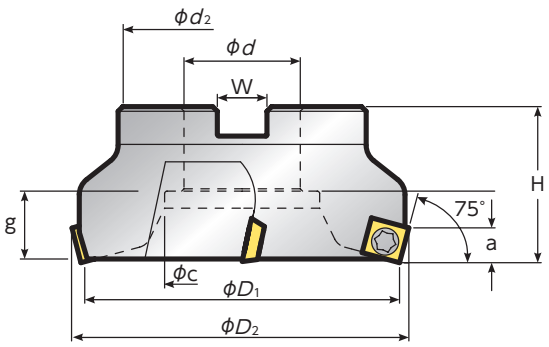
# HSM High speed heavy mill series

## Lead angle 75 degress - SDW43 〈A.R.+12° ,R.R.0°〉



θ : 75°



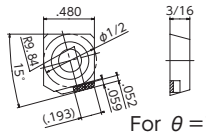

### Inch size cutters

| Item Number | Stock | | Dimensions (inch) | | | | | | | | | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| E250R100-SDW43-4C | ● | 4 | 2.500 | 2.780 | 2.000 | .360 | 1.000 | .387 | 2.290 | .820 | .787 | 1.9 |  SDCW 43 |
| E300R100-SDW43-5C | ● | 5 | 3.000 | 3.280 | 2.000 | .360 | 1.000 | .387 | 2.290 | .820 | .787 | 2.4 | |
| E400R150-SDW43-6C | ● | 6 | 4.000 | 4.280 | 2.000 | .360 | 1.500 | .640 | 3.200 | 2.000 | .875 | 3.7 | |
| E500R150-SDW43-7C | ● | 7 | 5.000 | 5.280 | 2.000 | .360 | 1.500 | .640 | 3.200 | 2.000 | .875 | 5.4 | |

### Metric size cutters

| Item Number | Stock | | Dimensions (mm) | | | | | | | | | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| JSDW063-75-04R | ○ | 4 | 63 | 70.6 | 50 | 9.1 | 22 | 10.4 | 58 | 18 | 14 | 0.8 |  SDCW 43 |
| JSDW080-75-05R | ○ | 5 | 80 | 83.3 | 50 | 9.1 | 25.4 | 9.5 | 62 | 36 | 15.5 | 1.0 | |
| JSDW100-75-06R | ○ | 6 | 100 | 108.7 | 50 | 9.1 | 31.75 | 12.7 | 58 | 45 | 16.5 | 1.3 | |
| JSDW125-75-07R | ○ | 7 | 125 | 134.1 | 58 | 9.1 | 38.1 | 15.9 | 79 | 55 | 21.5 | 2.5 | |
| JSDW160-75-10R | | 10 | 160 | 165 | 68 | 9.1 | 50.8 | 19 | 100 | 72 | 28.5 | 4.0 | |

### CBN Wiper Insert

| Shape | Item Number | CBN | |
|---|---|---|---|
| | | B30 | B52 |
|  For θ =75° | SDW 1204-75-50R | ○ | ○ |

### Spare Parts

| Insert Screw | Torx Wrench |
|---|---|
|  |  T20 |
| FSI21-5.0＊12.45 | T-20 |

### Inserts

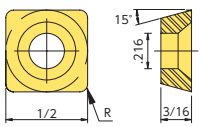



Fig.1: SDCW43

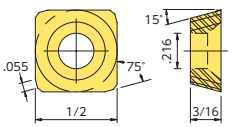



Fig.2: SDCW43EE with wiper

| 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 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) 700 1200 1700 2200 2700 3200 3700 4200 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K | | | | | | |
| Gray Cast Iron | SX6 | ● | ● | | | ~.220 |
| | SP9 | ● | ○ | | | ~.220 |
| Ductile Iron | SP9 | ● | ○ | | | ~.220 |

Inserts (SDCW) ➡E12 • E39

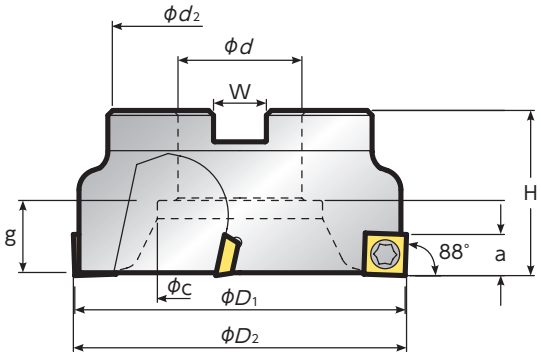
# HSM High Speed Shear Mill series

## Lead angle 88 degress - SDW43 〈A.R.+12° ,R.R.0°〉



θ : 88°




### Inch size cutters

| Item Number | Stock | | Dimensions (inch) | | | | | | | | | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| P250R100-SDW43-4C | ● | 4 | 2.500 | 2.590 | 2.000 | .400 | 1.000 | .387 | 2.290 | .820 | .787 | 1.7 |  SDCW 43 |
| P300R100-SDW43-6C | ● | 6 | 3.000 | 3.070 | 2.000 | .400 | 1.000 | .387 | 2.290 | .820 | .787 | 2.2 | |
| P400R150-SDW43-8C | ● | 8 | 4.000 | 4.070 | 2.000 | .400 | 1.500 | .640 | 3.200 | 2.000 | .875 | 3.5 | |
| P500R150-SDW43-10C | ● | 10 | 5.000 | 5.070 | 2.000 | .400 | 1.500 | .640 | 3.200 | 2.000 | .875 | 5.2 | |

### Spare Parts

| Insert Screw | Torx Wrench |
|---|---|
|  |  T20 |
| FSI21-5.0＊12.45 | T-20 |

### Inserts

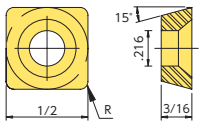



Fig.1: SDCW43

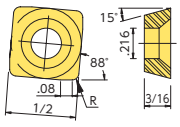



Fig.2: SDCW43PE with wiper

| 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

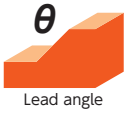
| Work Material | Grade | Dry | Wet | Cutting Speed (SFM) 700 1200 1700 2200 2700 3200 3700 4200 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K | | | | | | |
| Gray Cast Iron | SX6 | ● | ● | | | ~.220 |
| Gray Cast Iron | SP9 | ● | ○ | | | ~.220 |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

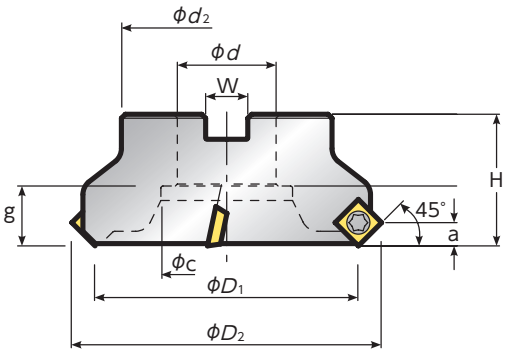
Inserts (SDCW) ➡E12 • E39

● : Stock ○ : 1-2 week delivery

## Lead angle 45 degress - SDW43 〈A.R.+12° ,R.R.0°〉





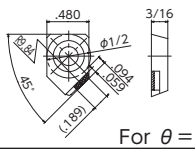

### Inch size cutters

| Item Number | Stock | | Dimensions (inch) | | | | | | | | | Weight (lbs) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | ϕc | g | | |
| A300R100-SDW43-6C | ● | 6 | 3.000 | 3.740 | 2.000 | .260 | 1.000 | .387 | 2.290 | .820 | .787 | 2.3 | SDCW 43 |
| A400R150-SDW43-7C | ● | 7 | 4.000 | 4.740 | 2.000 | .260 | 1.500 | .640 | 3.200 | 2.000 | .875 | 3.3 | |
| A500R150-SDW43-8C | ● | 8 | 5.000 | 5.740 | 2.000 | .260 | 1.500 | .640 | 3.810 | 2.120 | .871 | 5.0 | |

### Metric size cutters

| Item Number | Stock | | Dimensions (mm) | | | | | | | | | Weight (kg) | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD1 | ϕD2 | H | a | ϕd | W | ϕd2 | 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 |
|  For θ=45° | SDW 1204-45-50R | ● | ● |

### Spare Parts

| Insert Screw | Torx Wrench |
|---|---|
|  |  T20 |
| FSI21-5.0＊12.45 | T-20 |

### Inserts

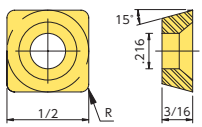



Fig.1: SDCW43

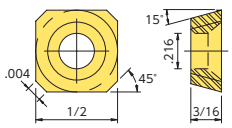



Fig.2: SDCW43AE with wiper

| 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 43AE T0420* | — | 2 | ● | ○ | ● |

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

＊ The insert must be installed in all insert pockets

### Recommend Cutting Conditions

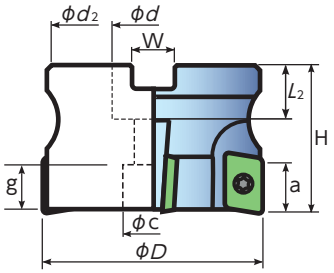
| Work Material | Grade | Dry | Wet | Cutting Speed (SFM) 700 1200 1700 2200 2700 3200 3700 4200 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K | | | | | | |
| Gray Cast Iron | SX6 | ● | ● | | | ~.200 |
| | SP9 | ● | ○ | | | ~.200 |
| Ductile Iron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

Inserts (SDCW) ➡E12・E39

# JQ series

## JQTS

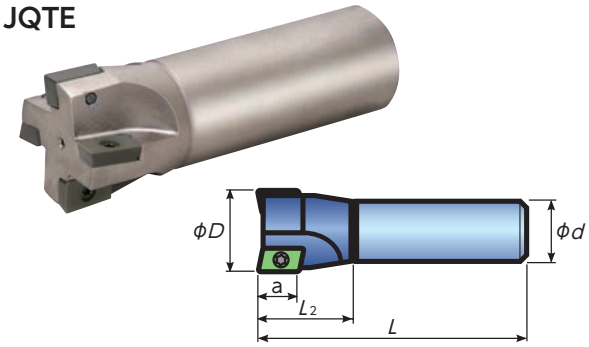








## JQTE



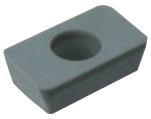
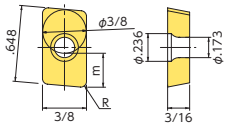
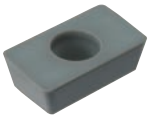
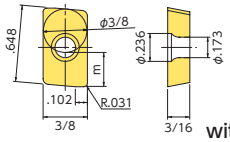

● JQTS Metric size cutters

| 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 | APCW 1604 |
| 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

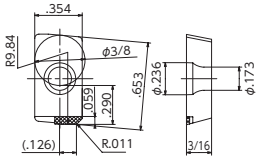
| Item Number | Stock | | Dimensions (mm) | | | | | Weight (kg) | A.R. | R.R. | Insert Screw | Wrench | Insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ϕD | L | $L_2$ | a | ϕd | | | | | | |
| JQTE020-90-1R | ○ | 1 | 20 | 100 | 30 | 14 | 20 | 0.2 | +6° | −13° | FSI23-4.0∗7 | T-15A | APCW 1604 |
| 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 | ○ | ○ |
|   with wiper | APCW 1604 PDTR<br>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) 700 1200 1700 2200 2700 3200 3700 4200 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K | | | | | | |
| 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

**Required mechanical power(hp) = ○○% × ○○hp**

Width of cutting $a_e$ = __ __ % of the cutter diameter

The value __ __hp determined from the applicable table below

〈Example of calculation〉
Cutter used : HVMϕ4"−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



HVM　Φ2.5" - 6 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 5 | 8 | 9 | 12 |
| .079 | 9 | 15 | 19 | 23 |
| .118 | 15 | 22 | 30 | 35 |
| .157 | 19 | 30 | 39 | 47 |

HVM　Φ3" - 8 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 8 | 12 | 16 | 19 |
| .079 | 16 | 24 | 32 | 39 |
| .118 | 24 | 36 | 47 | 58 |
| .157 | 31 | 48 | 63 | 76 |

HVM　Φ4" - 10 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 12 | 17 | 24 | 28 |
| .079 | 23 | 36 | 47 | 56 |
| .118 | 35 | 54 | 71 | 86 |
| .157 | 47 | 72 | 94 | 114 |

HVM　Φ5" - 12 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 16 | 26 | 34 | 40 |
| .079 | 32 | 50 | 66 | 79 |
| .118 | 48 | 75 | 98 | 119 |
| .157 | 64 | 99 | 131 | 158 |

HVM　Φ6" - 16 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 28 | 43 | 56 | 67 |
| .079 | 55 | 85 | 111 | 134 |
| .118 | 83 | 127 | 168 | 203 |
| .157 | 110 | 170 | 223 | 270 |

### HSM Series



HSM　Φ2.5" - 4 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 4 | 5 | 8 | 9 |
| .079 | 8 | 12 | 16 | 19 |
| .118 | 12 | 17 | 24 | 30 |
| .157 | 16 | 24 | 32 | 39 |

HSM　Φ3" - 6 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 7 | 11 | 15 | 17 |
| .079 | 15 | 22 | 30 | 35 |
| .118 | 22 | 32 | 44 | 52 |
| .157 | 28 | 43 | 58 | 70 |

HSM　Φ4" - 7 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 9 | 13 | 19 | 23 |
| .079 | 19 | 27 | 36 | 44 |
| .118 | 27 | 42 | 55 | 67 |
| .157 | 36 | 55 | 74 | 89 |

HSM　Φ5" - 8 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 11 | 17 | 23 | 27 |
| .079 | 23 | 34 | 46 | 55 |
| .118 | 34 | 51 | 68 | 82 |
| .157 | 44 | 67 | 91 | 110 |

HSM　Φ6" - 10 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .039 | 16 | 24 | 32 | 39 |
| .079 | 32 | 48 | 66 | 79 |
| .118 | 48 | 72 | 98 | 118 |
| .157 | 64 | 97 | 130 | 157 |

### XFM Series



XFM　Φ3" - 10 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .197 | 48 | 74 | 102 | 125 |
| .236 | 58 | 89 | 122 | 149 |
| .276 | 67 | 102 | 142 | 174 |
| .315 | 76 | 117 | 162 | 199 |

XFM　Φ4" - 13 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .197 | 82 | 125 | 174 | 213 |
| .236 | 98 | 150 | 209 | 255 |
| .276 | 114 | 176 | 244 | 298 |
| .315 | 130 | 200 | 279 | 341 |

XFM　Φ5" - 16 teeth

| Depth of cut (inch) | Feed rate per tooth (IPT) .004 | .008 | .012 | .016 |
|---|---|---|---|---|
| .197 | 125 | 192 | 266 | 325 |
| .236 | 149 | 229 | 319 | 390 |
| .276 | 174 | 268 | 372 | 455 |
| .315 | 199 | 306 | 425 | 519 |

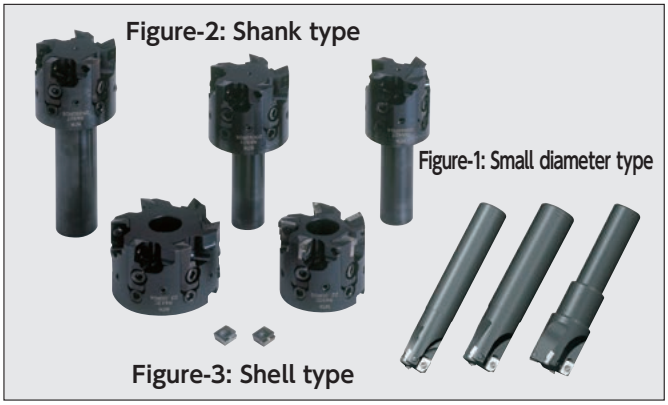
Unit : kW

## 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.

# HPC igh erformance utter series Fixed type/Adjustable type

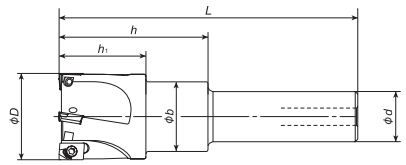



## Features

- ***A wide range of sizes***
  ***The diameters range from ϕ.787" - ϕ3.937" for the HPC series***
- ***Excellent rigidity (HPC)***
  ***The material for the HPC body is steel, achieving exceptional reliability***

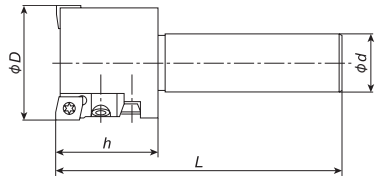
**HPC (steel body) ϕ20 - ϕ100 (ϕ.787" - ϕ.3.937")**

**Figure 1** Small diameter type



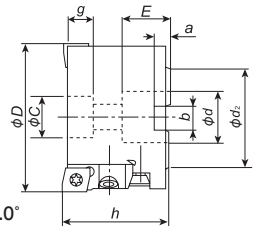

A.R.+9° R.R.+4°

**Figure 2** Shank type




A.R.+6° R.R.−3°~+3°

**Figure 3** Shell type




A.R.+6° R.R.0°

● Metric size Cutters

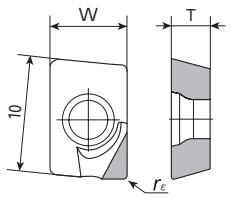
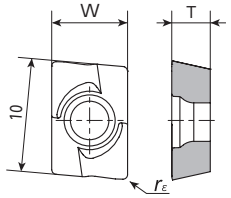
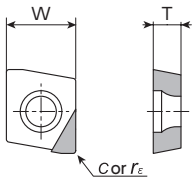
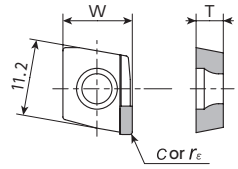
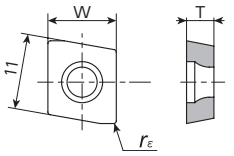
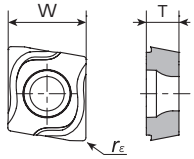
| | Figure | Item number | Stock | | ϕD | h | ϕd | L | h1 | E | ϕb | b | a | ϕd2 | ϕc | g | Weight (kg) | Max. RPM allowed (RPM) | Item number of applicable insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fixed type | 1 | RD020T20070R03 | ○ | 3 | 20 | 30 | 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 | |
| | 2 | RA040T20060R04K | ○ | 4 | 40 | 45 | 20 | 105 | – | – | – | – | – | – | – | – | 0.45 | 18,000 | HAL style<br>HAT style<br>HAN style<br>HLA style |
| | | RA040T25080R04K | ○ | 4 | 40 | 45 | 25 | 125 | – | – | – | – | – | – | – | – | 0.6 | 18,000 | |
| | | RA050T20060R05K | ○ | 5 | 50 | 45 | 20 | 105 | – | – | – | – | – | – | – | – | 0.6 | 18,000 | |
| | | RA050T25080R05K | ○ | 5 | 50 | 45 | 25 | 125 | – | – | – | – | – | – | – | – | 0.75 | 18,000 | |
| | | RA050T32080R05K | ○ | 5 | 50 | 45 | 32 | 125 | – | – | – | – | – | – | – | – | 0.9 | 18,000 | |
| | 3 | RA050C22.00R05K | ○ | 5 | 50 | 45 | 22 | – | – | 20 | – | 10.4 | 6.3 | 42 | 18 | 11 | 0.4 | 18,000 | |
| | | RA063C22.00R06K | ○ | 6 | 63 | 45 | 22 | – | – | 20 | – | 10.4 | 6.3 | 42 | 18 | 11 | 0.73 | 18,000 | |
| | | RA080A25.40R07K | ○ | 7 | 80 | 43 | 25.4 | – | – | 26 | – | 9.5 | 6.0 | 50 | 38.9 | 15 | 0.95 | 15,000 | |
| | | RA100A31.75R09K | | 9 | 100 | 45 | 31.75 | – | – | 32 | – | 12.7 | 8.0 | 60 | 61 | 11 | 1.6 | 10,000 | |
| Adjustable type | 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 | |
| | 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) 1000 3000 5000 7000 9000 11000 13000 15000 17000 19000 | Feed (IPT) .002 .004 .006 .008 .010 .012 | Depth of Cut (inch) |
|---|---|---|---|---|---|---|
| K | | | | | | |
| Aluminum Alloy (Si≦13) | PD1 | ○ | ● | | | ~.200 |
| | TM1 | ○ | ● | | | ~.200 |
| Aluminum Alloy (Si≧13) | PD1 | ○ | ● | | | ~.200 |
| | TM1 | ○ | ● | | | ~.200 |

● : Stock ○ : 1-2 week delivery

## Inserts

| Shape | Item number | Corner angle | w | T | Cutting edge length | A.R. | R.R. | $r_\varepsilon$ | Wiper | PCD PD1 | PVD coated carbide TM1 | Cutter Type (figure) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | **HDA4015R04** | 0° | 6.7 | 3.4 | 4.0 | +9° | +4° | 0.4 | Provided | ● | | 1 |
|  with chipbreaker | **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 |
|  with chipbreaker | **HLA8521R04** | 0° | 10.078 | 4.0 | Min. 6.0 | +6° | +3° | 0.4 | Provided | | ○ | 2 3 |

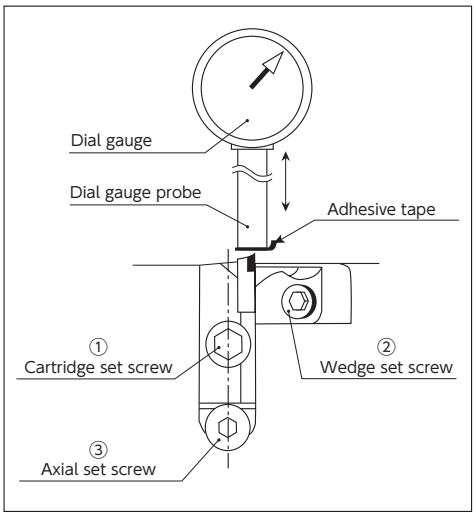
* Recommend using torque wrench @35lbs (4Nm)

## 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) | | |
| **RD025T20070R03** | | | | 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** | | | | | | | | CS1040A (OP) (coolant through) |
| **RA063C22.00R06/K** | | | | | | | | MBC-M12 (OP) |
| **RA080A25.40R07/K** | | | | | | | | MBC-M16 (OP) |
| **RA100A31.75R09/K** | | | | | | | | |

# Insert Presetting and PCD Damage Preventive 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

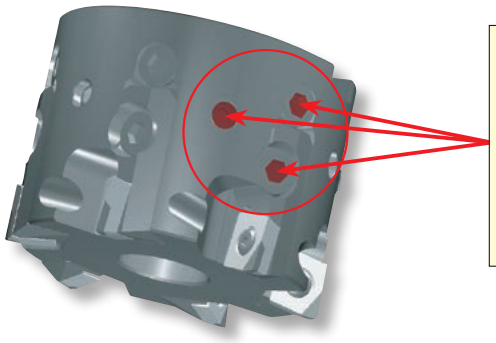
1. Even after the set screws have been tightened, the run out of the cutting edges should stay within approximately +/− 10 microns (20 microns in terms of range).
2. In the above case, NTK standard inserts (excluding some of them; see the note below for details.) and re-ground NTK inserts will not affect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

NGK SPARK PLUGS | NTK TECHNICAL CERAMICS

NGK SPARK PLUGS (USA), INC.

Tooling for Swiss-type Lathes

# NTK CUTTING TOOLS

## SWISS TOOLING 6000




App for iPad
Available on the App Store

App for ANDROID
ANDROID APP ON Google play

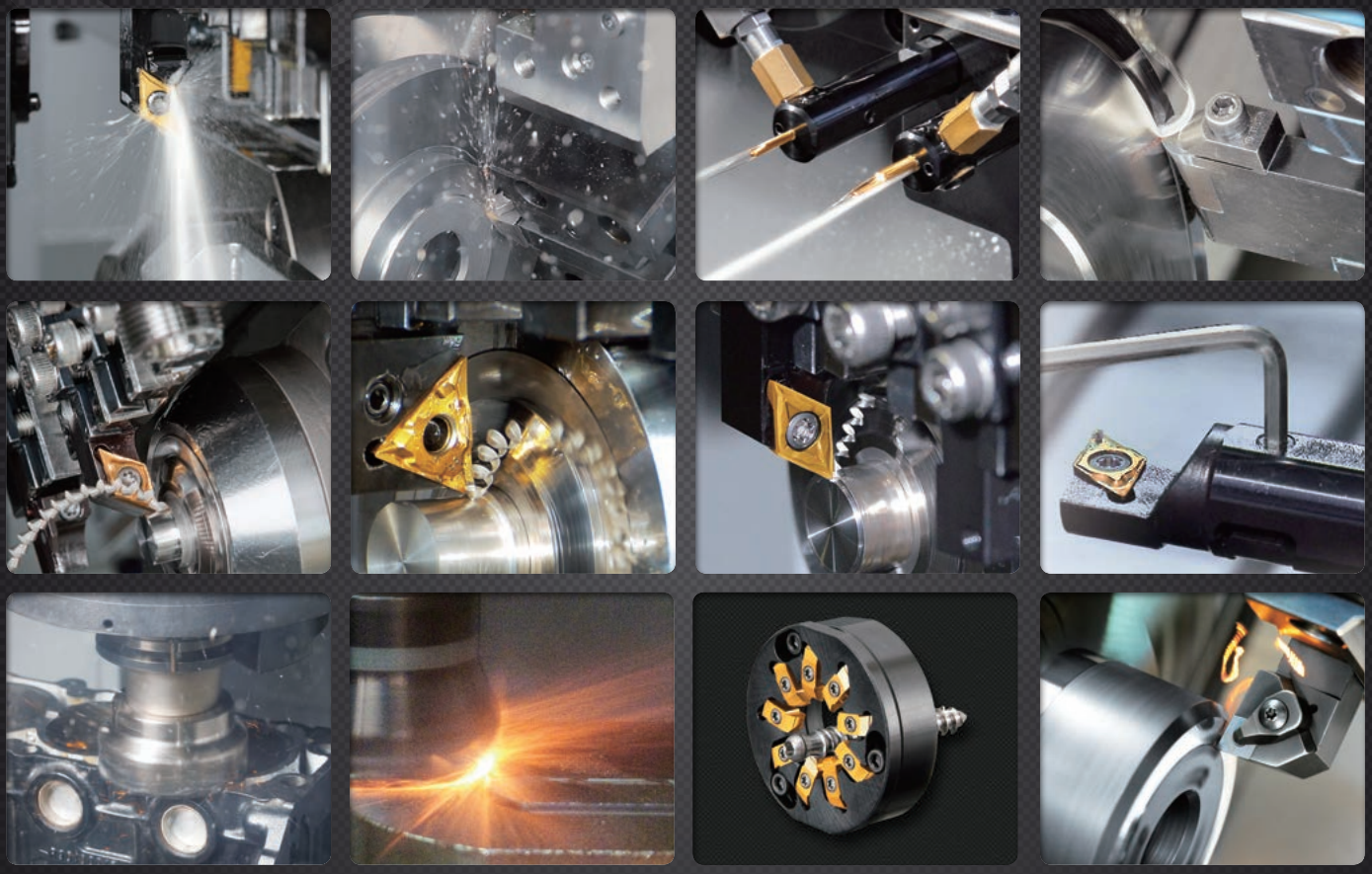
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App for iPad
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App for ANDROID
ANDROID APP ON Google play
NGK SPARK PLUGS | NTK TECHNICAL CERAMICS
NGK SPARK PLUG CO., LTD.

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MORE TO COME

J



# For Swiss-type Lathes


## ● New Products ····· J2

- SPLASH Series
- GTMH-GX Chipbreaker
- VBGT Tooling
- Groove DUO
- TBP / TBPA-BM Chipbreaker
- YL Chipbreaker
- SHAPER DUO

## ● NTK Unique Tooling ····· J10

- Thread Whirling
- Y-axis Toolholders
- DS-ACH Toolholders
- DS Sleeve
- CTPS Series
- UL Chipbreaker
- Saturn DUO
- SPLASH series
- Mogul bar
- DS Toolholders
- CSV Series
- WP Series
- Shifted Toolholders

# NEW SPLASH Series

## Coolant through toolholders



WATCH ON YouTube

### Features

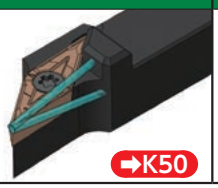
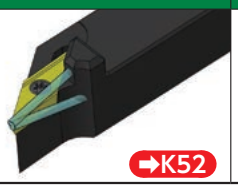
- Evacuates chips away from the cutting edge
- Reduces cutting tool temperature and helps keep the edge sharp
- Y-axis toolholders are available
- Improves part tolerance by steady coolant supply to the edge

➡J12

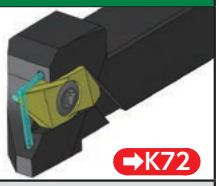
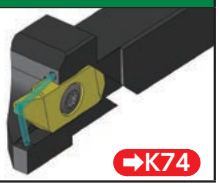
## Square Shank Toolholders



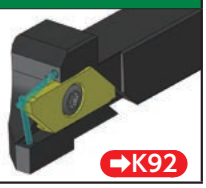
### Front Turning

| Insert | CC.. insert | DC.. insert | |
|---|---|---|---|
| Holder | SCLC-OH | SDJC-OH | Y-SDJC-OH |
| |  ➡K36 |  ➡K42 |  ➡K44 |
| Insert | VB.. insert | VC.. insert | |
| Holder | SVJB-OH | SVJC-OH | Y-SVJC-OH |
| |  ➡K50 |  ➡K52 |  ➡K54 |

### Back Turning

| Insert | TBP insert |
|---|---|
| Holder | TBP-OH |
| |  ➡K72 |
| Insert | TBP insert |
| Holder | Y-TBP-OH |
| |  ➡K72 |
| Insert | TBPA insert |
| Holder | CTPA-OH |
| |  ➡K74 |

### Cut Off

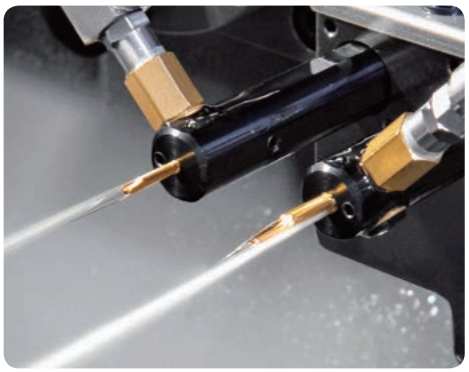
| Insert | CTP insert | CTPA insert |
|---|---|---|
| Holder | CTP-OH | CTPA-OH |
| |  ➡K92 |  ➡K92 |

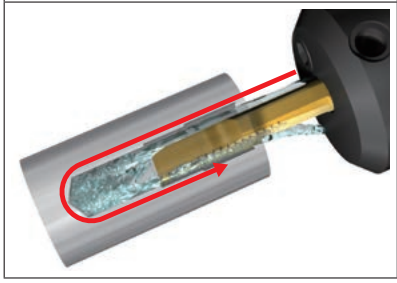
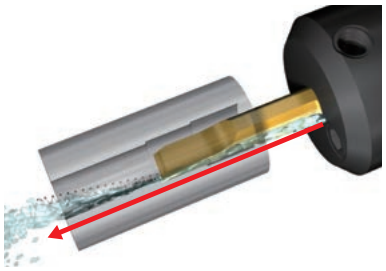
### Grooving / Side Turning

| Insert | GTM.. insert | GTPA.. insert | |
|---|---|---|---|
| Holder | GTT-OH | Y-GTT-OH | Y-GTPA-OH |
| |  ➡K112 |  ➡K112 |  ➡K126 |

## ID Tooling Toolholders

### STICK DUO Series with Adjustable Overhang Mechanism



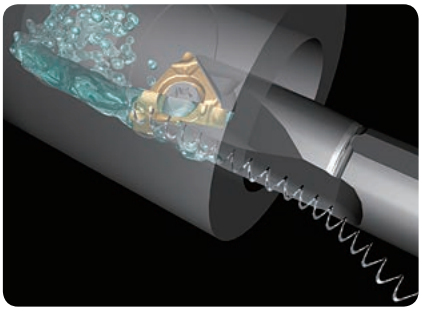
| Ⅰ) For Blind hole | Ⅱ) For Through hole |
|---|---|
|  |  |

**Features**

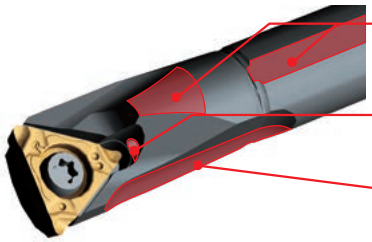
- Good chip control evacuation in ID machining
- Three way coolant connection
- Can choose 2-way coolant direct
- Adjustable overhang length

➡K156

### Mogul Bar Series



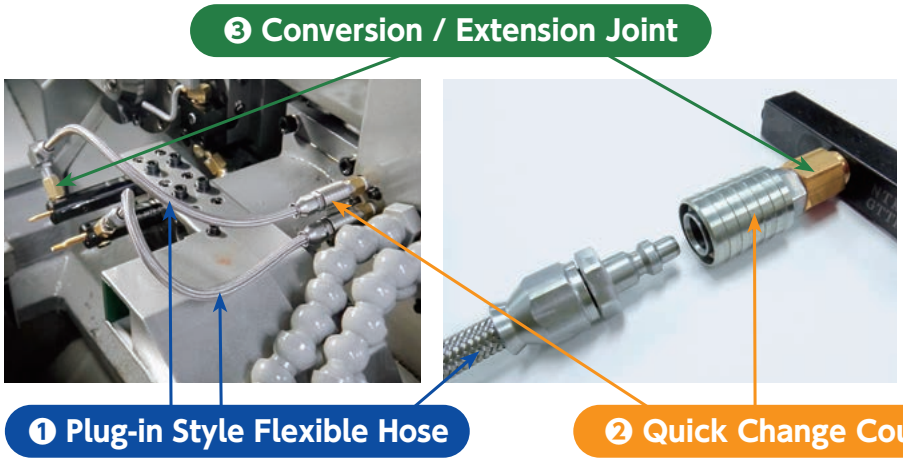
**Features**



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

Holders ➡K171 Information ➡J25

## Quick-Change Coolant Components




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

➡J19

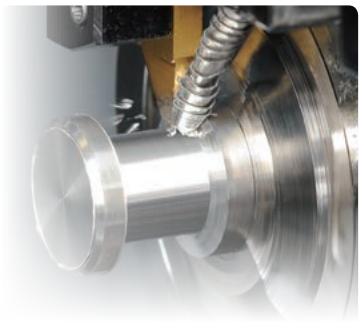
# 3D Molded Chipbreakers

## NEW TBP / TBPA-BM for Back turnings

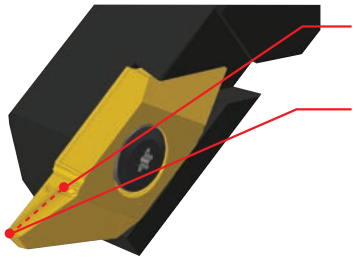
WATCH ON YouTube

### Features

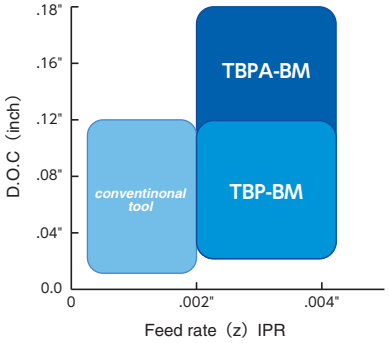
- "Single Pass Back Turning" offers excellent surface finishes
- Up-right type insert and screw clamping provides high rigidity
- Wiper flat on cutting edge offers stable surface finishes even under high feed cutting conditions



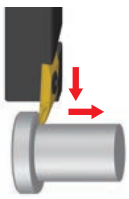
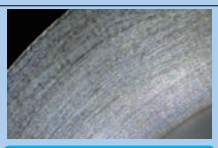
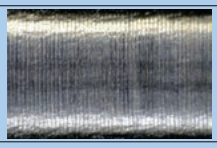
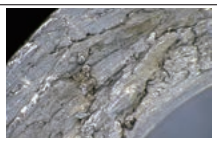
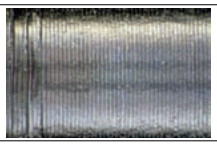
### New BM chipbreaker



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

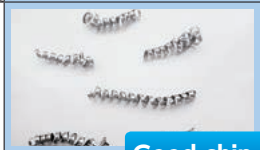
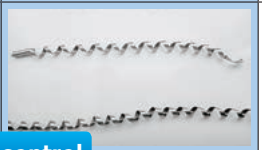
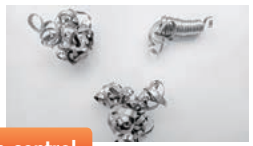



### Superior Surface Finish

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

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

### Excellent Chip Control

| | BM chipbreaker | | Competitor | |
|---|---|---|---|---|
| Feed rate (IPR) / D.O.C (inch) | .002" | .003" | .002" | .003" |
| .020" |  |  |  |  |
| .120" |  |  |  |  |

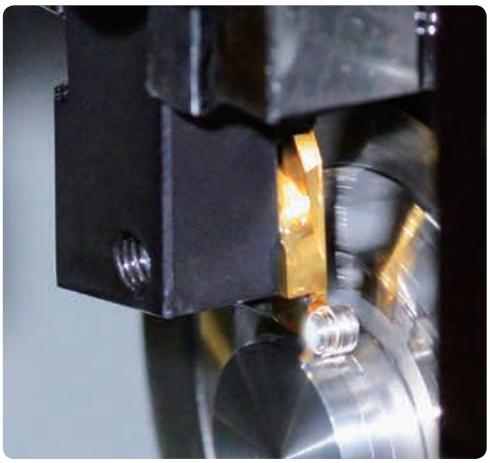
Good chip control

Unstable chip control

Material : 304 SS (ϕ.630") , 260 SFM , WET

TBP-BM ➡K72 TBPA-BM ➡K75

# NEW GTMH-GX Chipbreaker for Grooving / Side Turning



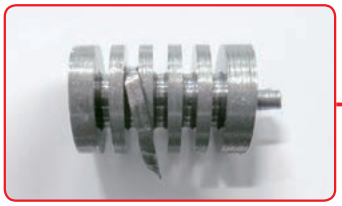
## Features

WATCH ON YouTube

- 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 Probrems

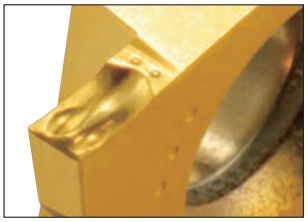
- Chips remain at the bottom of groove
- Bird's nest of chips





## Excellent Chip Control

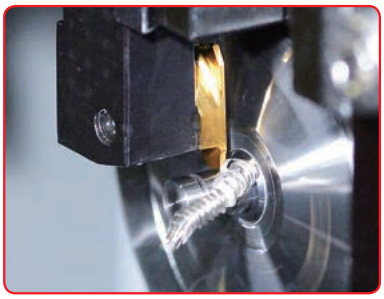
- Chipbreakers



Groove width .059"～

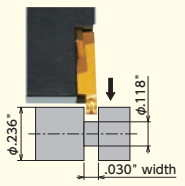


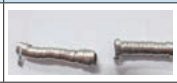
Groove width ～.039"



GX chipbreaker can solve these problems

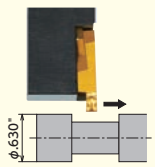
- Grooving




| DOC \ Feed rate (IPR) | .0004" | .0011" | .0020" |
|---|---|---|---|
| GX chipbreaker |  |  |  |
| Competiton's chipbreaker |  |  |  |

Material : 304 SS(ϕ.630"), 260 SFM, .059", DOC

- Side Turning



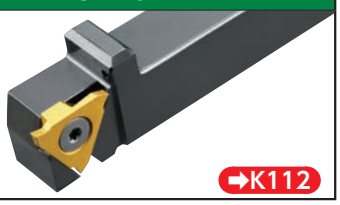

| DOC \ Feed rate (IPR) | .0004" | .0011" | .0020" | .0031" |
|---|---|---|---|---|
| .010" |  |  |  |  |
| .020" |  |  |  |  |
| .030" |  |  |  |  |

Material : 304 SS(ϕ.630"), 260 SFM, .030" width insert

## Best Solution for Chip Control

Now available in Coolant through toolholders

**GTT-OH**



➡K112

**Y-GTT-OH**



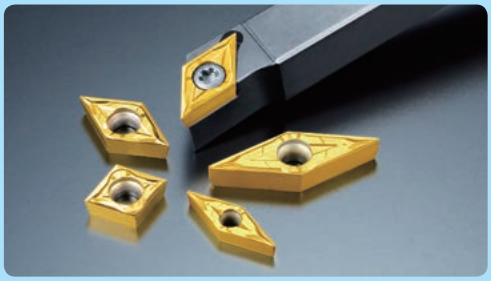
➡K112



Inserts ➡K114

# Front Turning Chipbreaker Quartet

## NEW YL Chipbreaker

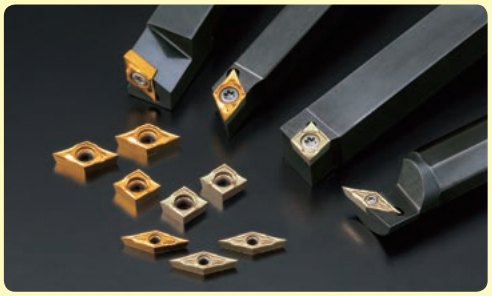


- Great combination of sharpness and toughness
- Covers extremely wide range
- Excellent chip control

WATCH ON YouTube

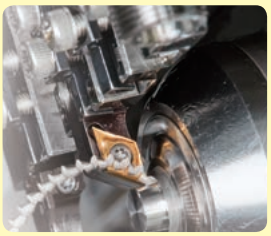


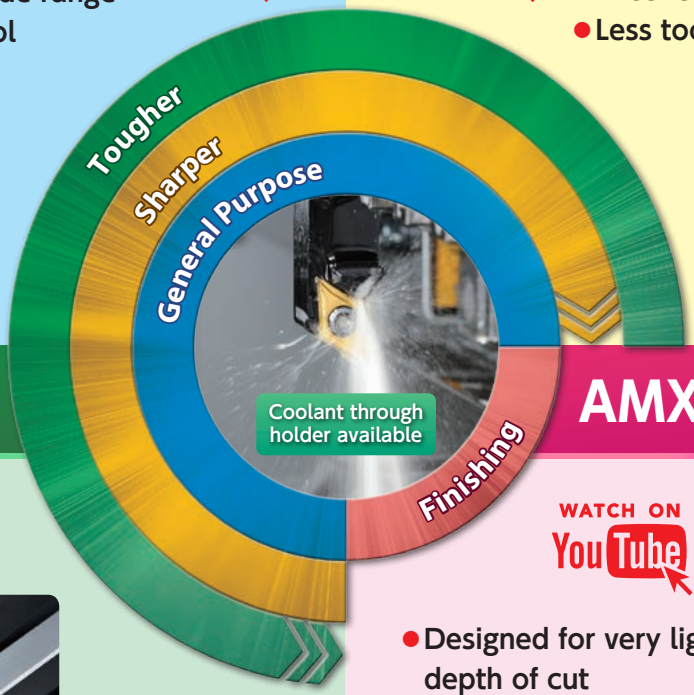
## CL Chipbreaker



WATCH ON YouTube

- Sharpest molded Chipbreaker
- Excellent chip control
- Less tool pressure






## AM3 Chipbreaker



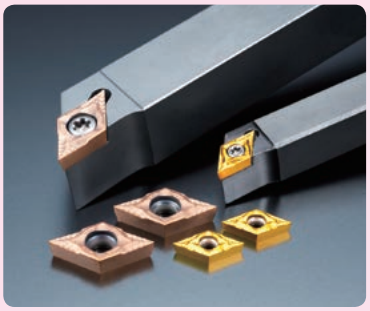
- All purpose chipbreaker
- Sharp edge with toughness

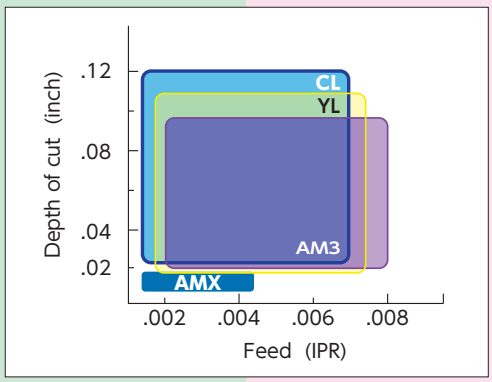
## AMX Chipbreaker

WATCH ON YouTube

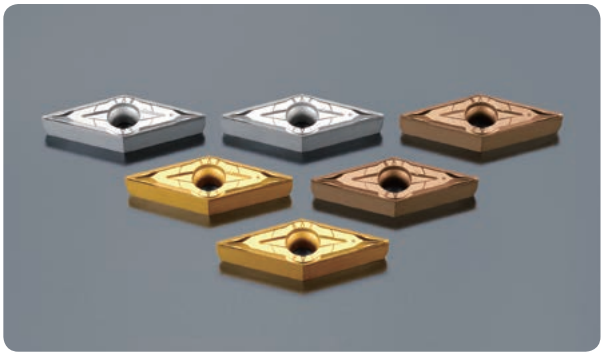
- Designed for very light depth of cut
- Exceptional sharpness







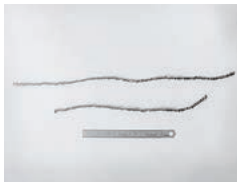
# NEW VBGT Tooling



## 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

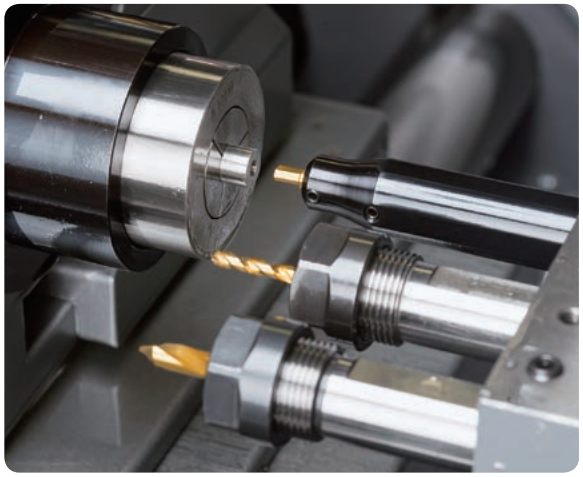


- Evacuates chips away from the cutting edge
- Reduces cutting tool temperature and keeps edge sharp even large depth of cut conditions
- Improves part tolerance by steady coolant supply to the edge

* Left-hand holders (SVJBL) are designed for Right-hand machines

➡K50

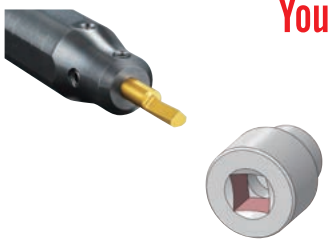
# NEW SHAPER DUO



■Hexagon Socket



■Square Socket



WATCH ON YouTube

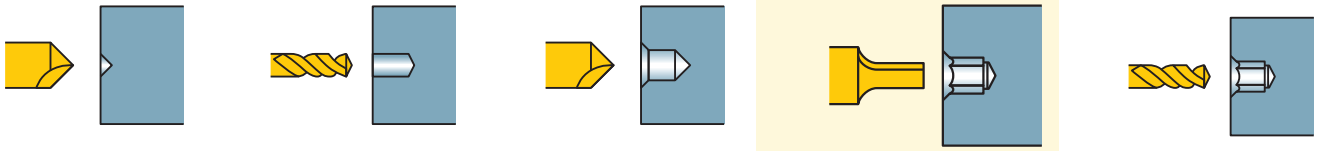
- Perfect fit for back spinde of Swiss machine
- Achieves good corner edge sharpness
- Less tool pressure than Rotary-Broaching
- Easy to adjust for correct dimension
- Economical two-sided insert bar

## Comparison Chart of HEX Socket Machining

| | Tool Pressure | Cycle Time | Pliability | Tool Cost | |
|---|---|---|---|---|---|
| Shaper Duo  | ◎ | △ ＊Can be off-set by over-wrapping operation | ○ | ◎ | ●Less tool pressure-especially on small diameter parts<br>●One size can cover several socket sizes |
| Broach Tool | △ | ○ | × | △ | ●Need to have tools for each socket size |

## Process Chart

① Center drilling ② Drilling (Pilot hole) ③ Chamfering ④ Shaper tool ⑤ Deburring



## SHAPER DUO Process Chart

| | | | | Number of passes | | | Estimated cycle time * | | |
|---|---|---|---|---|---|---|---|---|---|
| HEX Standard | Tool | Pilot bore Dia. (㎜) | Total DOC /side (㎜) | Total pass /side | Roughing pass 0.025㎜ | Finishing pass 0.010㎜ | ISO 2936 standard depth of Hex hole (㎜) | 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 ㎜/min
DOC : 0.025 ㎜ (Roughing), 0.010 ㎜ (Finishing)

Information ➡K182

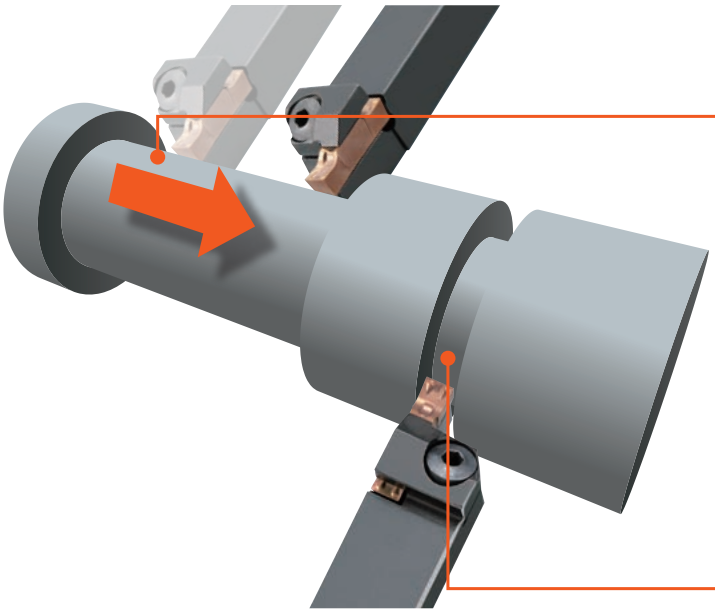
# NEW Groove Duo



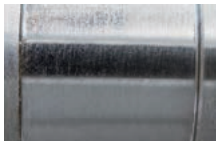
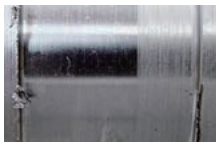
## Features

WATCH ON YouTube

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

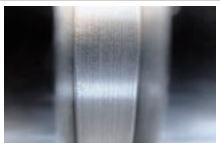
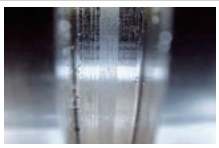


### Side-turning

| | NTK:GW chipbreaker | Competitor |
|---|---|---|
| Chip |  |  |
| Surface finish |  |  |

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

### Grooving

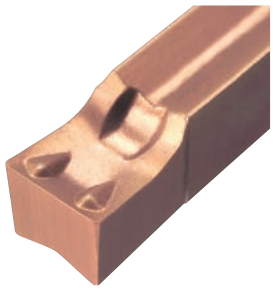
| | NTK:GW chipbreaker | Competitor |
|---|---|---|
| Chip |  |  |
| Surface finish |  |  |

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

## Chipbreaker

### For Grooving / Side-turning

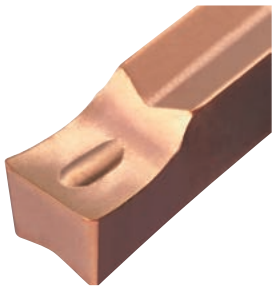
**GW**



- *Excellent chip control*
- *Good sharpness*
- *Side turning capability*

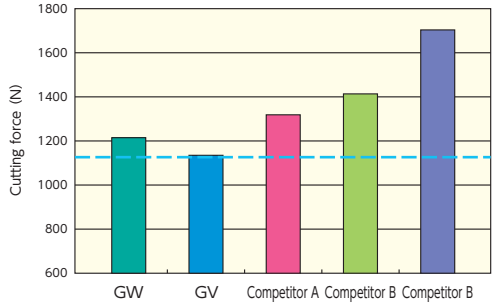
### Less tool pressure

**GV**



- *Superior sharp edge*

### Tool pressure comparison when grooving



# NTK Unique Tooling

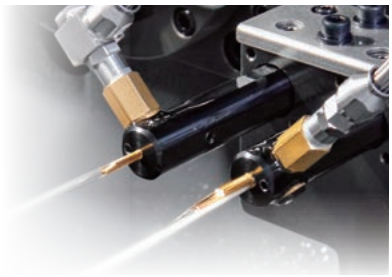


Multi-lead thread machining capability

## Thread Whirling

➡J11 WATCH ON YouTube





Coolant through toolholders

## Splash Series / Quick-Charge Coolant Components

➡J12 WATCH ON YouTube NEW



Chip controlled by gravity

## Y-axis Toolholders

➡J20 WATCH ON YouTube



High rigidity boring bars

## Mogul Bar

➡J25 WATCH ON YouTube



Interchangeable tools

## CSV / CTPS Series

➡J36 • J40



Tools for sub-spindle machining

## DS-ACH / DS Toolholders / DS Sleeves

➡J26 WATCH ON YouTube





Wiper inserts with ISO style

## WP Series

➡J42 WATCH ON YouTube



6 corner insert for Swiss machines

## UL Chipbreaker

➡J43 WATCH ON YouTube



Toolholders for extended guide-bushing

## Shifted Toolholders

➡J44 WATCH ON YouTube



Face turning / grooving tools

## Saturn DUO

➡J44 WATCH ON YouTube

# Thread Whirling

## Features

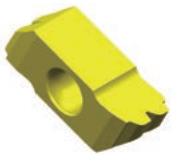
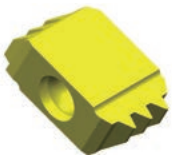
WATCH ON YouTube



- 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

## Form Double-lead or Multiple-lead with Single Pass

Patented

| | Double-lead threads | Triple-lead threads |
|---|---|---|
| Work | Bone screw | Worm gear |
| Work material | Ti-6Al-4V ELI | brass |
| Work appearance |  |  |
| Insert appearance |  |  |
| Major Dia. | $\phi$.157"(4.0mm) | $\phi$.278"(7.0mm) |
| Minor Dia. | $\phi$.094"(2.4mm) | $\phi$.185"(4.7mm) |
| Lead [Pitch×No. of Lead] | .135"(3.42mm) [.067"×2(1.71mm×2)] | .193"(4.9mm) [.064"×3(1.63mm×3)] |

- Can reduce cycle time by more than half
- NTK can achieve what other competitors cannot

## Double-lead Bone Screw Process Example

1. 1st thread whirl at taper part
2. Rotate the bar 180° and whirl the 2nd thread on same part as 1
3. Thread whirl whole straight part
4. Thread whirl at very last part to get two-exits, after back of bar has been backed up a half lead (one pitch) and rotated 180°

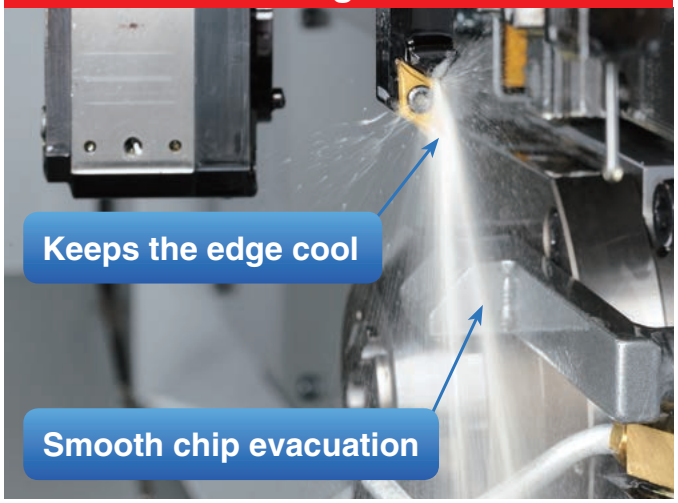
Information ➡K142

# SPLASH Series

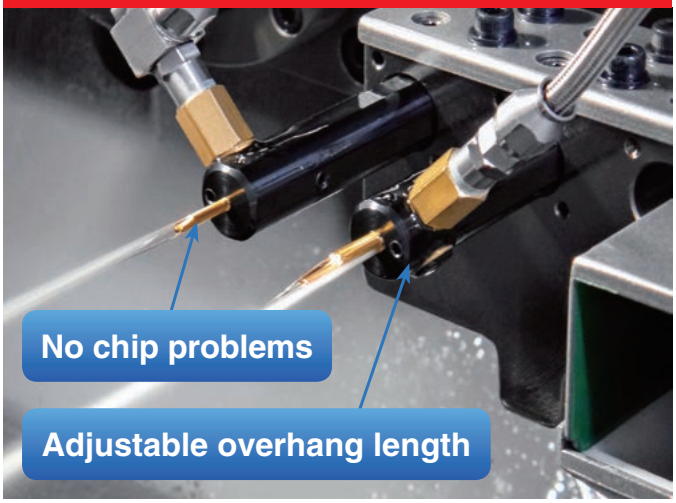
Coolant through toolholders

WATCH ON YouTube

## Coolant through toolholders



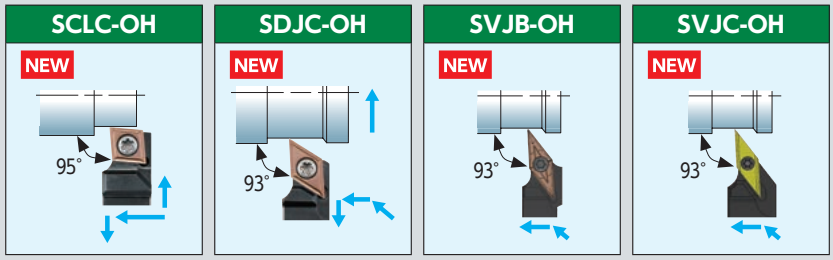

## STICK DUO SPLASH

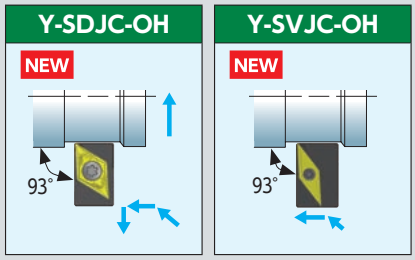



➡K156

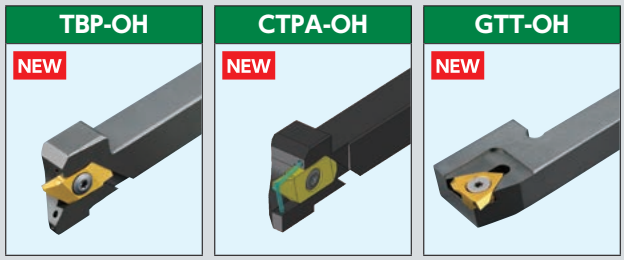
## Full line-up

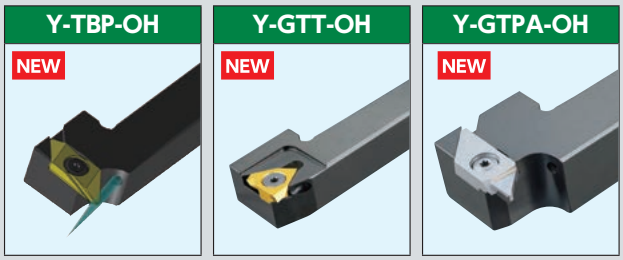
### *Front turning*



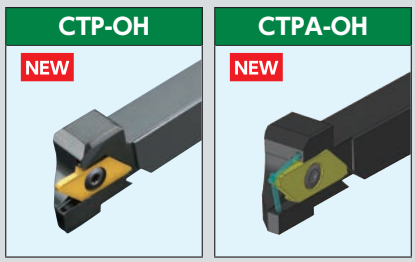

### *Back turning / Grooving / Side turning*




Perfect solution for chip control
- Y-axis holder with coolant through -

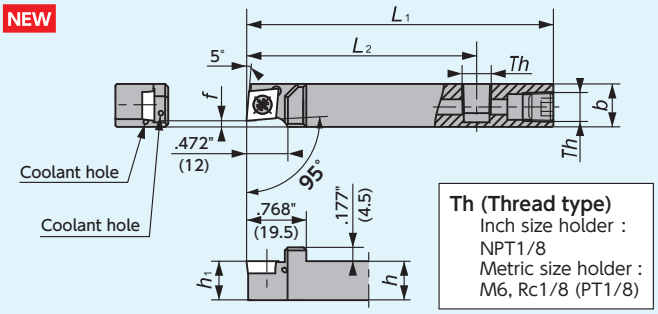
### *Cut-off*



# 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)

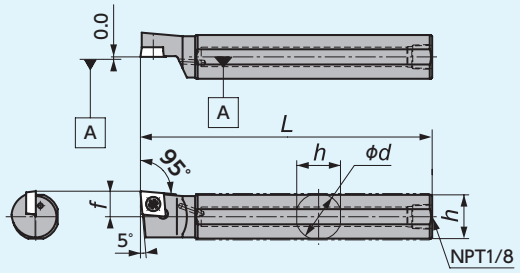



Figure-2

Left-Hand style shown
Takes Right-hand or Neutral insert

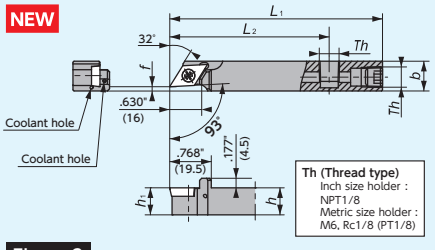
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | g (Inch) | g (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..21.5.. | SCLC⅜082H-F079-OH | 1 | ● | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-2.5×7 | CLR-15S |
| CC..32.5.. | SCLC⅜083H-F079-OH | 1 | ● | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4×10 | LLR-25S |
| | SCLC⅜103H-F079-OH | 1 | ● | | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4×10 | LLR-25S |
| | SCLC⅜1014F09N-F02OH | 1 | ○ | | .394 | 10 | .551 | 14 | .394 | 10 | 3.150 | 80 | .079 | 2.0 | 2.165 | 55 | – | – | M6×1 | LRIS-4×10 | LLR-25S |
| | SCLC⅜1214H09N-F02OH | 1 | ○ | | .472 | 12 | .551 | 14 | .472 | 12 | 3.937 | 100 | .079 | 2.0 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4×10 | LLR-25S |
| | SCLC⅜1616H09N-F02OH | 1 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .079 | 2.0 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4×10 | LLR-25S |

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-25S-20×65 |
| | DS-SCLL22-09-005 | 2 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .472 | 12.0 | LRIS-4×8 | LLR-25S-20×65 |

Inserts ➡K38

## SDJC-N-OH (Coolant through)

NEW



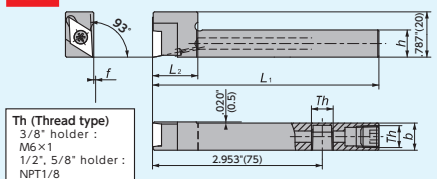

**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder : M6, Rc1/8 (PT1/8)

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)

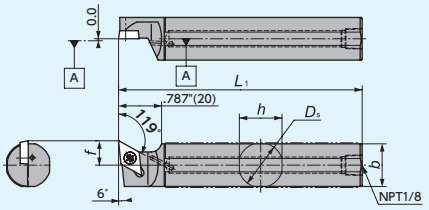



Figure-5

Left-Hand style shown
Takes Right-hand or Neutral insert

| Gage Insert | Item Number | Figure | Stock R | Stock L | Stock N | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | g (Inch) | g (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC..21.5../DC..21.5..WP | SDJC⅜082H-F079-OH | 3 | ● | | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-2.5×7 | CLR-15S |
| DC..32.5.. DC..32.5..WP | SDJC⅜083H-F079-OH | 3 | ● | | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4×10 | LLR-25S |
| | SDJC⅜103H-F079-OH | 3 | ● | | | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4×10 | LLR-25S |
| | SDJC⅜1014F11N-F02OH | 3 | ○ | | | .392 | 10 | .551 | 14 | .394 | 10 | 3.150 | 80 | .079 | 2 | 2.165 | 55 | – | – | M6×1 | LRIS-4×10 | LLR-25S |
| | SDJC⅜1214H11N-F02OH | 3 | ● | | | .472 | 12 | .551 | 14 | .472 | 12 | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4×10 | LLR-25S |
| | SDJC⅜1616H11N-F02OH | 3 | ○ | | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4×10 | LLR-25S |
| DC..21.5.. DC..21.5..WP | Y-SDJCR062H-IN-OH | 4 | ● | | | 3/8 | | 3/8 | | | | 3.937 | 100 | 0 | 0 | .984 | 25 | | | M6×1 | LRIS-2.5×7 | CLR-15S |
| | Y-SDJCR082H-IN-OH | 4 | ● | | | 1/2 | | 1/2 | | | | 3.937 | 100 | 0 | 0 | .984 | 25 | | | NPT1/8 | LRIS-2.5×7 | CLR-15S |
| DC..32.5.. DC..32.5..WP | Y-SDJCR083H-IN-OH | 4 | ● | | | 1/2 | | 1/2 | | | | 3.937 | 100 | 0 | 0 | .984 | 25 | | | NPT1/8 | LRIS-4×10 | LLR-25S-20×65 |
| | Y-SDJCR103H-IN-OH | 4 | ● | | | 5/8 | | 5/8 | | | | 3.937 | 100 | 0 | 0 | .984 | 25 | | | NPT1/8 | LRIS-4×10 | LLR-25S-20×65 |
| | Y-SDJCR1212H11S-OH | 4 | ● | | | .472 | 12.0 | .472 | 12.0 | | | 3.937 | 100 | 0 | 0 | .787 | 20 | | | Rc1/8(PT1/8) | LRIS-4×10 | LLR-25S-20×65 |
| | Y-SDJCR1616H11-OH | 4 | ○ | | | .630 | 16.0 | .630 | 16.0 | | | 3.937 | 100 | 0 | 0 | .984 | 25 | | | Rc1/8(PT1/8) | LRIS-4×10 | LLR-25S-20×65 |

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC..32.5.. DC..32.5..WP | DS-SDX⅝22-11-006 | 5 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .472 | 12.0 | LRIS-4×10 | LLR-25S-20×65 |

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

Inserts ➡K46 Cutting condition ➡K30

# Front Turning Toolholders Ⅱ

## SVJB-OH (Coolant through)

NEW

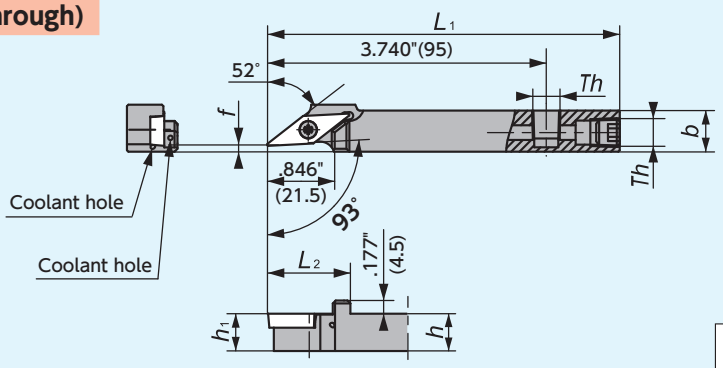



Figure-1

●Left-Hand coolant through holders are designed for Right-Hand machines.

**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

### ■VBGT33

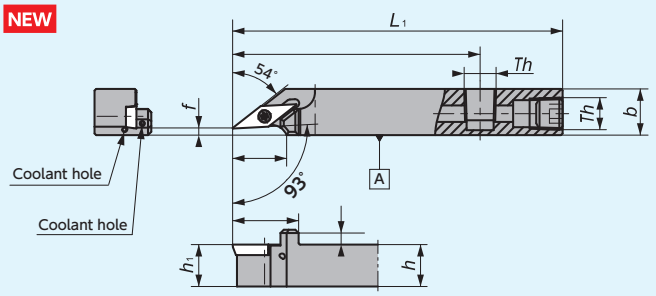
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VBGT33.. | SVJBR⅛083C-F079-OH | 1 | ● | ● | 1/2 | | .551 | 14 | 1/2 | | 4.724 | 120 | .079 | 2 | .079 | 2 | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SVJBR⅛103C-F079-OH | 1 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .079 | 2 | 0 | 0 | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SVJBR⅛1214-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 |
| | SVJBR⅛1616-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 ➡K50

## SVJC-OH (Coolant through)

NEW



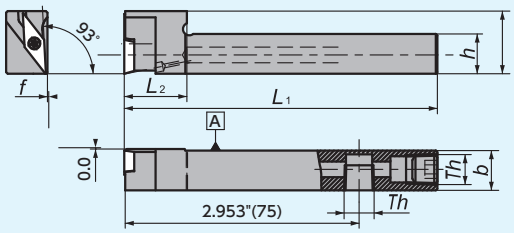

**Th (Thread type)**
Inch size holder: NPT1/8

Figure-2

Right-Hand style shown

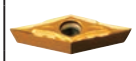
## Y-SVJCR-OH (Coolant through)

NEW




**Th (Thread type)**
Inch size holder: NPT1/8

Figure-3

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | N | | | | | | | | | | | | | | |
|  VC..22.. | SVJCR⅛-082H-F079-OH | 2 | ● | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2.0 | NPT1/8 | LRIS-2.5 × 7 | CLR-15S |
| | SVJCR⅛-102H-F079-OH | 2 | ● | | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .079 | 2.0 | NPT1/8 | LRIS-2.5 × 7 | CLR-15S |
| | Y-SVJCR082SHS-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 |

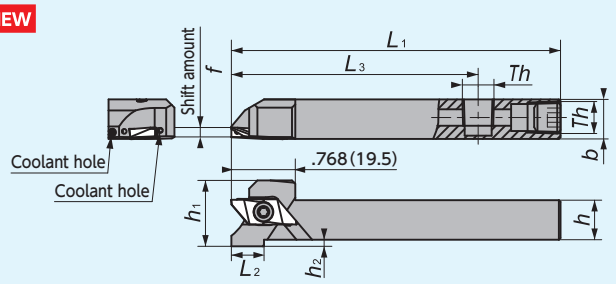
Inserts ➡K55 Cutting condition ➡K30

# 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)

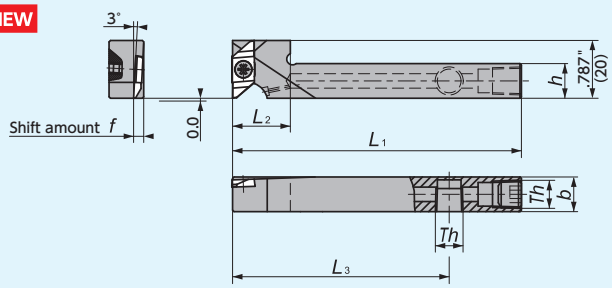
Figure-1

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

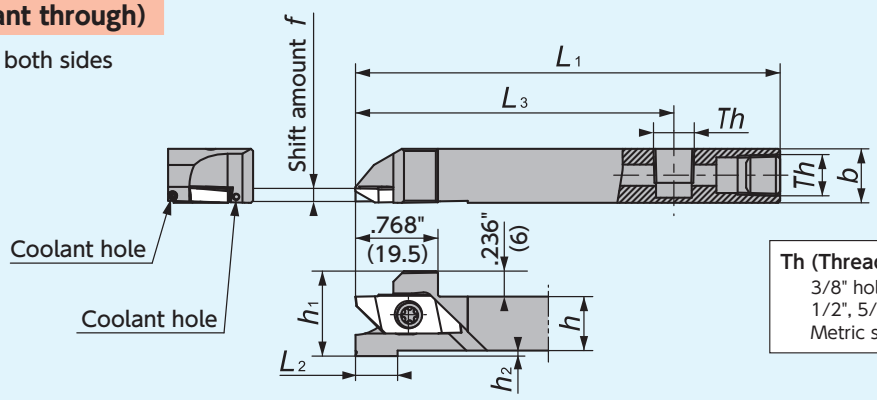
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | $L_3$ (Inch) | $L_3$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBP.. | **TBP□06-IN-OH** | 1 | ● | | 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□08-IN-OH** | 1 | ● | | 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□10-IN-OH** | 1 | ● | | 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□1012H-OH** | 1 | ○ | | .394 | 10 | .472 | 12 | .394 | 10 | 3.937 | 100 | .138 | 3.5 | .748 | 19 | .176 | 4.475 | 2.953 | 75 | M6 × 1 | LRIS-4 × 10PW | CLR-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 | 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 | 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 | 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 | 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 | Rc1/8 (PT1/8) | LRIS-4 × 12PW | CLR-15S |

Inserts ➡K73

## CTPA-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-3

Right-Hand style shown

## ■CTPA

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | $L_3$ (Inch) | $L_3$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBPA.. | **CTPA□06H-IN-OH** | 3 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 3.937 | 100 | .134 | 3.4 | .787 | 20 | .176 | 4.475 | 2.165 | 55 | M6 × 1 | LR-S-4 × 10PW | CLR-15S |
| | **CTPA□08H-IN-OH** | 3 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 3.937 | 100 | .134 | 3.4 | .394 | 10 | .051 | 1.3 | 2.953 | 75 | NPT1/8 | LR-S-4 × 12PW | CLR-15S |
| | **CTPA□10H-IN-OH** | 3 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .134 | 3.4 | 0 | 0 | 0 | 0 | 2.953 | 75 | NPT1/8 | LR-S-4 × 12PW | CLR-15S |

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

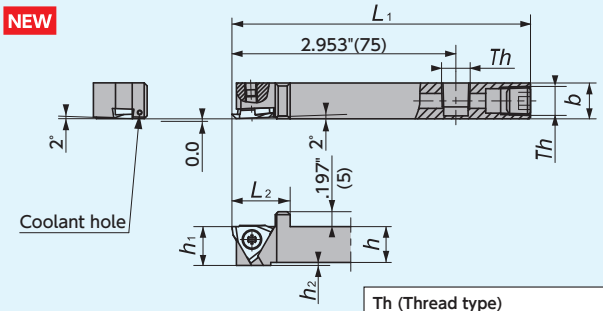
Inserts ➡K75 Cutting condition ➡K67

# Back Turning / Grooving / Side Turning Toolholders

## 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)

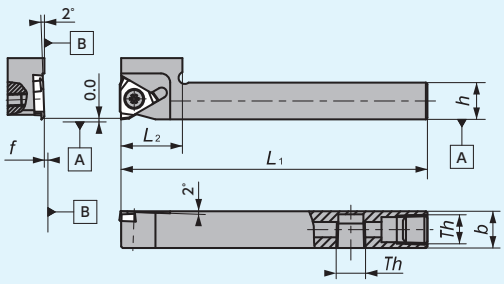
Figure-1

Right-Hand style shown

## 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-2

Right-Hand style shown
Takes Right-hand Insert

### ■GTT

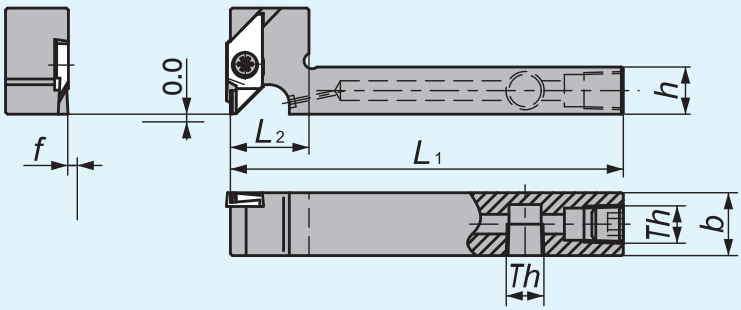
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $a_r$ (Inch) | $a_r$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TBMH32..<br>GTM.32..<br>TMG32 | GTTR¼08HA-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-4×10PW | CLR-15S |
| | GTTR¼08HB-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-4×10PW | CLR-15S |
| | GTTR¼10HA-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-4×10PW | CLR-15S |
| | GTTR¼10HB-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-4×10PW | CLR-15S |
| | GTTR¼1012H00-OH | 1 | ○ | | .394 | 10 | .472 | 12 | .394 | 10 | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .039 | 1 | M6 × 1 | LR-S-4×10PW | CLR-15S |
| | GTTR¼12H00-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-4×10PW | CLR-15S |
| | GTTR¼16H00-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-4×10PW | CLR-15S |
| | Y-GTTR¼08H-IN-OH | 2 | ● | | 1/2 | | 1/2 | | — | — | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | — | — | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | Y-GTTR¼12H00S-OH | 2 | ● | | .472 | 12 | .472 | 12 | — | — | 3.937 | 100 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | — | — | Rc1/8(PT1/8) | LR-S-4×10PW | CLR-15S |
| | Y-GTTR¼16H00-OH | 2 | ○ | | .630 | 16 | .472 | 16 | — | — | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | — | — | Rc1/8(PT1/8) | LR-S-4×10PW | CLR-15S |

Inserts TBMH ➔K83
Inserts GTM. ➔K114

## Y-GTPA-OH (Coolant through)

Screw Accessible from both sides

NEW




Th (Thread type)
Metric size holder: Rc1/8 (PT1/8)

Figure-3

Right-Hand style shown

### ■GTPA

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  GTPA | Y-GTPAR¼1216HS-OH | 3 | ○ | | .472 | 12 | .630 | 16 | — | — | 2.756 | 70 | .004 | 0.1 | .787 | 20 | Rc1/8(PT1/8) | LR1S-4 × 12PW | CLR-15S |
| | Y-GTPAR¼1216H-OH | 3 | ○ | | .630 | 16 | .630 | 16 | — | — | 2.756 | 70 | .004 | 0.1 | .984 | 25 | Rc1/8(PT1/8) | LR1S-4 × 12PW | CLR-15S |

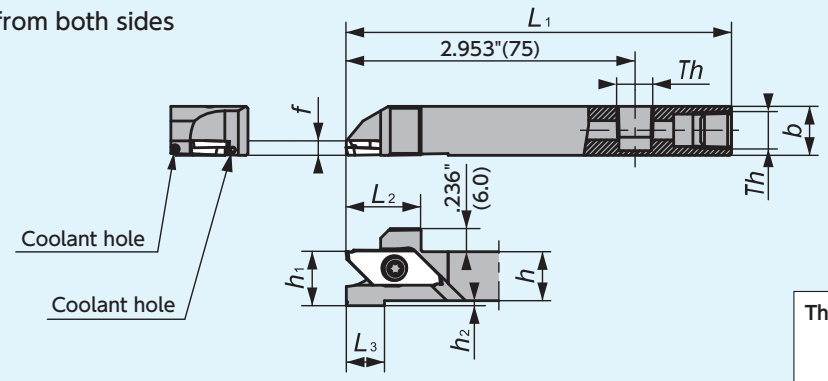
Inserts ➔K126

# 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 R | Stock L | Max. Cut-off Dia. φD* (Inch) | (mm) | h (Inch) | (mm) | h1 (Inch) | (mm) | b (Inch) | (mm) | L1 (Inch) | (mm) | h2 (Inch) | (mm) | L2 (Inch) | (mm) | L3 (Inch) | (mm) | Th | f (Inch) | (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTP FR../FL.. | CTP□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 | LRIS-4×10PW | CLR-15S |
| | CTP□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 | LRIS-4×12PW | CLR-15S |
| | CTP□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 | LRIS-4×12PW | CLR-15S |
| | CTP□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 | LRIS-4×12PW | CLR-15S |
| | CTP□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 | LRIS-4×12PW | CLR-15S |

●Left-Hand coolant through holders are designed for Right-Hand machines.

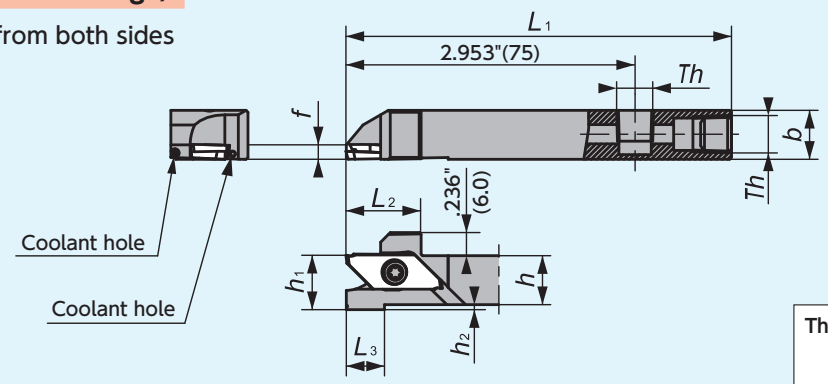
＊Would be changed by insert

Inserts ➡K94・K96

## CTPA-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-2

●Left-Hand holders are designed for Right-Hand machines

Right-Hand style shown

### ■CTPA

| Gage Insert | Item Number | Figure | Stock R | Stock L | Max. Cut-off Dia. φD* (Inch) | (mm) | h (Inch) | (mm) | h1 (Inch) | (mm) | b (Inch) | (mm) | L1 (Inch) | (mm) | h2 (Inch) | (mm) | L2 (Inch) | (mm) | L3 (Inch) | (mm) | Th | f (Inch) | (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTPA FR../FL.. | CTPA□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 | LRIS-4×10PW | CLR-15S |
| | CTPA□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 | LRIS-4×12PW | CLR-15S |
| | CTPA□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 | LRIS-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 ➡K94・K96 Cutting condition ➡K89

# ID Tooling - STICK DUO SPLASH -

## HY-NBH-OH (Coolant through)

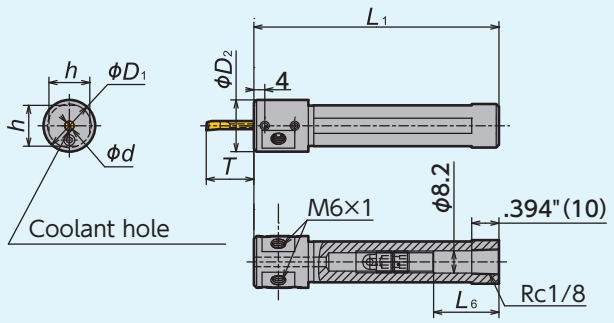



Figure-1

## HY-NBH-OH (Coolant through)

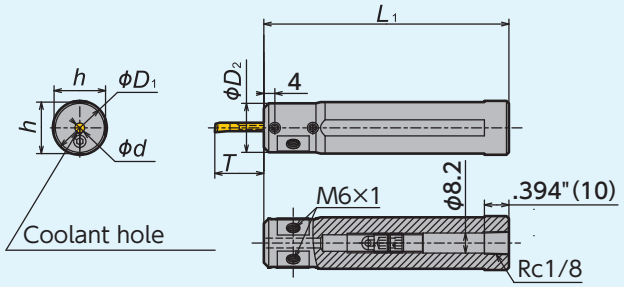
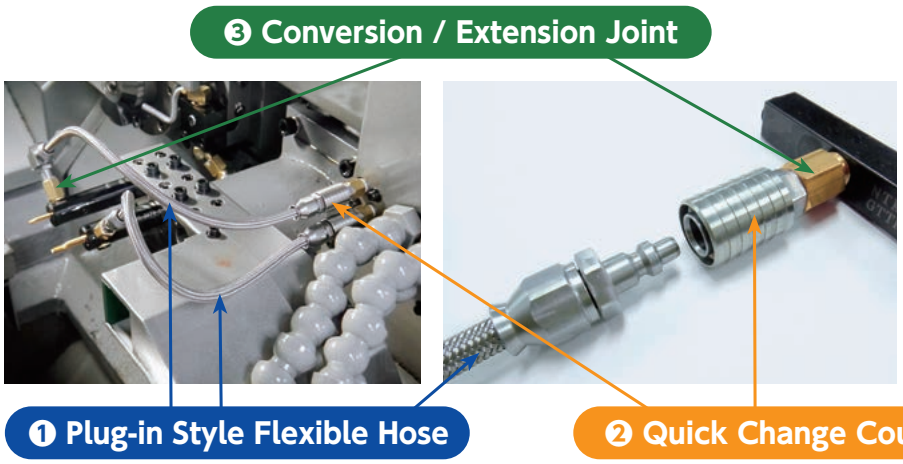



Figure-2

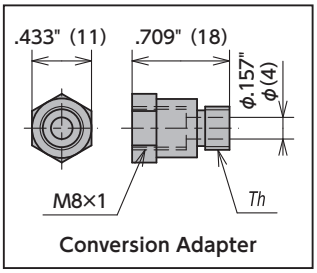
| Item Number | Stock | Figure | ϕ d | | ϕ D1 | | ϕ D2 | h | L1 | Overhang Length of Bar T | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Min. | | Max. | |
| | | | (Inch) | (mm) | (Inch) | (mm) | (mm) | (mm) | (mm) | (Inch) | (mm) | (Inch) | (mm) |
| HY-NBH02016G-OH | ● | 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 |

Insert bars ➡K160 Cutting condition ➡K152

# Quick-change Coolant Components



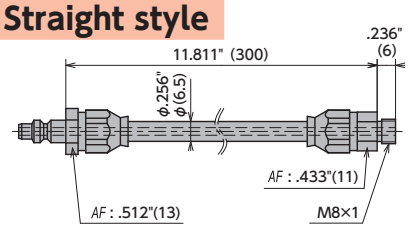

- Up to 2900psi
- High quality flexible stainless steel braided hose
- Reduce machine downtime

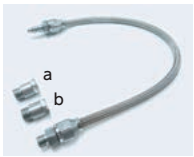


Conversion Adapter

## ① Plug-in Style Flexible Hose

### Straight style

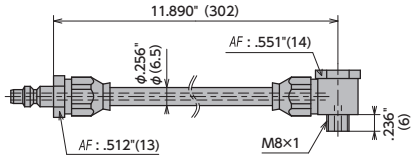


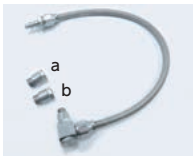




a : Convert M8×1 to M10×1
b : Convert M8×1 to G1/8 (PF1/8)

Figure-1

### L-style



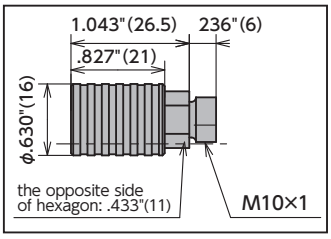

a : Convert M8×1 to M10×1
b : Convert M8×1 to G1/8 (PF1/8)

Figure-2

| Item Number | Figure | Stock | Comes with |
|---|---|---|---|
| **HOSE-ST-M8*1** | 1 | ● | Conversion Adapter a and b |
| **HOSE-AN-M8*1** | 2 | ● | Conversion Adapter a and b |

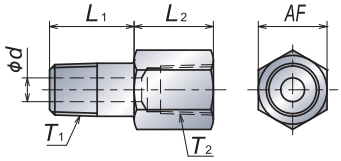
## ② Quick Change Coupling





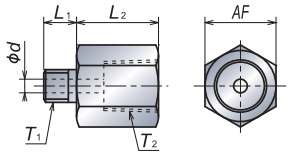

| Item Number | Stock | Comes with |
|---|---|---|
| **COUP-M10*1** | ● | Seal Plug |

## ③ Conversion / Extension Joint



For square shank holders

Figure-3



For sleeves

Figure-4

| Item Number | Figure | Stock | $T_1$ (mm) | $T_2$ (mm) | $L_1$ (mm) | $L_2$ (mm) | AF (mm) | d (mm) |
|---|---|---|---|---|---|---|---|---|
| **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-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

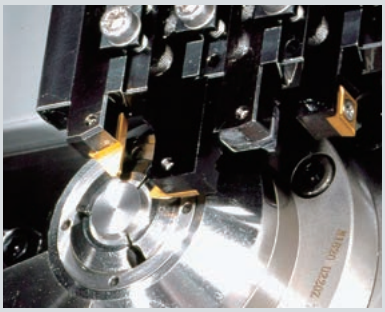


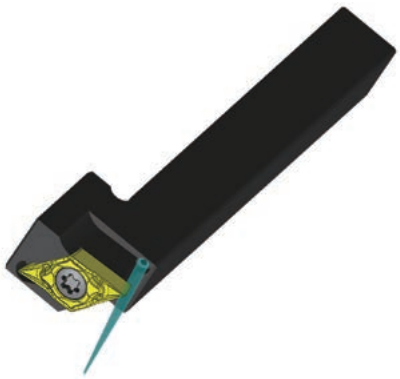
## Features

WATCH ON YouTube

- Chip drops down to the bed of the machine due to gravity, and chip control problem is solved
- Now available coolant through holders
- Front turning, grooving, and back turning operations can be performed by utilizing Y-axis control







- Perfect solution for chip problems
- Less wear, more stable dimensions

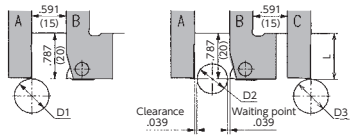
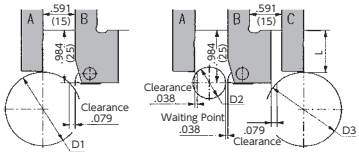
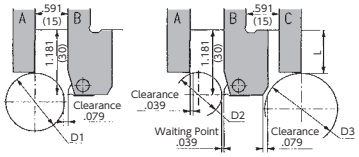
## Programming guidance

| Regular Toolholder | | | | | Y-axis Toolholder | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ①T300 | | | | Select tool | ①T300 | | | | |
| ②G0 | X .450 | Z .000 | T3 | Position tool | ②G0 | | Y .450 | Z .000 | T3 |
| ③ | | | | | ③ | X .000 | | | |
| ④G1 | X .300 | | F .003 | Move to OD to cut | ④G1 | | 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 | | |
| ⑦G0 | X .450 | | | | ⑦G0 | X .450 | | | |
| | Cut by X-axis | | | | | Cut by Y-axis | | | |

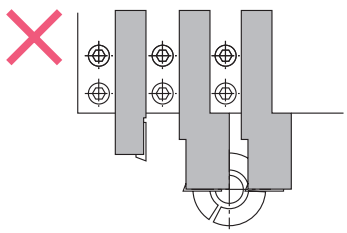
Note: Need Y-offset for holder shank size.

# Machinable OD Dimensions

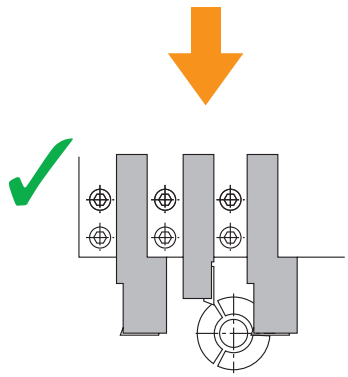
*Machinable ODs with Y-GTTR type grooving toolholders are shown as an example (The dimensions apply to other Y-axis toolholders as well)

| Y-axis Holder Overhang | Tool Layout | Situation | Overhang Amount (L) | | |
|---|---|---|---|---|---|
| | | | .787 (20mm) | .866 (22mm) | .984 (25mm) |
| .787 (20mm) |  | D1<br>Max machinable OD with Holder A | No limitation | No limitation | No limitation |
| | | D2<br>Max machinable OD with Holder B | .512 (13mm) | .512 (13mm) | .512 (13mm) |
| | | D3<br>Max machinable OD with Holder C | No limitation | No limitation | No limitation |
| .984 (25mm) |  | D1<br>Max machinable OD with Holder A | 1.496 (38mm) | 2.283 (58mm) | No limitation |
| | | D2<br>Max machinable OD with Holder B | .587 (14.9mm) | .535 (13.6mm) | .512 (13mm) |
| | | D3<br>Max machinable OD with Holder C | 1.496 (38mm) | 2.283 (58mm) | No limitation |
| 1.181 (30mm) |  | D1<br>Max machinable OD with Holder A | 1.055 (26.8mm) | 1.142 (29mm) | 1.516 (38.5mm) |
| | | D2<br>Max machinable OD with Holder B | .811 (20.6mm) | .705 (17.9mm) | .587 (14.9mm) |
| | | D3<br>Max machinable OD with Holder C | 1.299 (33mm)<br>1.055 (26.8mm) for TBP style | 1.457 (37mm)<br>1.142 (29mm) for TBP style | 2.028 (51.5mm)<br>1.516 (38.5mm) for TBP style |

# Important Notes for Using Y-axis Toolholders



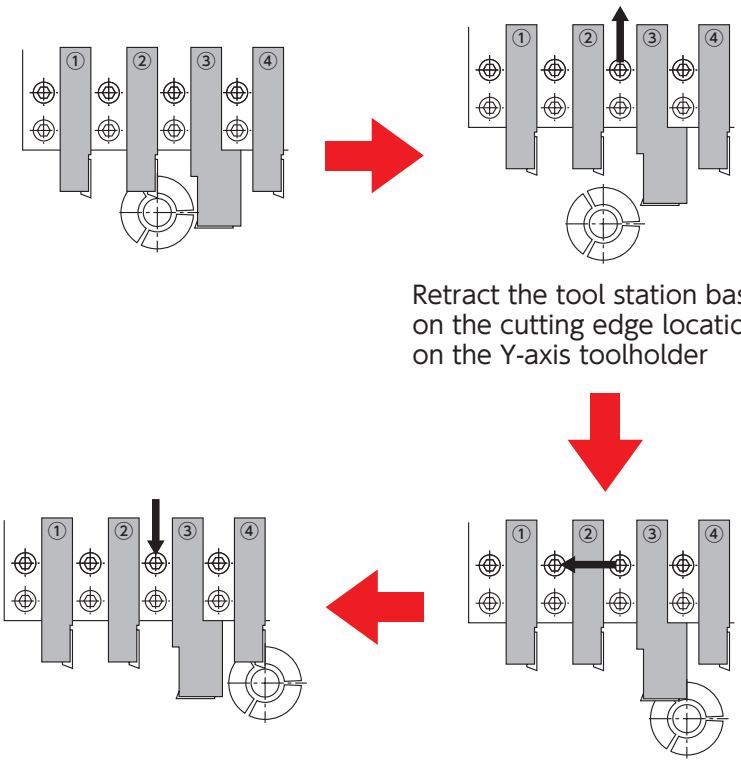
To avoid interference, two Y-axis toolholders should not be installed next to each other



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



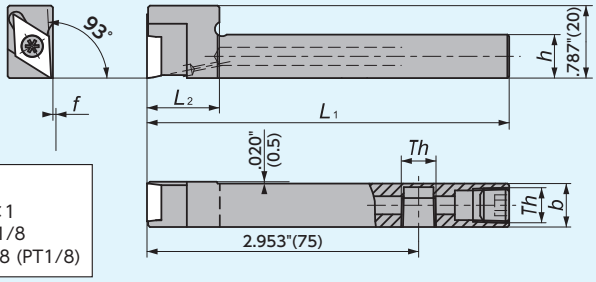

Retract the tool station based on the cutting edge location on the Y-axis toolholder

## Front Turning

## DC.. Series - Toolholders

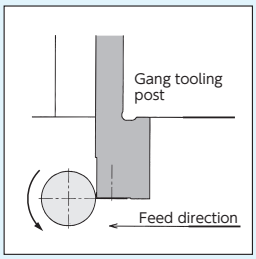
### Y-SDJC-OH (Coolant through)

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

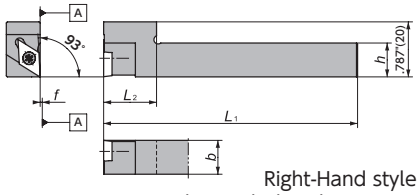



Figure-2

Right-Hand style shown
Takes Right-hand or Neutral insert

### Y-SDNC

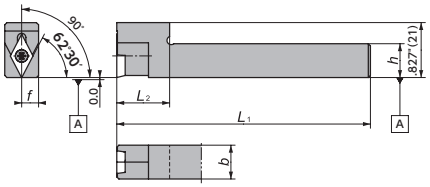



Figure-3

Takes Right-hand or Neutral insert

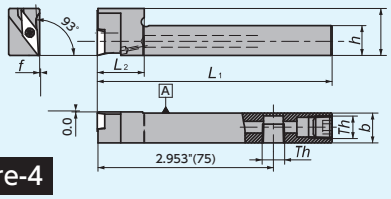
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | N | | | | | | | | | | | | | | |
| DC..21.5.. DC..21.5..WP | Y-SDJCR062H-IN-OH | 1 | ● | | 3/8 | | 3/8 | | 3.937 | 100 | 0 | 0 | .984 | 25 | M6 × 1 | LRIS-2.5 × 7 | CLR-15S |
| | 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.. DC..32.5..WP | 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 |
| | 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 |
| DC..21.5.. DC..21.5..WP | 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 |
| | 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 |
| DC..32.5.. DC..32.5..WP | Y-SDJCR083-IN | 2 | ● | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | .984 | 25 | – | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | Y-SDJCR103-IN | 2 | ● | | 5/8 | | 5/8 | | 4.724 | 120 | 0 | 0 | .984 | 25 | – | 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 ➔K46

## VC.. Series - Toolholders

### Y-SVJCR-OH (Coolant through)

NEW




Th (Thread type)
Inch size holder:
NPT1/8

Figure-4

### Y-SVJCR

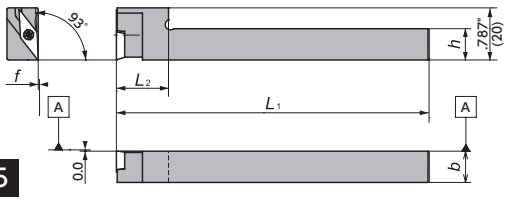



Figure-5

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VC..22.. | Y-SVJCR082SHS-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 ➔K55

# Back Turning

## TBP Series - Toolholders

### Y-TBP-OH (Coolant through)

Screw accessible from both sides

NEW

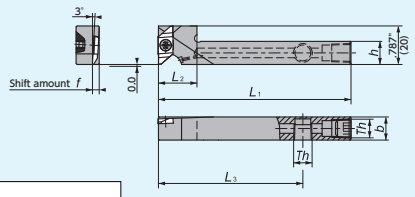



Figure-1

**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Right-Hand style shown
Takes Right-hand Insert

### Y-TBP

Screw accessible from both sides

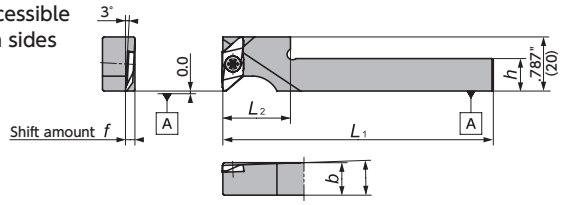



Figure-2

Right-Hand style shown
Takes Right-hand Insert

### TBP

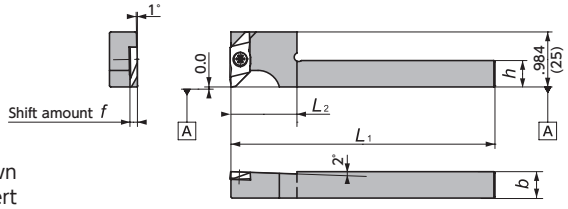
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) (mm) | b (Inch) (mm) | h1 (Inch) (mm) | L1 (Inch) (mm) | f (Inch) (mm) | L2 (Inch) (mm) | h2 (Inch) (mm) | L3 (Inch) (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBP.. | Y-TBP☐08H-IN-OH | 1 | ● | | 1/2 | 1/2 | — — | 3.937 100 | .138 3.5 | .984 25 | — — | 2.953 75 | NPT1/8 | LRIS-4 × 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) | LRIS-4 × 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) | LRIS-4 × 12PW | CLR-15S |
| | Y-TBP☐06-IN | 2 | ● | | 3/8 | 3/8 | — — | 2.756 70 | .138 3.5 | .984 25 | — — | — — | — | LRIS-4 × 10PW | CLR-15S |
| | Y-TBP☐08-IN | 2 | ● | | 1/2 | 1/2 | — — | 2.756 70 | .138 3.5 | .984 25 | — — | — — | — | LRIS-4 × 12PW | CLR-15S |
| | Y-TBP☐10-IN | 2 | ● | | 5/8 | 5/8 | — — | 2.756 70 | .138 3.5 | .984 25 | — — | — — | — | LRIS-4 × 12PW | CLR-15S |
| | Y-TBP☐10S | 2 | ○ | | .394 10 | .394 10 | — — | 4.724 120 | .138 3.5 | .787 20 | — — | — — | — | LRIS-4 × 10PW | CLR-15S |
| | Y-TBP☐12S | 2 | ○ | | .472 12 | .472 12 | — — | 4.724 120 | .138 3.5 | .787 20 | — — | — — | — | LRIS-4 × 12PW | CLR-15S |

Inserts ➡K73

## TBPA (CTPA) Series - Toolholders

### Y-CTPA

Screw accessible from both sides



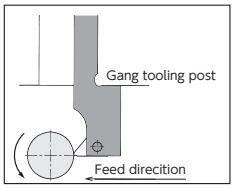




Figure-3

Right-Hand style shown
Takes Right-hand Insert

### CTPA

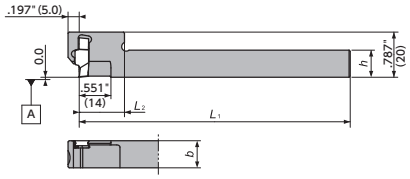
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) (mm) | b (Inch) (mm) | h1 (Inch) (mm) | L1 (Inch) (mm) | f (Inch) (mm) | L2 (Inch) (mm) | h2 (Inch) (mm) | L3 (Inch) (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBPA.. | Y-CTPA☐08L-IN | 3 | ● | | 1/2 | 1/2 | — — | 4.724 120 | 1.34 34 | — — | — — | — — | — | LR-S-4 × 12PW | CLR-15S |

Inserts ➡K75

## TBDP Series - Toolholders

### Y-TBDP

NEW



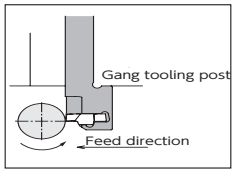




Figure-4

Right-Hand style shown

### TBDP

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) (mm) | b (Inch) (mm) | h1 (Inch) (mm) | L1 (Inch) (mm) | f (Inch) (mm) | L2 (Inch) (mm) | L3 (Inch) (mm) | h2 (Inch) (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBDP.. | Y-TBDPR12S | 4 | ○ | | .472 12 | .472 12 | — — | 4.724 120 | .081 2.05 | .787 20 | .197 5 | — — | LRIS-4 × 12 | LLR-25S |

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

Inserts ➡K76 Cutting condition ➡K67

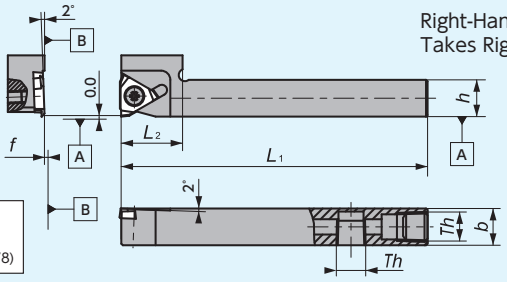
## Grooving / Side turning / Back turning

### GTT Series

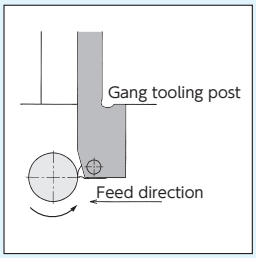
#### Y-GTT-OH (Coolant through)

Screw accessible from both sides

NEW




Right-Hand style shown
Takes Right-hand Insert

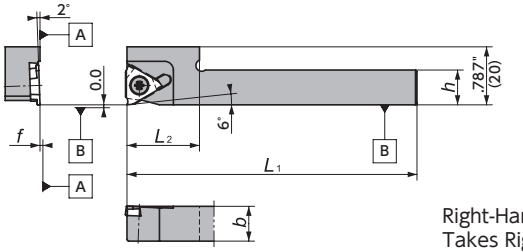



Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

Figure-1

#### Y-GTT

Screw accessible from both sides




Right-Hand style shown
Takes Right-hand Insert

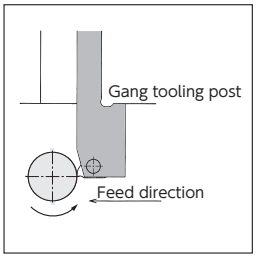



Figure-2

### GTT

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | L2 (Inch) | L2 (mm) | ar (Inch) | ar (mm) | h2 (Inch) | h2 (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TBMH32..<br>GTM.32..<br>TMG32 | Y-GTT⅜08H-IN-OH | 1 | ● | | 1/2 | | 1/2 | | – | – | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | NTP1/8 | LR-S-4×10PW | CLR-15S |
| | Y-GTT⅜12H00S-OH | 1 | ● | | .472 | 12 | .472 | 12 | – | – | 3.937 | 100 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | Rc1/8(PT1/8) | LR-S-4×10PW | CLR-15S |
| | Y-GTT⅜16H00-OH | 1 | ○ | | .630 | 16 | .472 | 16 | – | – | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | Rc1/8(PT1/8) | LR-S-4×10PW | CLR-15S |
| | Y-GTTR⅜06-IN | 2 | ● | | 3/8 | | 3/8 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTTR⅜08-IN | 2 | ● | | 1/2 | | 1/2 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTTR⅜10-IN | 2 | ● | | 5/8 | | 5/8 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT⅜10S | 2 | ○ | | .394 | 10 | .394 | 10 | – | – | 4.724 | 120 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT⅜12S | 2 | ○ | | .472 | 12 | .472 | 12 | – | – | 4.724 | 120 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |

Inserts GTM..32 ➡K114
Inserts TBMH32.. ➡K83

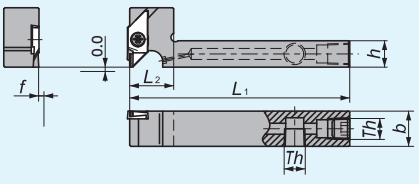
## Multi-functional Grooving for non-ferrous material

### GTPA Series - Inserts

#### Y-GTPA-OH (Coolant through)

Screw Accessible from both sides

NEW




Th (Thread type)
Metric size holder:
Rc1/8 (PT1/8)

Figure-1

Right-Hand style shown

#### Y-GTPA

Screw Accessible from both sides

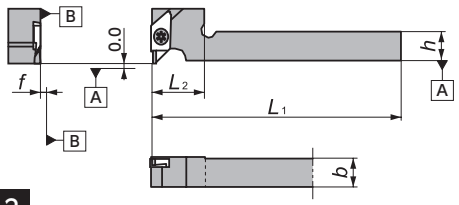



Figure-2

Right-Hand style shown

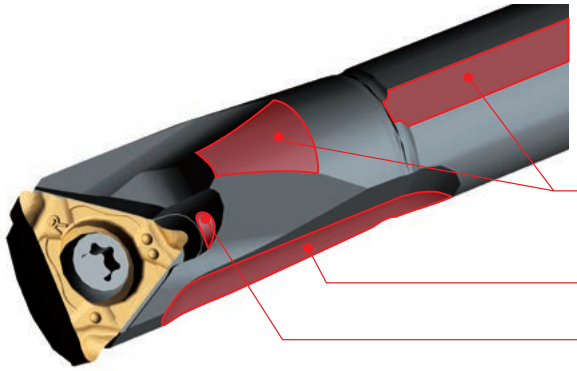
### GTPA

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | L2 (Inch) | L2 (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  GTPA | Y-GTPA⅜1216HS-OH | 1 | ○ | | .472 | 12 | .630 | 16 | – | – | 2.756 | 70 | .004 | 0.1 | .787 | 20 | Rc1/8(PT1/8) | LRIS-4 × 12PW | CLR-15S |
| | Y-GTPA⅜1216H-OH | 1 | ○ | | .630 | 16 | .630 | 16 | – | – | 2.756 | 70 | .004 | 0.1 | .984 | 25 | Rc1/8(PT1/8) | LRIS-4 × 12PW | CLR-15S |
| | Y-GTPA⅜1216 | 2 | ○ | | .472 | 12 | .630 | 16 | – | – | 4.724 | 120 | .004 | 0.1 | .787 | 20 | – | LRIS-4 × 12PW | CLR-15S |

Inserts ➡K126

# Mogul Bar

## High rigidity boring bars



WATCH ON YouTube

## Features

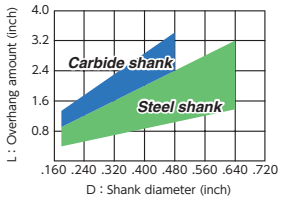
- ***High rigidity + Minimal flat widths Reduce vibration***
- ***Large clearance for improved chip evacuation***
- ***All MogulBar boring bars are coolant through***

## Recommended amount of overhang

Steel Shank **L/D≦5**

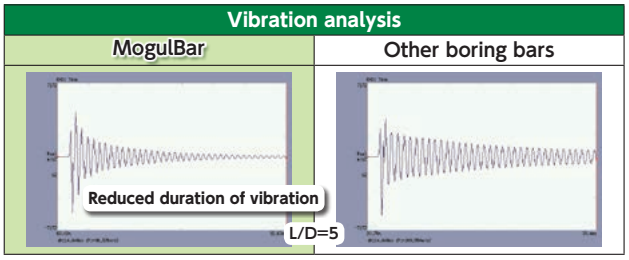
Carbide Shank **L/D≦7**

L : Overhang
D : Shank diameter




[Cutting condition example]
Work materials: Alloy steel, stainless
260 SFM, .002 - .004 IPR, .004" - .020" DOC WET

**Vibration analysis**



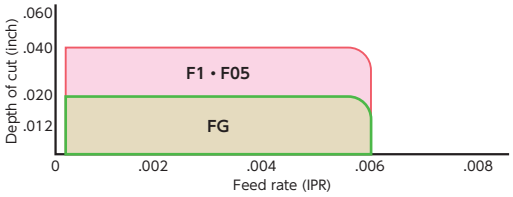

Note: Assuming a 100N load is applied. An equal amount of force was applied to both bars for vibration analysis.
Boring bar used in above analysis: S08H-STUPR09D10-OH

## F Chipbreakers - Evacuate chips BACKWARD

- F chipbreakers allow chips to evacuate backward
- Combination of the F-chipbreakers and MogulBar delivers the best performance



### Recommended Cutting Condition Range




## F Chipbreakers - Features

| | DOC (inch) | Feed (IPR) .002 | Feed (IPR) .004 |
|---|---|---|---|
| **FG Chipbreaker**<br>● Best for finishing<br>● Works for small DOC (.020" or less)<br>● High rake angle  | .004 |  |  |
| | .012 |  |  |
| **F1/F05 Chipbreakers**<br>● Cover wide condition range<br>● Ground chipbreaker  | .020 |  |  |

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

[Cutting condition example]
4140 Carbon Steel Diameter : ϕ.472"
260 SFM Depth of Bore : .787" Wet
Holder : S10K-STUPR11D12-OH Insert : TPGH221

Holders ➡K171

# DS-ACH Toolholders

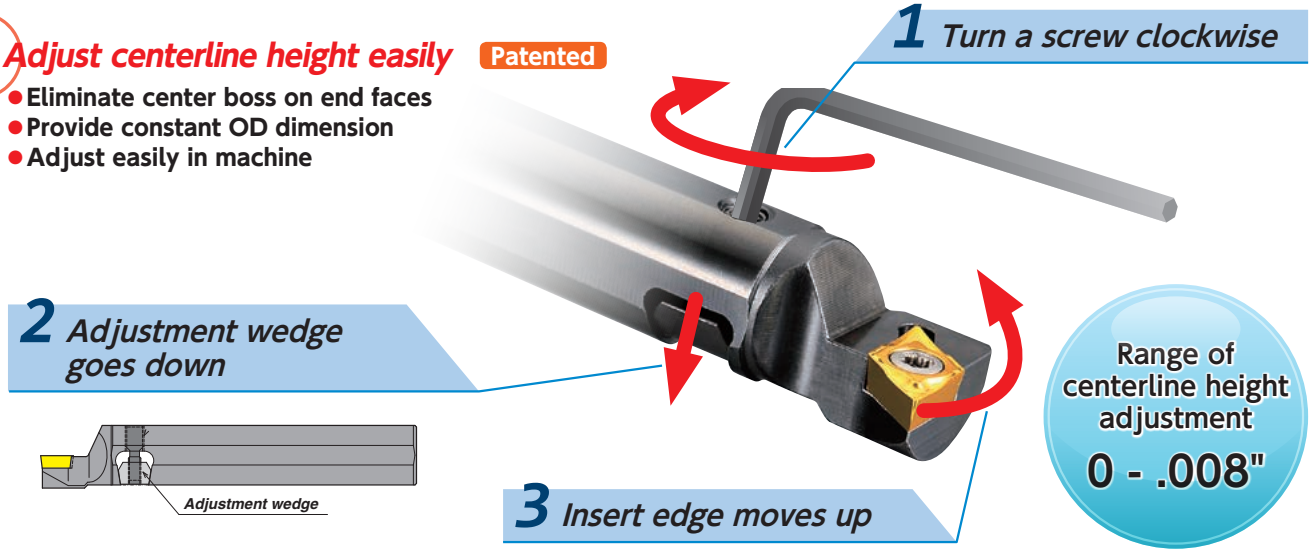
## Features

WATCH ON YouTube

- Adjust centerline height simply with a wrench

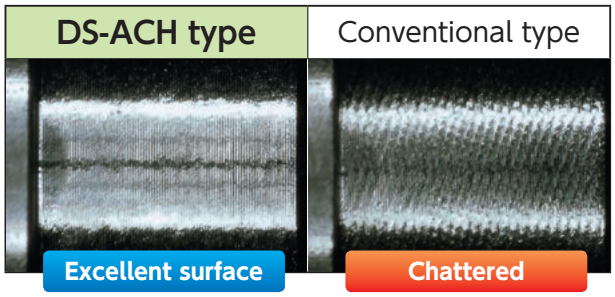
### 1 Adjust centerline height easily Patented

- Eliminate center boss on end faces
- Provide constant OD dimension
- Adjust easily in machine



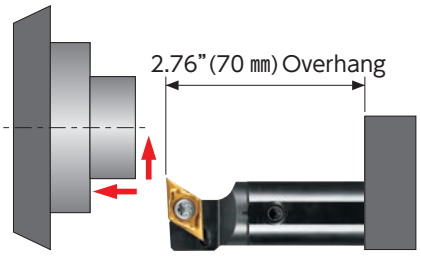

### 2 Optimized design reduces vibration

**Improved chatter resistance.**



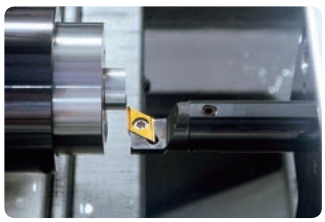

### Tested cutting conditions (304 SS)

Work material : 304 SS
Holder : DS-SDUL19-11-ACH
Insert : DCGT32.508MCL TM4
Cutting condition : 250 SFM .002 IPR .079" DOC WET

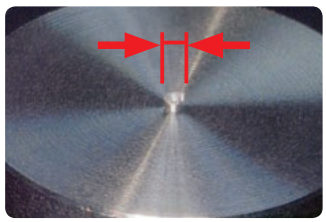



## How to use

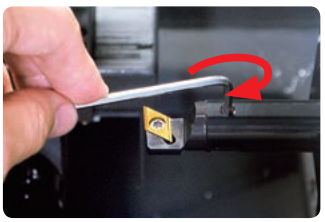
Insert moves in an upward direction only. See the instruction shown on the back page. (Loosen wedge screw before making any adjustment)



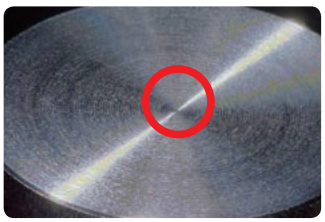
①Install the holder slightly below centerline. Then take a facing test cut.



②Measure the diameter of the centerboss.



③Raise the center height by one half of the diameter of the boss. Adjustment references are available in the tool case.



④Re-machine the end face.

*Adjustment instructions are supplied in the tool case

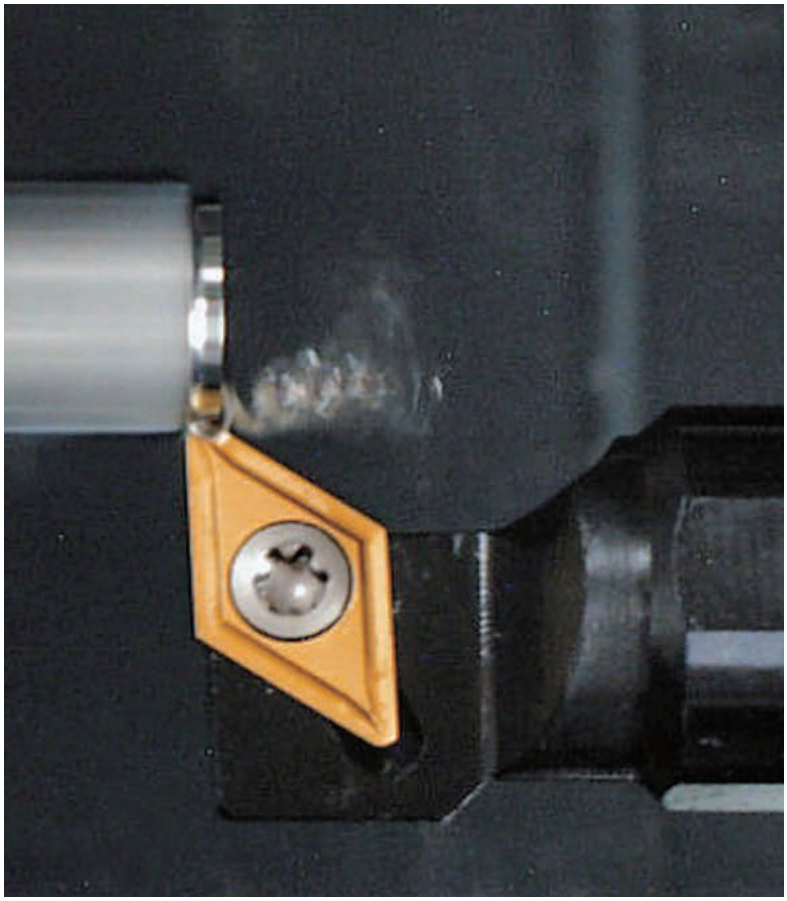
# DS Toolholders

## For making the most of vacant drill sleeves

# DS / DS-ACH Toolholders



Industry Proven Concept



Are you satisfied with the number of tool positions in your machine?

NTK DS type toolholder is useful when additional tool positions are required

Five types of tools are available: 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"(14㎜) to 1"(25.4㎜)

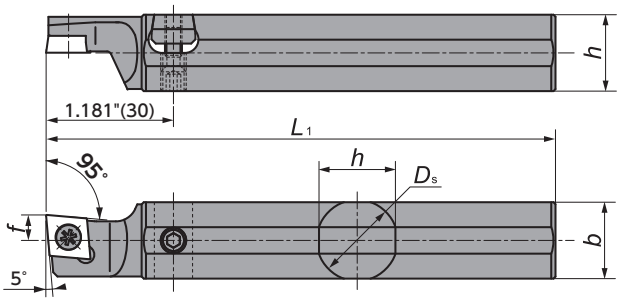
## Front Turning

# CC.. Series - Toolholders

## DS-SCLL-ACH (Adjustable centerline height)

〈Parts〉

| Shank | Wedge | Screw for Wedge |
|---|---|---|
| ϕ.630" (16) | ACH-W18 (5805601) | WS060415-003 (5795539) |
| ϕ3/4" (19.05) | | |
| ϕ.787" (20) | | WS060419-004 (5799226) |
| ϕ.866" (22) | | |
| ϕ1" (25.4) | ACH-W24 (5805619) | |



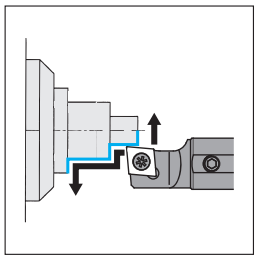



Figure-1

Left-Hand style shown
Takes Right-hand or Neutral insert

## DS-SCL

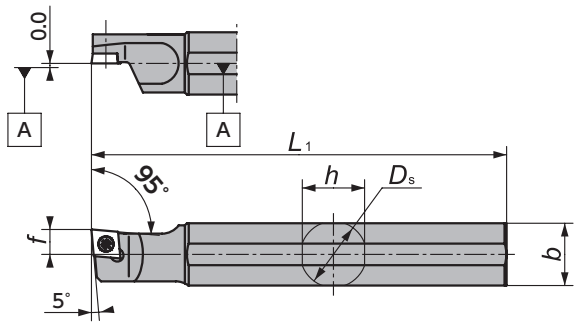



Figure-2

## DS-SCL (Coolant through)

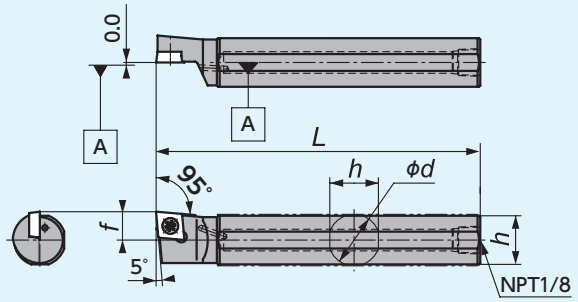



Figure-3

Left-Hand style shown
Takes Right-hand or Neutral insert

## DS-SCL (Takes right-hand or neutral insert)

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..21.5.. | DS-SCL5/8"14F-06 | 2 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"15H-06 | 2 | | ○ | 5/8 | 15.875 | .591 | 15 | .591 | 15 | 3.937 | 100 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"16F-06 | 2 | | ○ | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.150 | 80 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"19-06 | 2 | | ● | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"20X-06 | 2 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 3.740 | 95 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"20-06 | 2 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"22-06 | 2 | | ○ | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"25-06MET | 2 | | ● | .984 | 25.000 | .945 | 24 | .945 | 24 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL5/8"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-SCL5/8"14F-09 | 2 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"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-SCL5/8"16F-09 | 2 | | ○ | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.150 | 80 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"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-SCL5/8"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-SCLL19-09-004 | 3 | | ● | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .413 | 10.5 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"20X-09 | 2 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 3.740 | 95 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"20-09 | 2 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"22-09 | 2 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCLL22-09-005 | 3 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .472 | 12.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"25-09MET | 2 | | ○ | .984 | 25.000 | .945 | 24 | .945 | 24 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"25-09 | 2 | | ● | 1 | 25.400 | .945 | 24 | .945 | 24 | 5.906 | 150 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL5/8"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-SCL5/8"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-SCL5/8"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-SCL5/8"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-SCL5/8"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 |

Inserts ➡K38

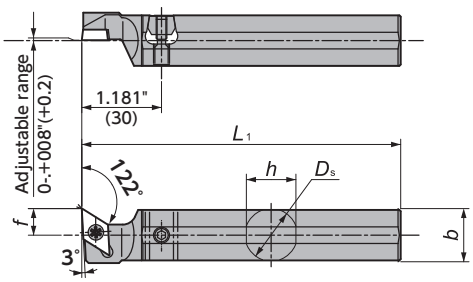
# DC.. Series - Toolholders

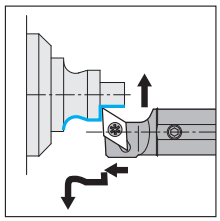
## DS-SDU-ACH (Adjustable centerline height)

〈Parts〉

| Shank | Wedge | Screw for Wedge |
|---|---|---|
| ϕ.630" (16) | ACH-W18 (5805601) | WS060415-003 (5795539) |
| ϕ3/4" (19.05) | | |
| ϕ.787" (20) | | WS060419-004 (5799226) |
| ϕ.866" (22) | | |
| ϕ1" (25.4) | ACH-W24 (5805619) | |

Figure-1

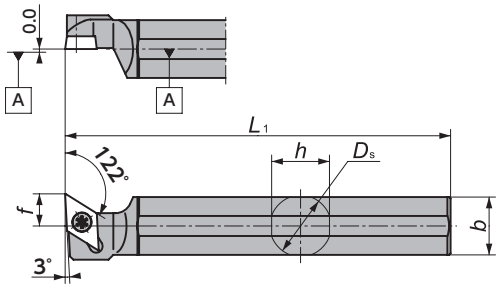


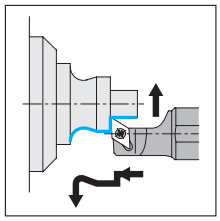



Left-Hand style shown
Takes Right-hand or Neutral insert

## DS-SDU

Figure-2

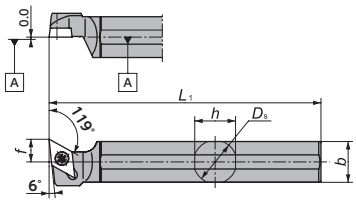


Left-Hand style shown
Takes Right-hand or Neutral insert

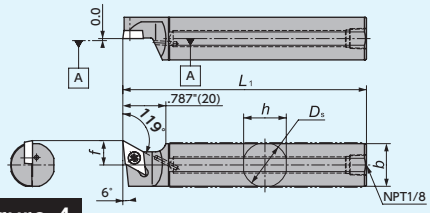
## DS-SDX / DS-SDX (Coolant through)

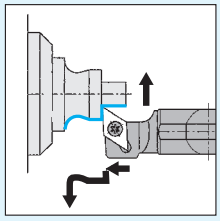
Figure-3




DS-SDXL22-11-006 (Coolant through)

Figure-4



Left-Hand style shown
Takes Right-hand or Neutral insert

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | $h$ (Inch) | $h$ (mm) | $b$ (Inch) | $b$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $f$ (Inch) | $f$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC..21.5.. DC..21.5..WP | DS-SDU[R/L]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[R/L]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[R/L]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[R/L]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[R/L]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[R/L]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[R/L]20-07 | 2 | | ● | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SDU[R/L]22-07 | 2 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| DC..32.5.. DC..32.5..WP | DS-SDU[R/L]14F-11 | 2 | | ○ | .551 | 14.000 | .512 | 13.0 | .512 | 13.0 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]16F-11 | 2 | | ○ | .630 | 16.000 | .591 | 15.0 | .591 | 15.0 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]19-11 | 2 | | ● | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]19-11SPL | 2 | | ○ | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 6.300 | 160 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]20X-11 | 2 | | ○ | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 3.740 | 95 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]20-11 | 2 | | ● | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]22-11 | 2 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]23-11-007 | 2 | | ○ | .906 | 23.000 | .866 | 22.0 | .866 | 22.0 | 2.756 | 70 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]25-11MET | 2 | | ● | .984 | 25.000 | .945 | 24.0 | .945 | 24.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]25-11 | 2 | | ● | 1 | 25.400 | .945 | 24.0 | .945 | 24.0 | 5.906 | 150 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]25-11SPL | 2 | | ○ | 1 | 25.400 | .945 | 24.0 | .945 | 24.0 | 5.906 | 150 | .492 | 12.5 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]16F-11-ACH | 1 | | ● | .630 | 16.000 | .610 | 15.5 | .610 | 15.5 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]19-11-ACH | 1 | | ● | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]20-11-ACH | 1 | | ● | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]22-11-ACH | 1 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU[R/L]25-11-ACH | 1 | | ● | 1 | 25.400 | .945 | 24.0 | .945 | 24.0 | 5.906 | 150 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX[R/L]22-11-006 💧 | 4 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .472 | 12.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX[R/L]19-11 | 3 | | ○ | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX[R/L]20X-11 | 3 | | ○ | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 3.740 | 95 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX[R/L]20-11 | 3 | | ○ | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX[R/L]25-11MET | 3 | | ○ | .984 | 25.000 | .945 | 24.0 | .945 | 24.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |

Inserts ➔K46

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

Cutting condition ➔K30

# VC.. Series - Toolholders

## DS-SVX

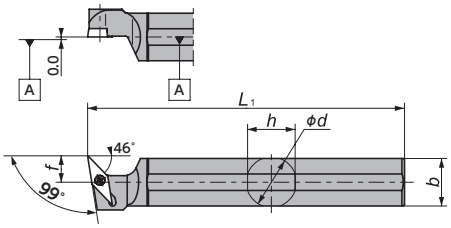



Figure-1

| Gage Insert | Item Number | Figure | Stock R | Stock L | φ d (Inch) | φ d (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VC..22.. | DS-SVX R/L 14F-11 | 1 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX R/L 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 R/L 16F-11 | 1 | | ● | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.150 | 80 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX R/L 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 R/L 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 R/L 20X-11 | 1 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 3.740 | 95 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX R/L 20-11 | 1 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX R/L 22-11 | 1 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX R/L 25-11 | 1 | | ● | 1 | 25.400 | .945 | 24 | .945 | 24 | 5.906 | 150 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |

Inserts ➡K55

# VP..08 Series - Toolholders

## DS-SVXP

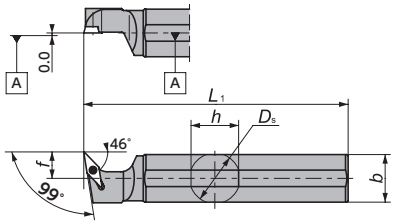
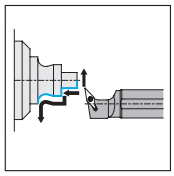
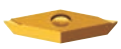



Figure-2



Left-Hand style shown
Takes Right-hand or Neutral insert

| Gage Insert | Item Number | Figure | Stock R | Stock L | Ds (Inch) | Ds (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VP..0802 | DS-SVXP R/L 19-08 | 2 | | ○ | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .394 | 10 | LRIS-2 × 6 | CLR-13S |
| | DS-SVXP R/L 20-08 | 2 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .394 | 10 | LRIS-2 × 6 | CLR-13S |
| | DS-SVXP R/L 22-08 | 2 | | ○ | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .394 | 10 | LRIS-2 × 6 | CLR-13S |
| | DS-SVXP R/L 25-08 | 2 | | ○ | 1 | 25.400 | .945 | 24 | .945 | 24 | 5.906 | 150 | .394 | 10 | LRIS-2 × 6 | CLR-13S |

Inserts ➡K56

# VP..22 Series - Toolholders

## DS-SVVP-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) | | WS060419-004 (5799226) |
| φ.866" (22) | | |
| φ1" (25.4) | ACH-W24 (5805619) | |

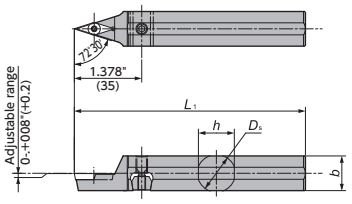



Figure-3

## DS-SVVP

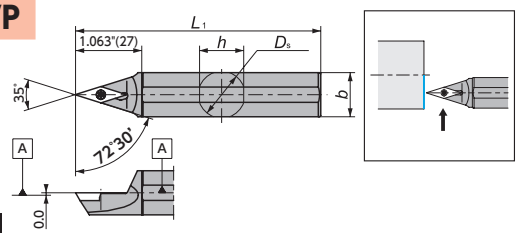



Figure-4

| Gage Insert | Item Number | Figure | Stock R | Stock L | Ds (Inch) | Ds (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | L1 (Inch) | L1 (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | 22.00 | .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 ➡K57

# TN.. Series - Toolholders

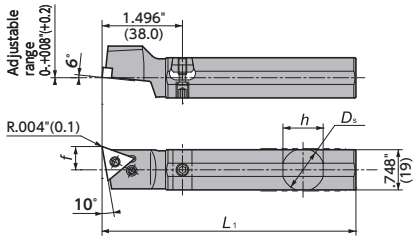
## DS-PTX-ACH (Adjustable centerline height)

〈Parts〉

| Shank | Wedge | Screw for Wedge |
|---|---|---|
| ϕ.630" (16) | ACH-W18 (5805601) | WS060415-003 (5795539) |
| ϕ3/4" (19.05) | | |
| ϕ.787" (20) | | WS060419-004 (5799226) |
| ϕ.866" (22) | | |
| ϕ1" (25.4) | ACH-W24 (5805619) | |

Figure-1

| Shim | Clamp Pin | Spring |
|---|---|---|
| – | LCL33N | – |




Left-Hand style shown
Takes Right-hand or Neutral insert.

## DS-PTX

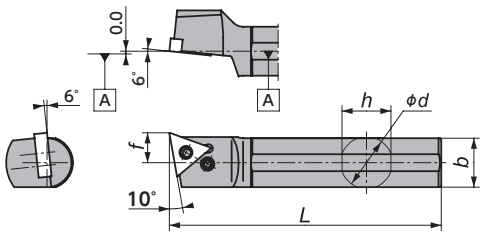
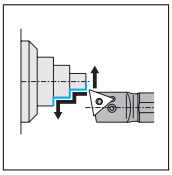



Figure-2

| 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 R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TN..33.. | DS-PTX☒19-33 | 2 | | ○ | 3/4 | 19.050 | .709 | 18.0 | .709 | 18 | 4.724 | 120 | .433 | 11.0 | LCS33 | LW-2 |
| | DS-PTX☒20-33 | 2 | | ○ | .787 | 20.000 | .748 | 19.0 | .748 | 19 | 4.724 | 120 | .433 | 11.0 | LCS33 | LW-2 |
| | DS-PTX☒22-33 | 2 | | ○ | .866 | 22.000 | .827 | 21.0 | .827 | 21 | 4.724 | 120 | .472 | 12.0 | LCS33 | LW-2 |
| | DS-PTX☒25M-33 | 2 | | ○ | 1 | 25.400 | .945 | 24.0 | .945 | 24 | 5.906 | 150 | .512 | 13.0 | LCS33 | LW-2 |
| TN..33.. | DS-PTX☒16-33-ACH | 1 | | ● | .630 | 16.000 | .610 | 15.5 | .591 | 15 | 4.724 | 120 | .433 | 11.0 | LCS33 | LW-2 |
| | DS-PTX☒19-33-ACH | 1 | | ● | 3/4 | 19.050 | .709 | 18.0 | .709 | 18 | 4.724 | 120 | .433 | 11.0 | LCS33 | LW-2 |
| | DS-PTX☒20-33-ACH | 1 | | ● | .787 | 20.000 | .748 | 19.0 | .748 | 19 | 4.724 | 120 | .433 | 11.0 | LCS33 | LW-2 |
| | DS-PTX☒22-33-ACH | 1 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21 | 4.724 | 120 | .472 | 12.0 | LCS33 | LW-2 |
| | DS-PTX☒25-33-ACH | 1 | | ● | 1 | 25.400 | .945 | 24.0 | .945 | 24 | 5.906 | 150 | .512 | 13.0 | LCS33 | LW-2 |

Inserts ➔K62
Cutting condition ➔K30

# ■ Back Turning

# TBP.. Series - Toolholders

## DS-TBP

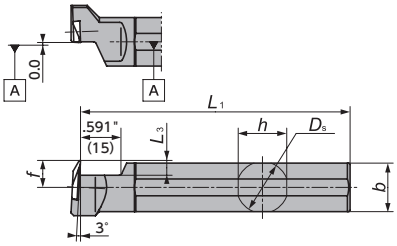
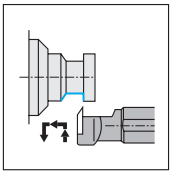



Figure-1



Left-Hand style shown
Takes Right-hand Insert

### ■DS-TBP (Takes right-hand inserts)

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_3$ (Inch) | $L_3$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBP..FR.. | DS-TBP☒19 | 1 | | ○ | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .433 | 11.0 | .217 | 5.5 | LRIS-4 × 10 | LLR-25S-20×65 |
| | DS-TBP☒20 | 1 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .433 | 11.0 | .217 | 5.5 | LRIS-4 × 10 | LLR-25S-20×65 |
| | DS-TBP☒25 | 1 | | ○ | 1.00 | 25.400 | .945 | 24 | .945 | 24 | 5.906 | 150 | .512 | 13.0 | .217 | 5.5 | LRIS-4 × 10 | LLR-25S-20×65 |

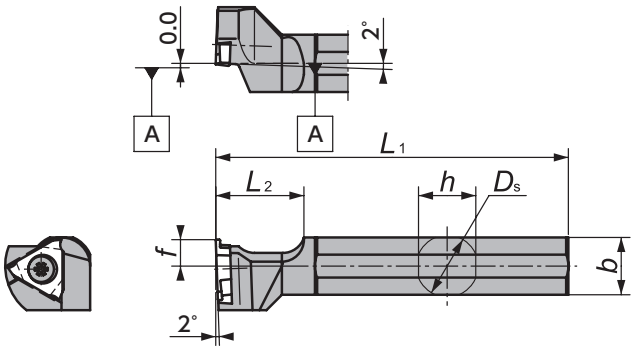
Inserts ➔K73
Cutting condition ➔K67

● : Stock ○ : 1-2 week delivery

## Grooving / Side Turning / Back Turning

### GTT.. Series - Toolholders

#### DS-GTT



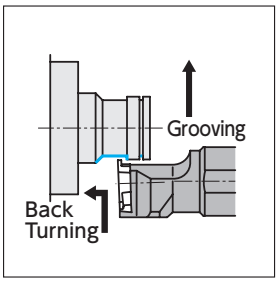




Figure-1

Left-Hand style shown
Takes Right-hand Insert

#### DS-GTT

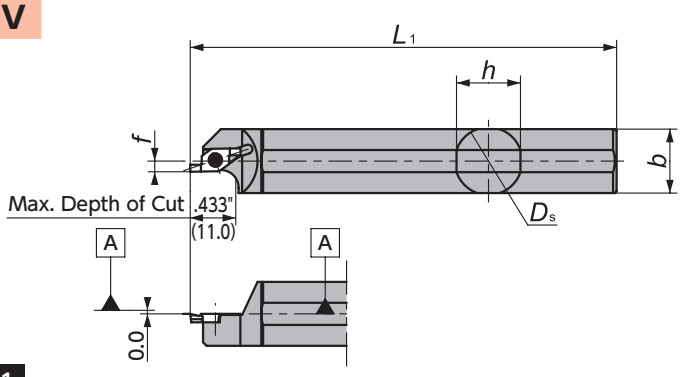
| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | $h$ (Inch) | $h$ (mm) | $b$ (Inch) | $b$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $f$ (Inch) | $f$ (mm) | $L_2$ (Inch) | $L_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBMH32.. GTM.32 TMG32 | DS-GTT⅛14F | 1 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT⅛15H | 1 | | ○ | .518 | 15.875 | .591 | 15 | .591 | 15 | 3.937 | 100 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT⅛16X | 1 | | ● | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.740 | 95 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT⅛19 | 1 | | ● | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT⅛20 | 1 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT⅛22 | 1 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT⅛25 | 1 | | ● | 1 | 25.400 | .945 | 24 | .945 | 24 | 4.724 | 120 | .394 | 10 | .787 | 20 | LR-S-4 × 9 | RLR-20S |

Inserts GTM..32 ➡K114
Inserts TBMH32.. ➡K83

## Face Grooving

### FGV.. Series - Toolholders

#### DS-FGV



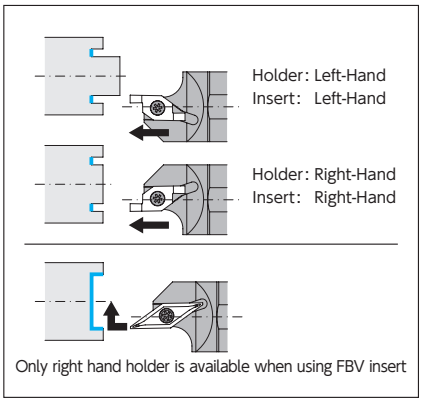




Figure-1

Right-Hand with FGV style shown

#### DS-FGV

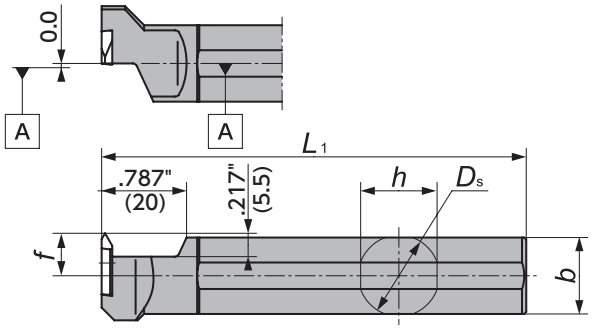
| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | $h$ (Inch) | $h$ (mm) | $b$ (Inch) | $b$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $f$ (Inch) | $f$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  FGV FBV | DS-FGV⅛16-012 | 1 | ○ | ○ | .630 | 16 | .591 | 15 | .591 | 15 | 3.150 | 80 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV⅛19 | 1 | ○ | ○ | 3/4 | 19.05 | .709 | 18 | .709 | 18 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV⅛20 | 1 | ○ | ○ | .787 | 20 | .748 | 19 | .748 | 19 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV⅛22 | 1 | ○ | ○ | .866 | 22 | .827 | 21 | .827 | 21 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV⅛25 | 1 | ○ | ○ | 1 | 25.4 | .965 | 24.5 | .965 | 24.5 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |

Inserts ➡K125
Cutting condition ➡K106・K123

# Threading

## TTP.. Series - Toolholders

### DS-TTP



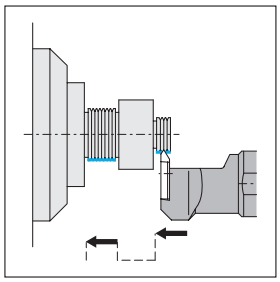



Figure-1

Left-Hand style shown
Takes Right-Hand insert.

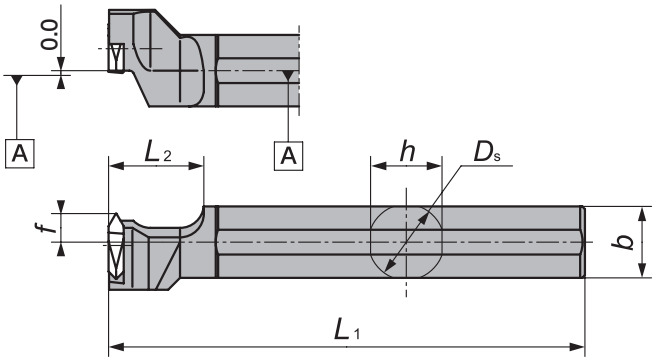
### DS-TTP

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TTP.. | DS-TTP℄16F | 1 | | ○ | .630 | 16.00 | .591 | 15 | .591 | 15 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP℄19 | 1 | | ● | 3/4 | 19.05 | .709 | 18 | .709 | 18 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP℄20 | 1 | | ● | .787 | 20.00 | .748 | 19 | .748 | 19 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP℄22 | 1 | | ● | .866 | 22.00 | .827 | 21 | .827 | 21 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP℄25 | 1 | | ● | 1 | 25.40 | .945 | 24 | .945 | 24 | 5.906 | 150 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |

Inserts ➡K137

## STTN.. Series - Toolholders

### DS-STT



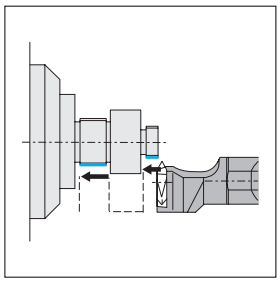



Figure-2

Left-Hand style shown
Takes Right-Hand insert.

### DS-STT℞℄

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TTMH3260 | DS-STT℞℄14F | 2 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6.0 | LR-S-4 × 9 | RLR-20S |
| | DS-STT℞℄15H | 2 | | ○ | 5/8 | 15.875 | 591 | 15 | 591 | 15 | 3.937 | 100 | .236 | 6.0 | LR-S-4 × 9 | RLR-20S |
| | DS-STT℞℄16X* | 2 | | ○ | .630 | 16.000 | 591 | 15 | 591 | 15 | 3.346 | 85 | .236 | 6.0 | LR-S-4 × 9 | RLR-20S |

Inserts ➡K140

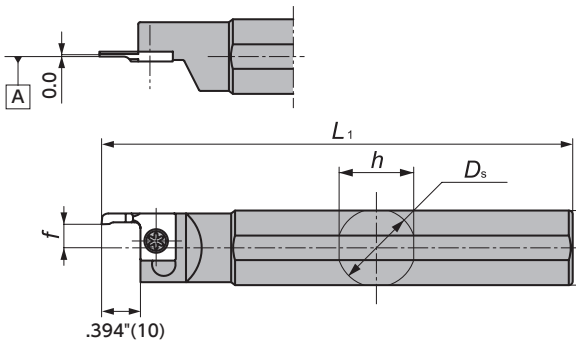
● : Stock ○ : 1-2 week delivery

Cutting condition ➡K130

## ID Boring

### LBM.. Series - Toolholders

#### DS-LBMB



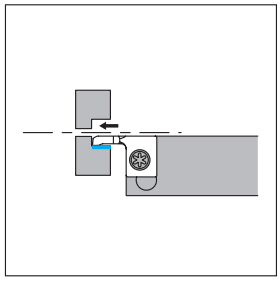



Figure-1

Left-Hand style shown

#### LBMAR / CH-TTPL

| Gage Insert | Item Number | Figure | Stock | Ds (Inch) | Ds (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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 ➡K155
Cutting condition ➡K152

## Interchangeable Tooling

### CSV.. Series - Toolholders

#### DS-CSVL

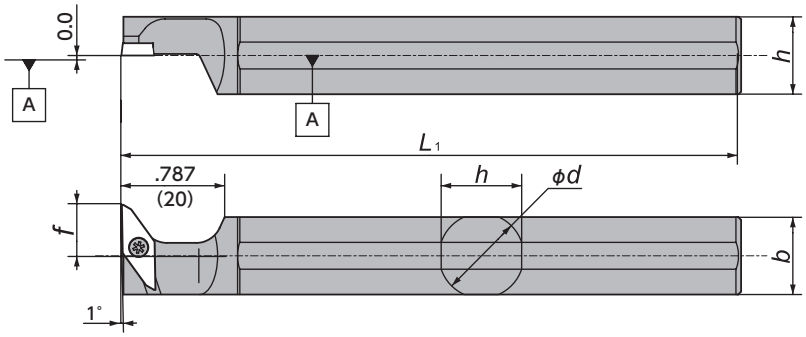



Figure-1

Left-Hand style shown
Takes right-hand inserts

#### DS-CSVL (Takes right-hand insert)

| Gage Insert | Item Number | Figure | Stock R | Stock L | Ds (Inch) | Ds (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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 ➡J38

# DS Sleeve

## Features

WATCH ON YouTube

- Prevents coolant and chips from damaging live tool stations
- Accepts DS Series holders to perform various back working
- Designed exclusively for 22mm(.886") round shank stations
- Compatible with 16mm(.630") round shank DS Series holders

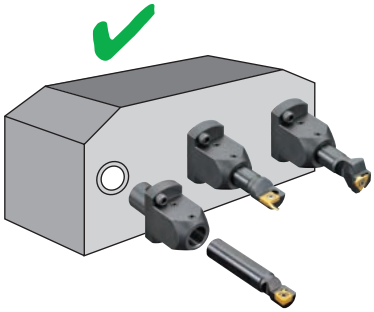


## First Recommendation for Turning




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**

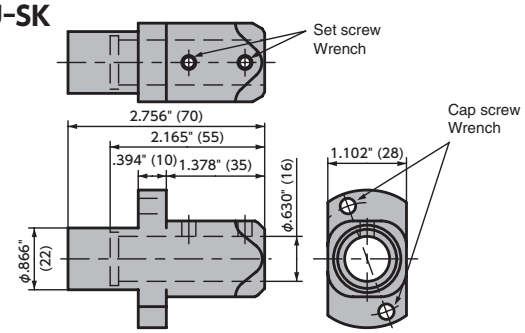


*Stop coolant and chips from damaging live tool stations.*

By using the DS Sleeve, you can use the DS Series holders without any worry about damaging live stations

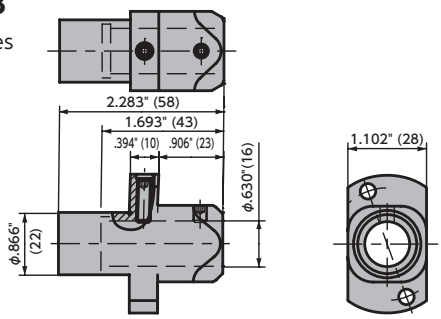
## For Back 4-spindle unit

### ■SS-DSU-SK



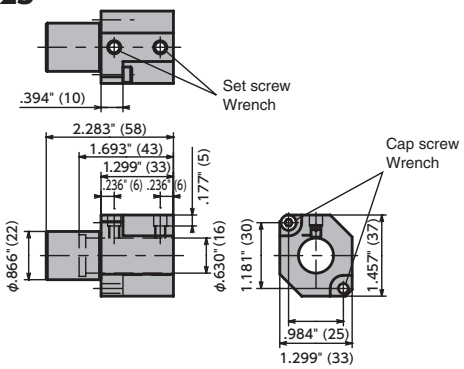

### ■SS-DSU-L23

For DS-ACH series




## For Back 8-spindle unit

### ■SS-DSU-B8L23




| 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<br>SS0515 | LW-2.5 | For DS-ACH Series |
| SS-DSU-B8L23 | ● | CS0415 | LW-3 | SS0506 | LW-2.5 | |

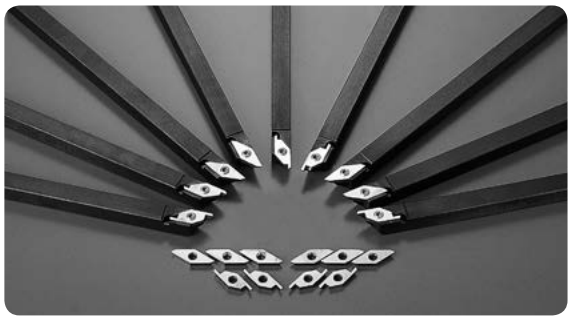
➡L27

● : 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

**CSV toolholder**



**CSVF**



Front turning

**CSVT**



Threading

**CSVB**



Back turning

**CSVC**

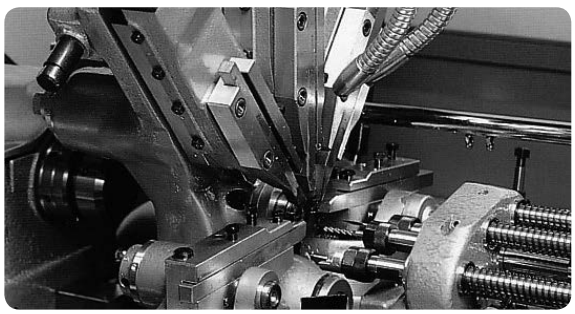


Cut-off

**CSVG**



Grooving



- Holders for Cam-style machine also available

# CSV Series - Toolholders

**Best for up to .200" diameter material**

## CSV-NC

For Gang-style machine

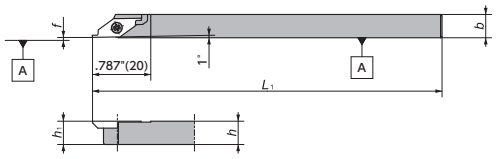



Figure-1

Right-Hand style shown

## CSV

For Cam-style machine

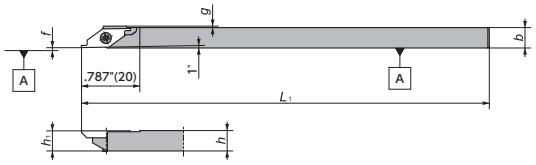



Figure-2

Right-Hand style shown

## DS-CSVL

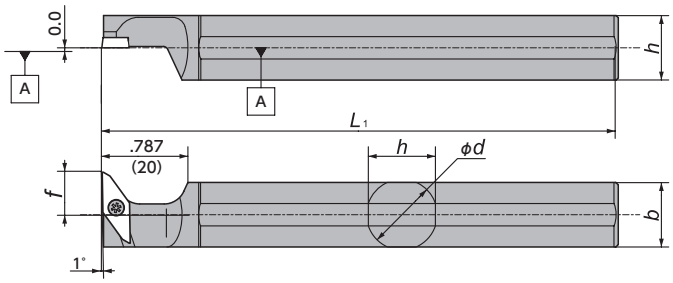



Figure-3

Left-Hand style shown
Takes right-hand inserts

# CSV Series - Toolholders

## ■CSV R/L / CSV R/L-NC

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11.. | CSVR/L06-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 |
| | CSVR/L08-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 |
| | CSVR/L08NC | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08NC-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 |
| | CSVR/L10GXNC | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L10NC | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12NC | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07GX | 2 | ○ | | .275 | 7 | .275 | 7 | .275 | 7 | 3.346 | 85 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07 | 2 | ○ | ● | .275 | 7 | .275 | 7 | .275 | 7 | 5.512 | 140 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08GX | 2 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08 | 2 | ● | ● | .315 | 8 | .315 | 8 | .315 | 8 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L095 | 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 |
| | CSVR/L10 | 2 | ● | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12GX | 2 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12 | 2 | ● | | .472 | 12 | .472 | 12 | .472 | 12 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |

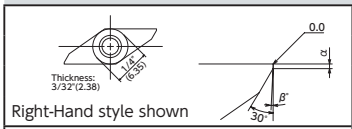
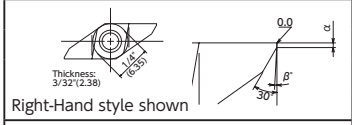
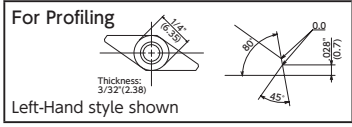
## ■DS-CSVL (Takes right-hand insert)

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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

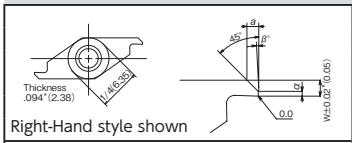
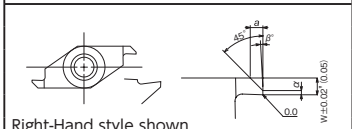
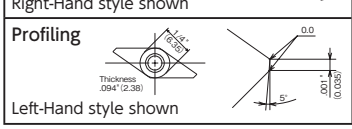
### ■CSVF Mirror finish

| Shape | Item Number | Chip-breaker | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | Edge Geometry (α × β°) (Inch) | Edge Geometry (α × β°) (mm) | Coated Carbide DT4 R | DT4 L | VM1 R | VM1 L | ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | CSVF11F[R/L]V (M) | No | – | – | .012 × 5° | 0.3 × 5° | | | ○ | ○ | | |
| | CSVF11F[R/L]V-A (M) | No | – | – | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVF11F[R/L]V-M (M) | No | – | – | .006 × 2° | 0.15 × 2° | ● | | ● | ● | ○ | |
| | CSVF11F[R/L]V-C (M) | No | – | – | .006 × 5° | 0.15 × 5° | | | ○ | | | |
|  Right-Hand style shown | CSVF11F[R/L]VB (M) | Yes | .118 | 3 | .012 × 5° | 0.3 × 5° | | | ● | ○ | | |
| | CSVF11F[R/L]VB-A (M) | Yes | .118 | 3 | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVF11F[R/L]VB-M (M) | Yes | .118 | 3 | .006 × 2° | 0.15 × 2° | ● | | ● | ● | ○ | |
| | CSVF11F[R/L]VB-C (M) | Yes | .118 | 3 | .006 × 5° | 0.15 × 5° | | | ○ | | | |
| For Profiling  Left-Hand style shown | CSVF11F[R/L]VX (M) | No | – | – | | | | | | ○ | | |

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

## Back turning

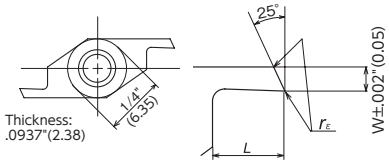
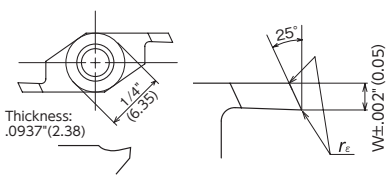
### ■CSVB Mirror finish

| Shape | Item Number | Chip-breaker | Length of Blade (Inch) | Length of Blade (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | W (Inch) | W (mm) | Edge Geometry (α × β°) (Inch) | Edge Geometry (α × β°) (mm) | Coated Carbide DT4 R | DT4 L | VM1 R | VM1 L | ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | CSVB11F[R/L]V (M) | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 5° | 0.3 × 5° | | | ○ | ○ | | |
| | CSVB11F[R/L]V-A (M) | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVB11F[R/L]V-M (M) | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 2° | 0.15 × 2° | ● | | ● | ○ | ○ | |
| | CSVB11F[R/L]V-C (M) | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 5° | 0.15 × 5° | | | ○ | | | |
| | CSVB11F[R/L]V12 (M) | No | .031 | 0.8 | .079 | 2.0 | .047 | 1.20 | .012 × 5° | 0.3 × 5° | | | ○ | | | |
| | CSVB11F[R/L]V14 (M) | No | .039 | 1.0 | .079 | 2.0 | .055 | 1.40 | .012 × 5° | 0.3 × 5° | | | ○ | | | |
|  Right-Hand style shown | CSVB11F[R/L]VB (M) | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 5° | 0.3 × 5° | | | ○ | | | |
| | CSVB11F[R/L]VB-A (M) | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVB11F[R/L]VB-M (M) | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 2° | 0.15 × 2° | ● | | ● | ○ | ○ | |
| | CSVB11F[R/L]VB-C (M) | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 5° | 0.15 × 5° | | | ○ | | | |
| | CSVB11F[R/L]VB12 (M) | Yes | .031 | 0.8 | .079 | 2.0 | .047 | 1.20 | .012 × 2° | 0.3 × 5° | | | ○ | | | |
| | CSVB11F[R/L]VB14 (M) | Yes | .039 | 1.0 | .079 | 2.0 | .055 | 1.40 | .012 × 2° | 0.3 × 5° | | | ○ | | | |
| Profiling  Left-Hand style shown | CSVB11F[R/L]VX (M) | No | – | – | – | – | – | – | | | | | | ○ | | |

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

## Cut-off

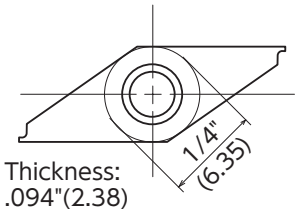
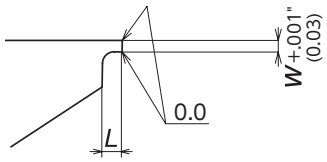
### ■CSVC Mirror finish

| Shape | Item Number | Chip-breaker | Max. Cut-off Dia. φD (Inch) | Max. Cut-off Dia. φD (mm) | W (Inch) | W (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | VM1 R | VM1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | CSVC11F[R/L]V06 (M) | No | .118 | 3.0 | .024 | 0.6 | .079 | 2.0 | 0 | 0.0 | ○ | |
| | CSVC11F[R/L]V07 (M) | No | .157 | 4.0 | .028 | 0.7 | .098 | 2.5 | 0 | 0.0 | ● | ● |
| | CSVC11F[R/L]V08 (M) | No | .157 | 4.0 | .031 | 0.8 | .098 | 2.5 | 0 | 0.0 | ○ | ○ |
| | CSVC11F[R/L]V09 (M) | No | .157 | 4.0 | .035 | 0.9 | .098 | 2.5 | 0 | 0.0 | ○ | |
| | CSVC11F[R/L]V10 (M) | No | .197 | 5.0 | .039 | 1.0 | .118 | 3.0 | 0 | 0.0 | ● | ● |
| | CSVC11F[R/L]V13 (M) | No | .197 | 5.0 | .051 | 1.3 | .118 | 3.0 | 0 | 0.0 | ● | ○ |
| | CSVC11F[R/L]V15 (M) | No | .197 | 5.0 | .059 | 1.5 | .118 | 3.0 | 0 | 0.0 | ○ | ○ |
|  Right-Hand style shown | CSVC11F[R/L]VB06 (M) | Yes | .118 | 3.0 | .024 | 0.6 | .079 | 2.0 | 0 | 0.0 | ○ | |
| | CSVC11F[R/L]VB07 (M) | Yes | .157 | 4.0 | .028 | 0.7 | .098 | 2.5 | 0 | 0.0 | ● | |
| | CSVC11F[R/L]VB08 (M) | Yes | .157 | 4.0 | .031 | 0.8 | .098 | 2.5 | 0 | 0.0 | ○ | |
| | CSVC11F[R/L]VB09 (M) | Yes | .157 | 4.0 | .035 | 0.9 | .098 | 2.5 | 0 | 0.0 | ○ | |
| | CSVC11F[R/L]VB10 (M) | Yes | .197 | 5.0 | .039 | 1.0 | .118 | 3.0 | 0 | 0.0 | ● | |
| | CSVC11F[R/L]VB13 (M) | Yes | .197 | 5.0 | .051 | 1.3 | .118 | 3.0 | 0 | 0.0 | ○ | |
| | CSVC11F[R/L]VB15 (M) | Yes | .197 | 5.0 | .059 | 1.5 | .118 | 3.0 | 0 | 0.0 | ○ | |

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

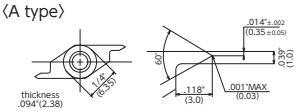
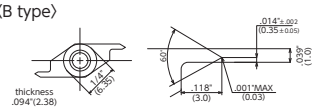
# Grooving

## ■CSVG Mirror finish

| Shape | Item Number | Chip-breaker | Groove Width W (Inch) | Groove Width W (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide VM1 R | Coated Carbide VM1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Thickness: .094"(2.38) | CSVG11F☒V025 Ⓜ | No | .010 | 0.25 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V030 Ⓜ | No | .012 | 0.30 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V035 Ⓜ | No | .014 | 0.35 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V040 Ⓜ | No | .016 | 0.40 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V045 Ⓜ | No | .018 | 0.45 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V050 Ⓜ | No | .020 | 0.50 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V055 Ⓜ | No | .022 | 0.55 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V060 Ⓜ | No | .024 | 0.60 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V065 Ⓜ | No | .026 | 0.65 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V070 Ⓜ | No | .028 | 0.70 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V075 Ⓜ | No | .030 | 0.75 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | ○ |
| | CSVG11F☒V080 Ⓜ | No | .031 | 0.80 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
|  | CSVG11F☒V085 Ⓜ | No | .033 | 0.85 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V090 Ⓜ | No | .035 | 0.90 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V095 Ⓜ | No | .037 | 0.95 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | ○ |
| | CSVG11F☒V100 Ⓜ | No | .039 | 1.00 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V110 Ⓜ | No | .043 | 1.10 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V120 Ⓜ | No | .047 | 1.20 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | ○ |
| | CSVG11F☒V130 Ⓜ | No | .051 | 1.30 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |
| | CSVG11F☒V140 Ⓜ | No | .055 | 1.40 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |
| Right-Hand style shown | CSVG11F☒V150 Ⓜ | No | .059 | 1.50 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |

# Threading

## ■CSVT Mirror finish

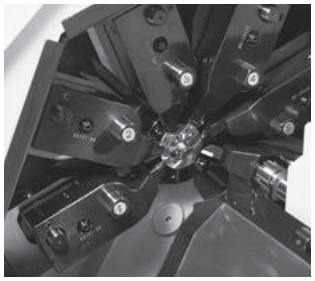
| Shape | Item Number | Chip-breaker | $r_\varepsilon$ (TPI) | $r_\varepsilon$ (mm) | Pitch (TPI) | Pitch (mm) | Coated Carbide VM1 R | Coated Carbide VM1 L |
|---|---|---|---|---|---|---|---|---|
| 〈A type〉  Right-Hand style shown | CSVT11F☒P60-035A Ⓜ | No | -R.001 | R0.03 MAX | 127 - 51 | 0.2 - 0.5 | ● | ● |
| 〈B type〉  Right-Hand style shown | CSVT11F☒P60-035B Ⓜ | No | -R.001 | R0.03 MAX | 127 - 51 | 0.2 - 0.5 | ● | ● |

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

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

# CTPS Series

## Tooling for Radial-style tool station



### Features

- Best fit for Radial-style tool station.
- Interchangeable tools

SVACR1010X11N
Designed for Radial-style tool station

Front turning

**CTPS Series**



Back turning | Cut-off | Grooving | Threading

## CTPS Series - Toolholders

### CTPS

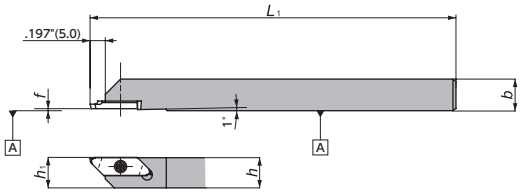



Figure-1

Right-Hand style shown

### CTPSR-SUB Max. Cut-off Dia. .157" (4.0㎜)

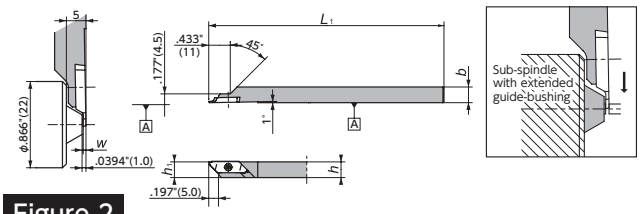



Figure-2

Right-Hand style shown

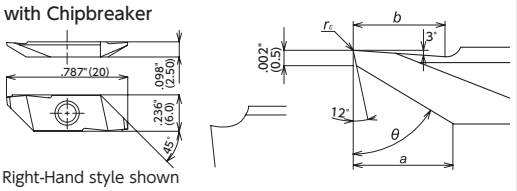
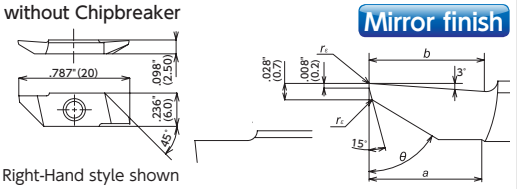
### ■CTPS / CTPSR

| Gage Insert | Item Number | Figure | Stock R | Stock L | Max. Cut-off Dia. ϕD (Inch) | Max. Cut-off Dia. ϕD (㎜) | h (Inch) | h (㎜) | b (Inch) | b (㎜) | $h_1$ (Inch) | $h_1$ (㎜) | $L_1$ (Inch) | $L_1$ (㎜) | f (Inch) | f (㎜) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTPS.. | **CTPSR06-IN** | 1 | ● | | **.394** | **10.0** | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR08-IN** | 1 | ● | | **.394** | **10.0** | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR10** | 1 | ○ | | **.394** | **10.0** | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR12** | 1 | ○ | | **.394** | **10.0** | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| CTPS-001 | **CTPSR08-SUB04** | 2 | ○ | | **.157** | **4.0** | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | | — | LR1S-2.5 × 5 | CLR-15S |

## CTPS Series - Inserts

### Back turning

#### ■TBPS

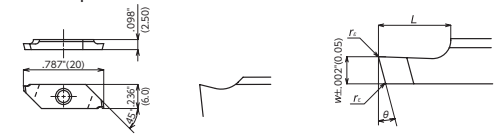
| Shape | Item Number | Chip-breaker | Length of Blade a (Inch) | Length of Blade a (㎜) | Max Depth of Cut b (Inch) | Max Depth of Cut b (㎜) | θ | $r_ε$ (Inch) | $r_ε$ (㎜) | Coated Carbide VM1 | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| with Chipbreaker  Right-Hand style 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

# Cut-off

## ■CTPS

| Shape | Item Number | Chip-breaker | Max. Cut-off Dia. $\phi D$ (Inch) | (mm) | $w$ (Inch) | (mm) | $L$ (Inch) | (mm) | $\theta$ | $r_\varepsilon$ (Inch) | (mm) | Coated Carbide VM1 R | VM1 L | ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| with chipbraker | 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 | ○ | | ○ | |
| without chipbraker Mirror finish | 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 | ○ | | ○ | |



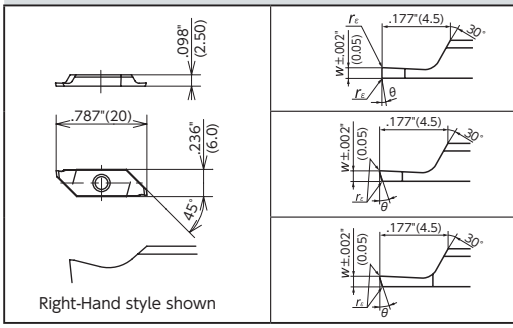
Right-Hand style shown



Right-Hand style shown

## ■CTPS-001

| Shape | Item Number | Chip-breaker | Max. Cut-off Dia. $\phi D$ (Inch) | (mm) | $w$ (Inch) | (mm) | $\theta$ | $r_\varepsilon$ (Inch) | (mm) | Coated Carbide ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | ○ | |

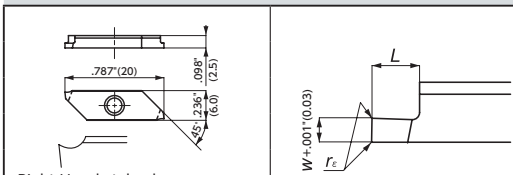


Right-Hand style shown

# Grooving

## ■GTPS

| Shape | Item Number | Groove Width $w$ (Inch) | (mm) | Max Depth of Cut (Inch) | (mm) | $r_\varepsilon$ (Inch) | (mm) | $L$ (Inch) | (mm) | Coated Carbide VM1 | ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | ○ | ○ |

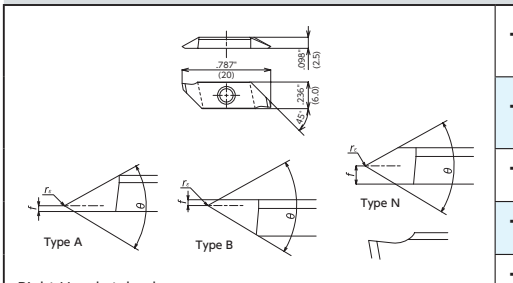


Right-Hand style shown
☆θ shows the angle when the holder is set.

# Threading

## ■TTPS - Threading

| Shape | Item Number | Type | $\theta$ | $f$ (Inch) | (mm) | $r_\varepsilon$ (Inch) | (mm) | Pitch (TPI) | (mm) | Coated Carbide 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 | ○ | ○ |

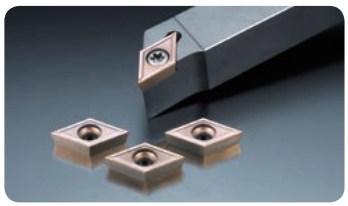


Right-Hand style shown

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

# WP Series

## Wiper insert with ISO style



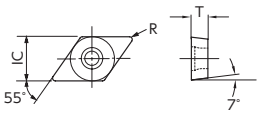
## Features

- 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

WATCH ON YouTube

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

## ■DCGT-WP(55°)〈TFD style〉 ＊Can be used in SDJC and SDUC toolholders



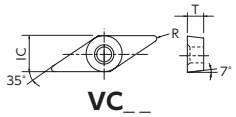

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Hardened Material | H |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

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | PVD Coated Q15 | PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | KM1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW wiper insert | DCGT 32.502 AM3-WP | TFD 11FR05AM3 | 3/8 | .002 | | | | | | | ● | | | | | |
| | DCGT 32.506 AM3-WP | TFD 11FR15AM3 | 3/8 | .006 | | | | | | | ● | | | | | |
| wiper insert | DCGT 21.502 R/L S-WP | TFD 07FR/L05 | 1/4 | .002 | | | | | | R | | | | Ⓡ | ⓇⓁ | |
| | DCGT 21.506 R/L S-WP | TFD 07FR/L15 | 1/4 | .006 | | | | | | R | | | | | ⓇⓁ | |
| | DCGT 32.502 R/L S-WP | TFD 11FR/L05 | 3/8 | .002 | | | | | | R | | | | Ⓡ | Ⓡ | |
| | DCGT 32.506 R/L S-WP | TFD 11FR/L15 | 3/8 | .006 | | | | | | R | | | | | Ⓡ | |
| wiper insert | DCGT 21.502 R/L U-WP | TFD 07FR/L05U | 1/4 | .002 | | | | | | Ⓡ | | | | Ⓡ | Ⓡ | |
| | DCGT 21.506 R/L U-WP | TFD 07FR/L15U | 1/4 | .006 | | | | | | Ⓡ | | | | | Ⓡ | |
| | DCGT 32.502 R/L U1-WP | TFD 11FR/L05U1 | 3/8 | .002 | | | | | | Ⓡ | | | | Ⓡ | Ⓡ | |
| wiper insert | DCGT 32.506 R/L U1-WP | TFD 11FR/L15U1 | 3/8 | .006 | | | | | | Ⓡ | | | | | Ⓡ | |
| wiper insert | 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 |




VC__

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

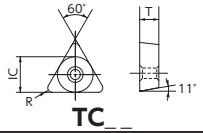
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Cermet XT3 | Cermet C7X | Cermet XN4 | PVD Coated Q15 | PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | KM1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| wiper insert | VCGT 2202 R/L S-WP | TFV 11FR/L05SX | 1/4 | .002 | | | | | | | | | | R | Ⓡ | |
| | VCGT 2204 R/L S-WP | TFV 11FR/L10SX | 1/4 | .004 | | | | | | | | | | R | Ⓡ | |
| wiper insert | VCGT 2202 R/L U-WP | TFV 11FR/L05U | 1/4 | .002 | | | | | | | | | | Ⓡ | Ⓡ | |
| | VCGT 2204 R/L U-WP | TFV 11FR/L10U | 1/4 | .004 | | | | | | | | | | Ⓡ | Ⓡ | |

## ■TCGT-WP(60°)〈TFT style〉 ＊Can be used in STAC toolholders

| (inch) | IC | T |
|---|---|---|
| TC..21 | 1/4 | 3/32 |

| (inch) | IC | T |
|---|---|---|
| TC..73 | 7/32 | 3/32 |




TC__

| | | |
|---|---|---|
| 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 XT3 | Cermet C7X | Cermet XN4 | PVD Coated Q15 | PVD Coated C7Z | Carbide PVD Coated QM3 | Carbide PVD Coated DT4 | Carbide PVD Coated DM4 | Carbide PVD Coated TM4 | Carbide PVD Coated VM1 | Carbide PVD Coated ZM3 | KM1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| wiper insert | TCGT 7302 R/L S-WP | TFT 09FR/L05 | .002 | 0.05 | | | | | | | | | | | Ⓡ | |
| | TCGT 7306 R/L S-WP | TFT 09FR/L15 | .006 | 0.15 | | | | | | | | | | | Ⓡ | |
| | TCGT 21.502 R/L S-WP | TFT 11FR/L05 | .002 | 0.05 | | | | | | | | | | | Ⓡ | |
| | TCGT 21.506 R/L S-WP | TFT 11FR/L15 | .006 | 0.15 | | | | | | | | | | | Ⓡ | |
| wiper insert | TCGT 7302 R/L U-WP | TFT 09FR/L05U | .002 | 0.05 | | | | | | | | | | | Ⓡ | |
| | TCGT 7306 R/L U-WP | TFT 09FR/L15U | .006 | 0.15 | | | | | | | | | | | Ⓡ | |
| | TCGT 21.502 R/L U1-WP | TFT 11FR/L05U1 | .002 | 0.05 | | | | | | | | | | | Ⓡ | |
| wiper insert | TCGT 21.506 R/L U1-WP | TFT 11FR/L15U1 | .006 | 0.15 | | | | | | | | | | | Ⓡ | |

# UL Chipbreaker

## 6 corner insert for Swiss machines

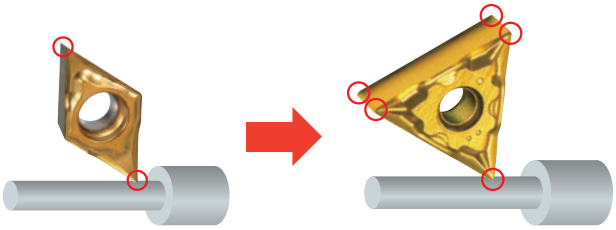


## Features

WATCH ON YouTube

- First negative style insert designed for Swiss machines
- Less tool pressure and good chip control

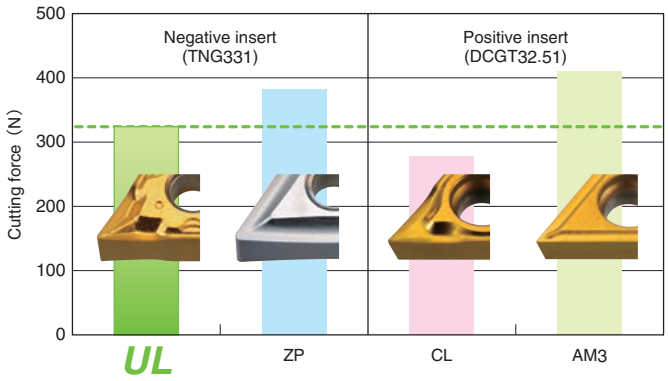
## Reduce Cost in Swiss Machining



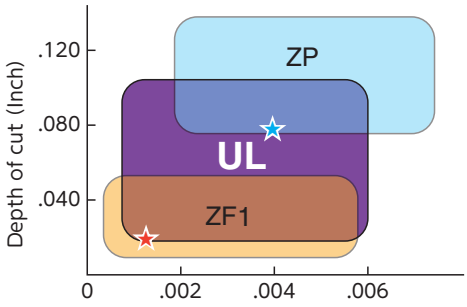
Positive insert with sharp cutting edge is required for Swiss machining.

With UL chipbreaker, negative insert provides sharp cutting edge AND more corners.

## Cuts Like Positive Inserts




## Covers a Wide Range of Cutting Conditions with Good Chip Control

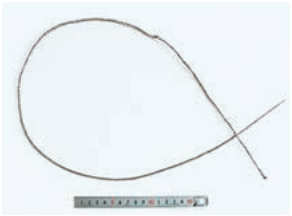



《304 SS》 260 SFM WET

★ .001 IPR .020" DOC



★ .004 IPR .079" DOC



## Toolholders for Swiss Machines





Available in ACH (Adjustable centerline height) toolholder

Holders ➡K60
Inserts ➡K62

# Shifted Toolholders

## Toolholders for extended guide-bushing

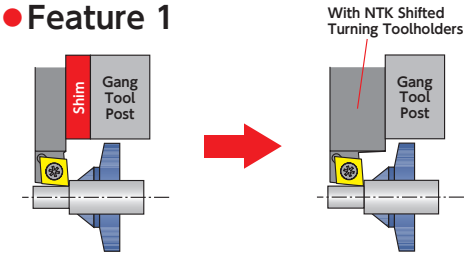


### Two Major Features

WATCH ON YouTube

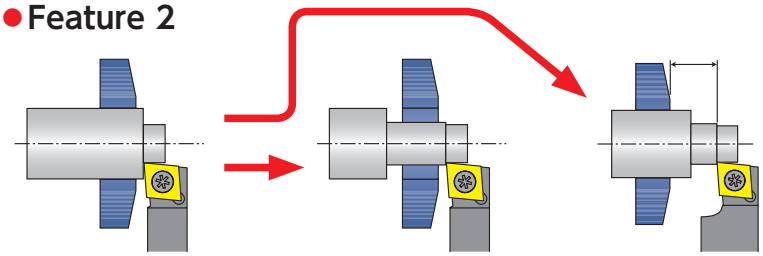
1. Eliminate shims for turning holders when extended guide bushing is used (especially in thread whirling)
2. Performs finish cut without retracting roughed section (bar) from guide bushing

### ●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

# SATURN DUO

## Face turning / grooving tools



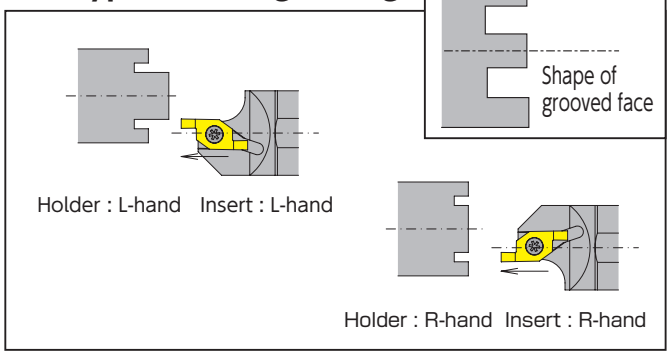
### Features

WATCH ON YouTube

- 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

### FGV type for face grooving

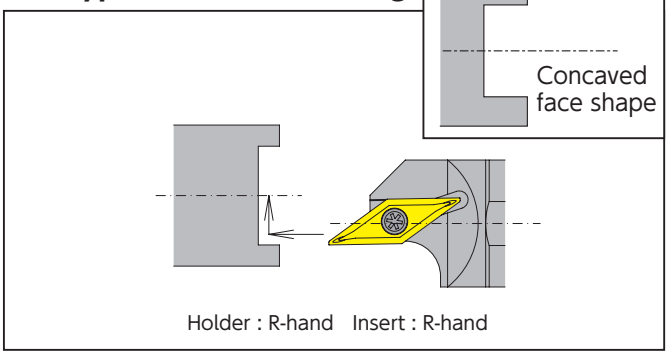
Target work shape




- 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

### FBV type for face machining

Target work shape




- Further improved face machining efficiency
- Minimum machining diameter of $\phi$ .315"

➡K122

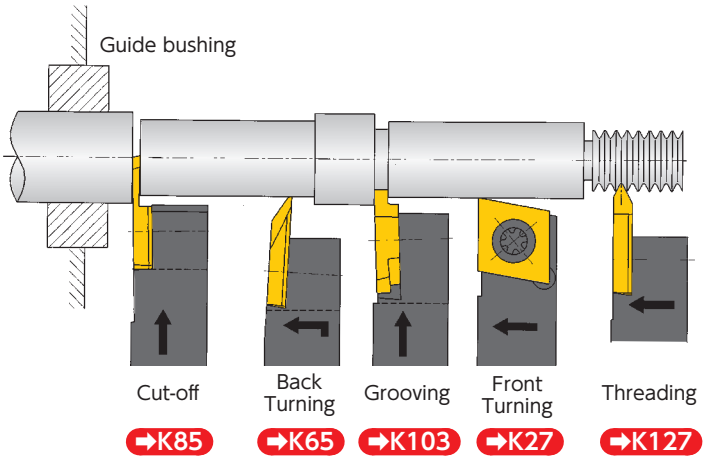
# K

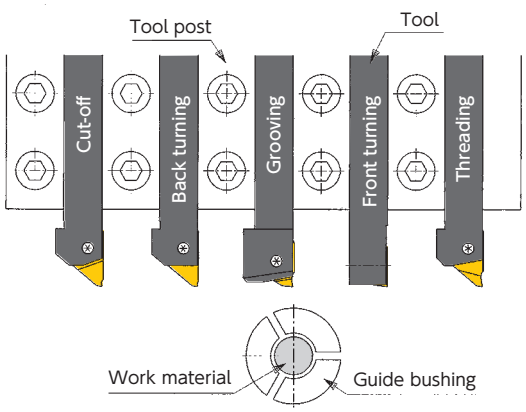


## Tooling for Swiss-type Lathes


- Tooling ····· K2
- Grade Introduction ····· K4
- Recommended Insert Grade and Cutting Conditions ····· K20
- Chipbreaker Introduction ····· K21

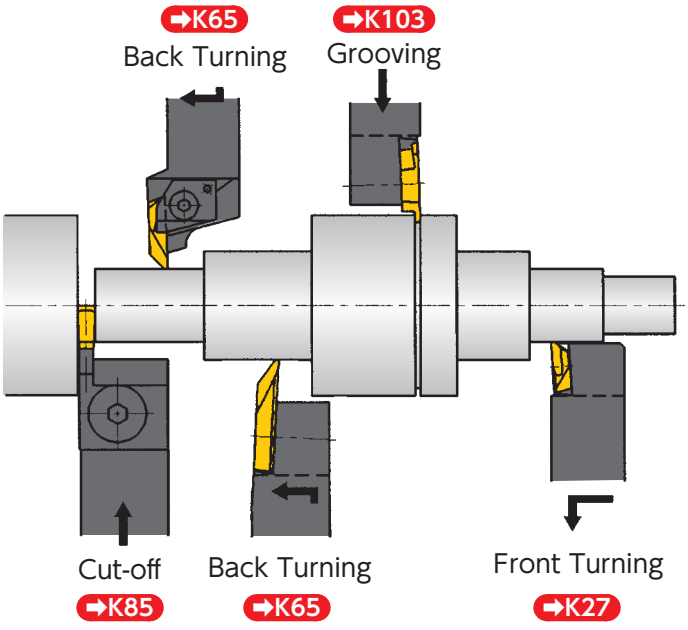
## Tooling example for a small CNC automatic lathe (gang type)

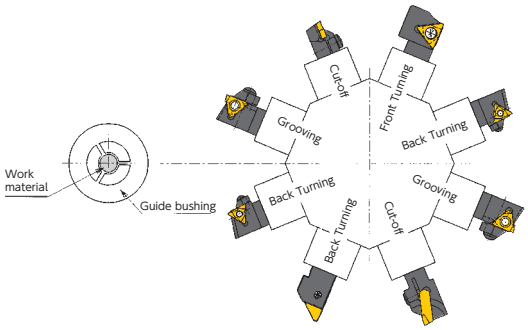



Tooling for gang type tool post

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

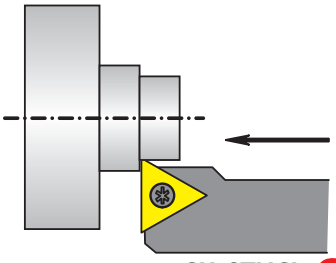


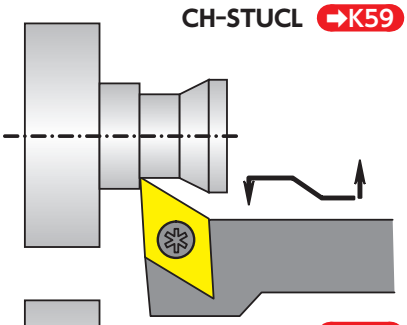

Tooling for turret type tool post

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

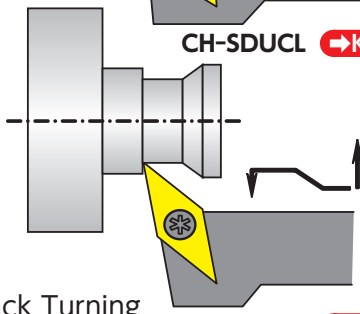
■Front Turning



CH-STUCL ➡K59

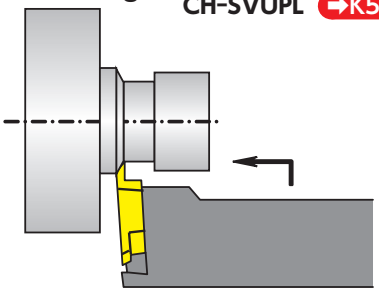


CH-SDUCL ➡K43



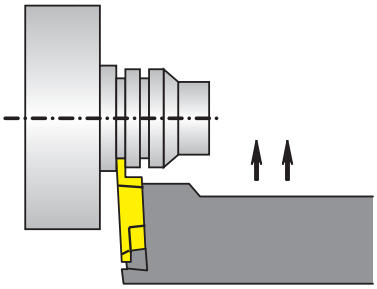
CH-SVUPL ➡K56

■back Turning



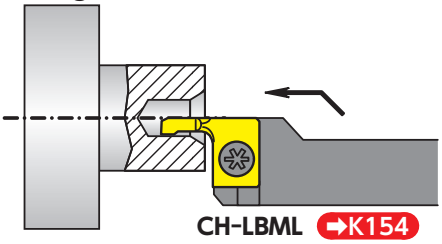
CH-GTTL ➡K82

■Grooving

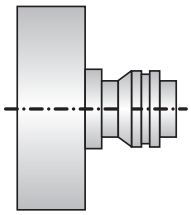


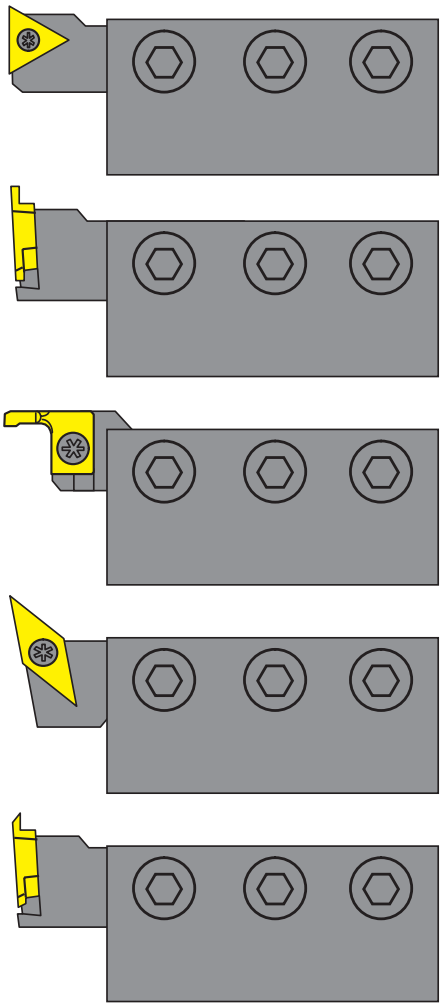
CH-GTTL ➡K112

■ID Boring



CH-LBML ➡K154





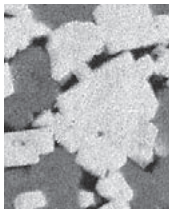
# Micro-grain Carbide and PVD/CVD-coated Carbide



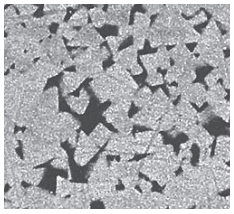
## Excellence in precision machining and machining of hard-to-cut materials

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

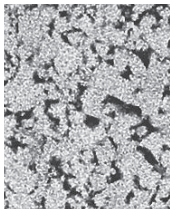
## Carbide grade



General carbide structure



Micro-grain carbide structure

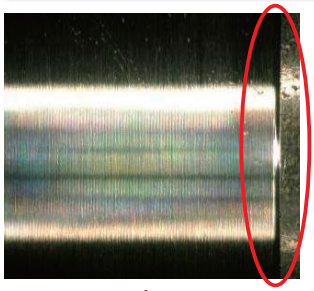


Super micro-grain carbide structure

## The result of intensive reseach and development for improving carbide grades

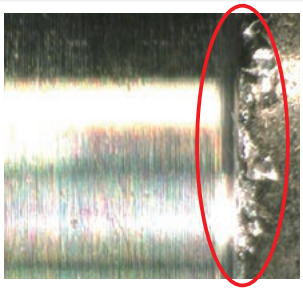
The NTK carbide grade series shows very stable performance under a wide range of conditions. NTK uses micro-grain carbide well balanced between wear resistance and toughness, as substrate.

**Features** Superior cutting performance



No burrs

Machined with our insert with a sharp cutting edge



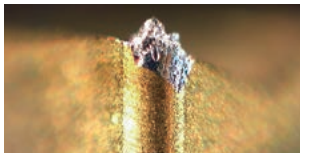
Burrs

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

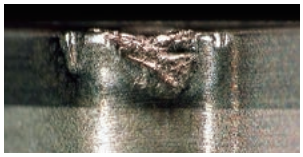
## Relentless pursuit of better cutting performance

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.

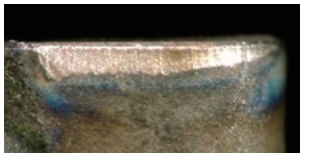
**Features** Precise analysis on insert wear patterns



Build-up edge



Chipping / fracture



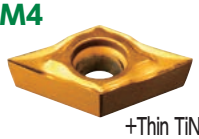
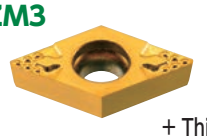
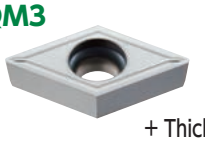
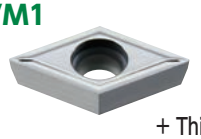
Flank wear



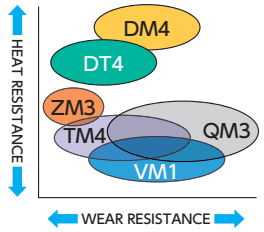
Wear on rake

## Continuous research on insert tool life

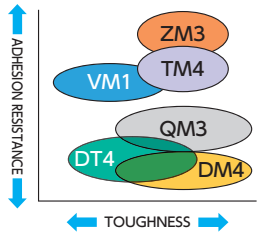
Damage to insert cutting edges varies depending on the machining process and the work material. There are various types of coatings that reduce such damages to prolong the tool life. NTK carbide series offers a variety of coated insert grades which have been developed to improve their resistance characteristics,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

| | Grade / Coating | Applications / Features | Physical properties* | | | | | | Applications map |
|---|---|---|---|---|---|---|---|---|---|
| | | | Density g/cm³ | Hardness HRA | Bending strength MPa | Young's modulus GPa | Thermal expansion coefficient X10⁻⁶/K | Thermal conductivity W/m・K | |
| PVD coated | **DM4**  Micro-grain carbide + Thick TiN-TiCN-TiAlN coat | P M S H<br>●Best oxidation resistance enable high temperature machining | 14.4 | 91.0 | 3000 | 580 | 5.8 | 63 | |
| | **DT4**  Micro-grain carbide + Thin TiN-TiCN-TiAlN coat | P M S H<br>●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<br>●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<br>●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<br>●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<br>●Best edge sharpness and good wear resistance | 14.8 | 92.0 | 2500 | 640 | 5.7 | 84 | |
| Uncoated | **KM1**  Micro-grain carbide | P M N<br>●Best for non-ferrous material with mirror finish | 14.8 | 92.0 | 2500 | 640 | 5.7 | 84 | |

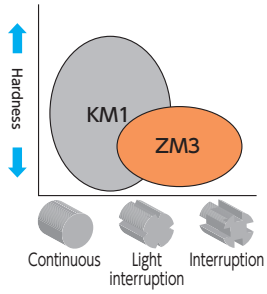
■Correlation chart 1




■Correlation chart 2



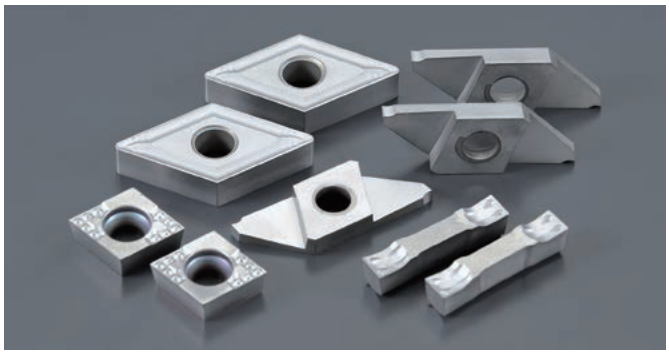

■Aluminum / Brass



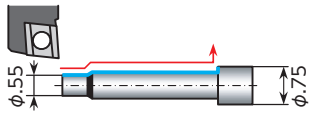

※For products with coating, the values of the base material are indicated.

# QM3

## Superb wear resistance and fracture resistance in interrupted cutting !



| Spindle | |
|---|---|
| 4135 | |
| 330 SFM | |
| .0012 IPR | |
| .008" DOC | |
| WET | |
| NTK : **QM3** | 600 pcs |
| Competitor's PVD-coated carbide | 300 pcs |



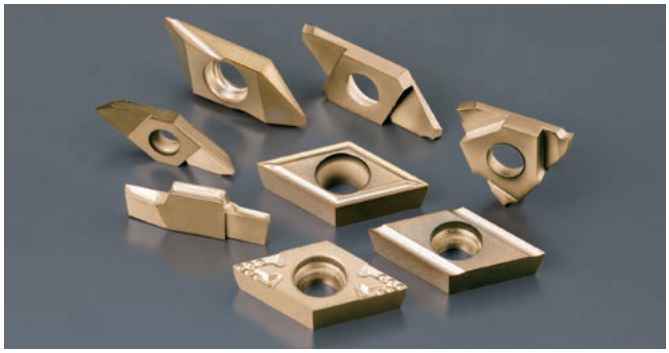

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Heat resistant alloys | Swiss-type lathes<br>Conventional lathes | Wear resistance |

### Features

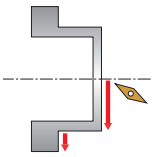
- ***Excellent toughness and wear resistance for wide speed range***
- ***Stable interrupted machining of steel***

# NEW DT4

## Excellent heat 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 |



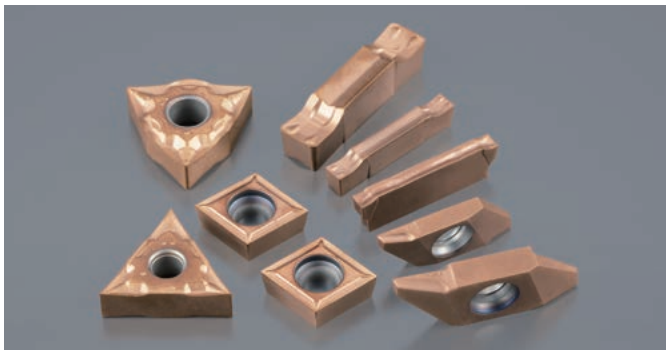
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Titanium alloys<br>● Stainless steels<br>● Alloy steels<br>● Carbon steels<br>● Heat resistant alloys | Swiss-type lathes | Oxidation<br>Heat resistance |

### Features

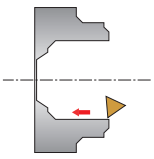
- ***Excellent oxidation resistance for Swiss-type lathes***

# NEW DM4

## Excellent oxidation resistance !



| Case | |
|---|---|
| Inco 718 | |
| 130 SFM | |
| .001 IPR | |
| .008" DOC | |
| WET | |
| NTK : **DM4** | 110 pcs |
| Competitor's PVD-coated carbide | 90 pcs |



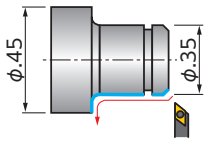
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Titanium alloys<br>● Stainless steels<br>● Alloy steels<br>● Carbon steels<br>● Heat resistant alloys | Conventional lathes<br>Swiss-type lathes | Oxidation<br>Heat resistance |

### Features

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

# TM4 Next generation standard insert grade for Swiss-type lathes !



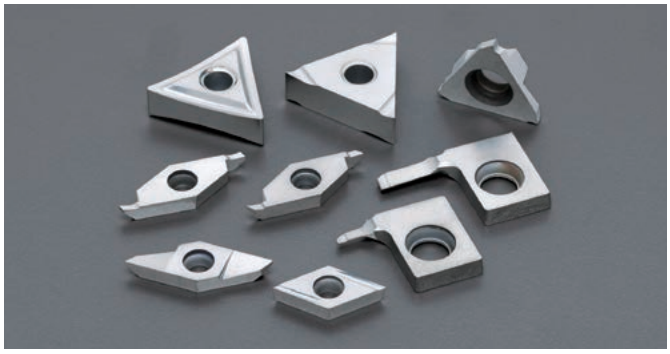
| Automobile parts | |
|---|---|
| 304 SS |   |
| 260 SFM | |
| .0008 IPR | |
| .047" DOC | |
| WET | |
| NTK : **TM4** | 950 pcs |
| Competitor's PVD-coated carbide | 500 pcs |

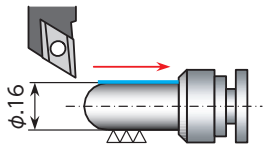
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels | Swiss-type lathes | Balance |

## Features

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

# VM1 High precision machining of small diameter parts !



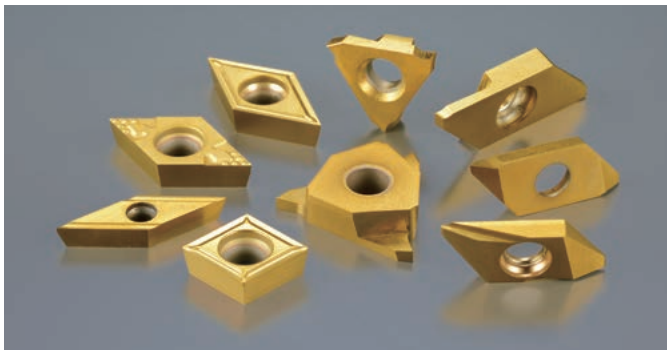
| Plug | |
|---|---|
| 12L14 |   |
| 460 SFM | |
| .0006 IPR | |
| .004" DOC | |
| WET | |
| NTK : **VM1** | 800–1000 pcs |
| Competitor's PVD-coated carbide | 150 pcs |

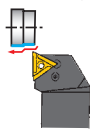
| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels | Swiss-type lathes | Edge sharpness |

## Features

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

# ZM3 The best selling grade 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 |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Non-ferrous materials | Swiss-type lathes<br>Conventional lathes | Adhesion resistance |

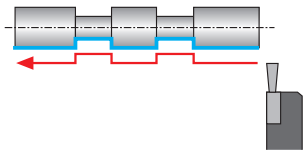
## Features

- ***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***

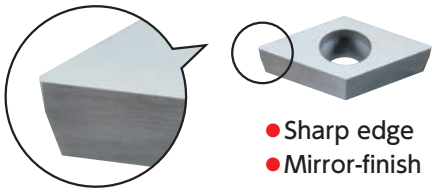
# KM1

## Longer tool life even for machining hard-to-cut materials !



| 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 |
|---|---|---|
| ● Aluminium<br>● Plastic<br>● Non-ferrous materials | Swiss-type lathes | Edge sharpness |



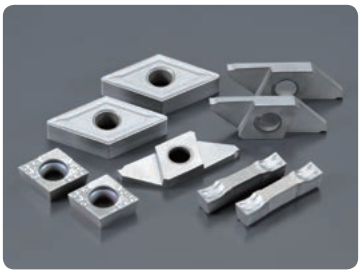
● Sharp edge
● Mirror-finish

## 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***

## PVD Coatings

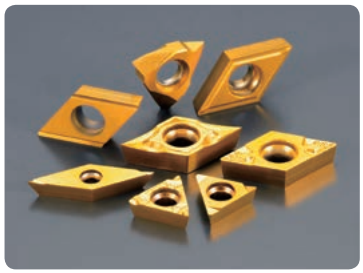
### QM3/Q15 Q-Coat



***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*

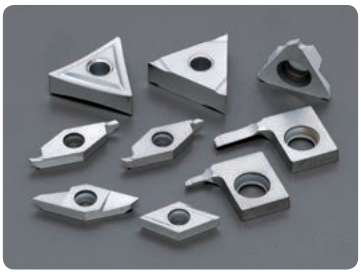
### DT4 DT-Coat




***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*

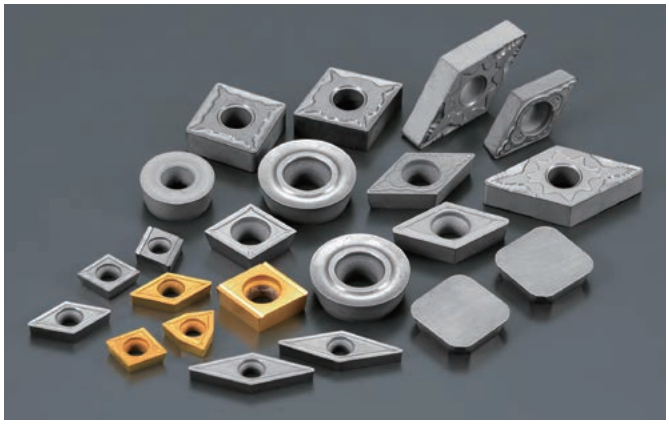
## Coating Specitications

| | 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 |

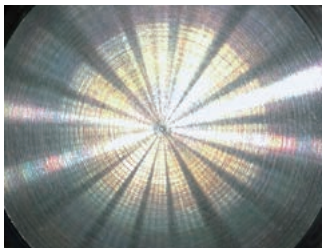
◎1st choice ○2nd choice

# Cermet / PVD-coated Cermet

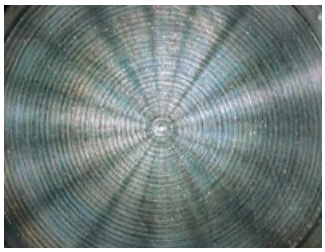
## Cermet series



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.



Surface finished with cermet

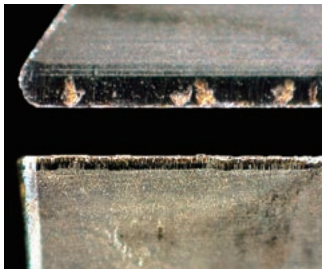


Surface finished with carbide

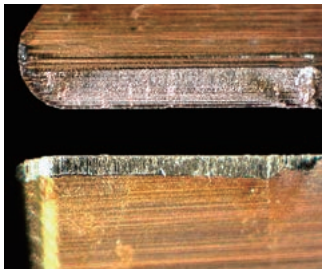
**Features**

### 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.



Cermet



Carbide

### High speed cutting

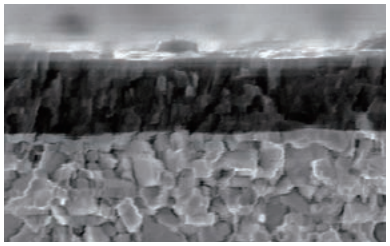
The main components, TiC and TiN, are more resistant to wear and oxidation at high temperature than WC (tungsten carbide), which is the main component of carbide tools. Because of excellent wear and oxidation resistance, cermet grades are less reactive with work materials and make stable high speed machining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

## PVD-coated cermet series



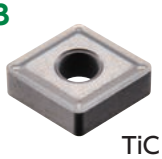
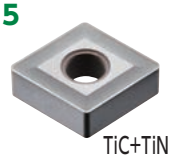
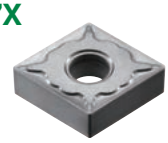


PVD TiN or TiCN coated cermet grades bring improved wear resistance. Since the coating layer does not contain any binder components, the coating maximizes the wear resistance of the titanium which delivers excellent performance and the tool life.



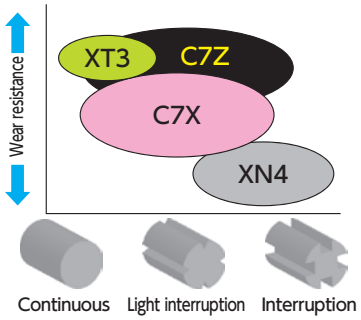

**Features**

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

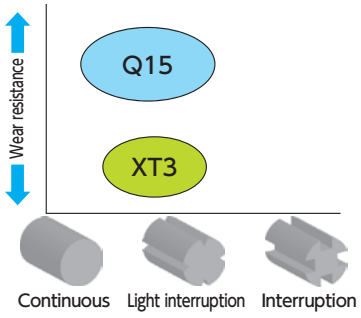
| Grade / Coating | Applications / Features | Density g/cm³ | Hardness HRA | Bending strength MPa | Young's modulus GPa | Thermal expansion coefficient X10⁻⁶/K | Thermal conductivity W/m・K |
|---|---|---|---|---|---|---|---|
| **XT3**  TiC+TiN base | P M K N<br>●Well balanced between wear resistance and toughness | 6.3 | 92.5 | 1,700 | 450 | 8.4 | 21 |
| **Q15**  TiC+TiN base+TiCN coat | P M K<br>●Superior wear resistance and toughness | 6.3 | 92.5 | 1,700 | 450 | 8.4 | 21 |
| **C7X**  TiCN base | P M K N<br>●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<br>●Perfect combination of heat resistance and toughness | 7.0 | 91.5 | 1,800 | 440 | 8.2 | 31 |
| **XN4**  TiN base | P M<br>●Excellent toughness | 5.9 | 91.5 | 1,900 | 450 | 8.9 | 42 |

Applications and ceramic property map

■ Steel




■ Ductile cast iron

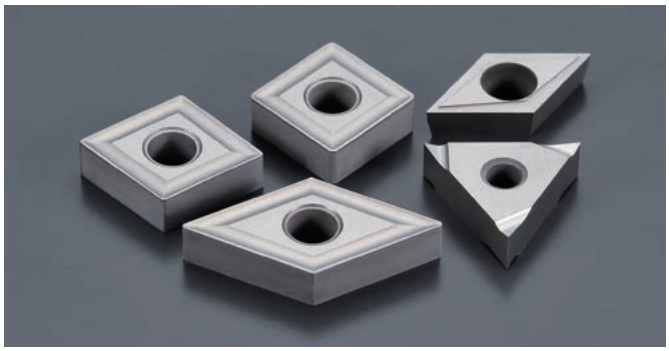


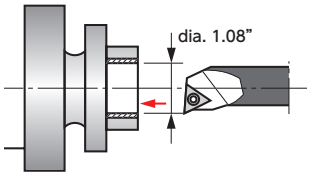

*For coated grades, the values of the base material are indicated.

## ■ Applications

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

# XT3 Well balanced combination of wear resistance and toughness !



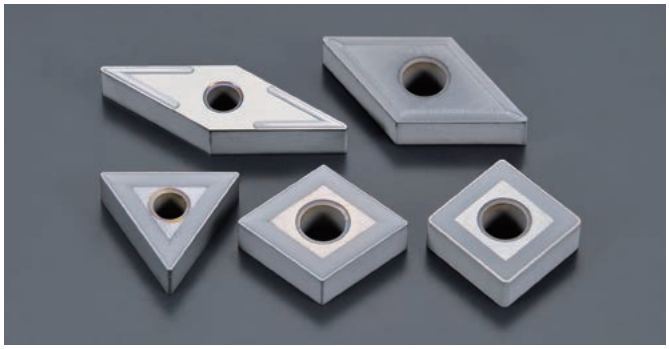
| Crank shaft | |
|---|---|
| 1049 |   |
| 250 SFM | |
| .002 IPR | |
| .001" DOC | |
| WET | |
| NTK : **XT3** | 100 pcs |
| Competitor's cermet | 60 pcs |

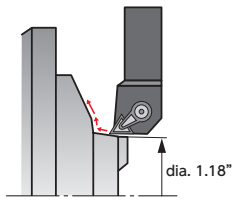
## Features

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

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron | Conventional lathes | Wear resistance |

# Q15 Coated cermet 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 |

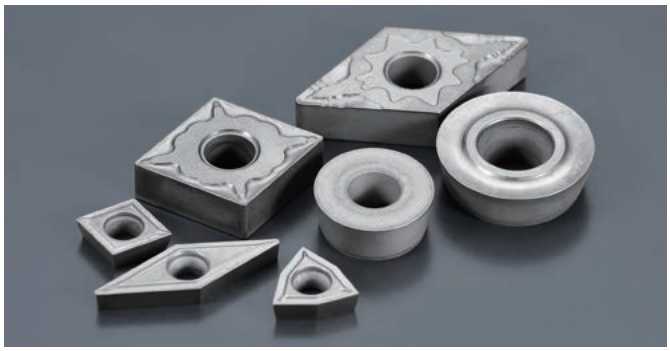
## Features

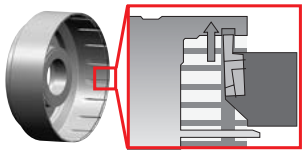
- *Further improved wear resistance and toughness from the TiCN-based coating*
- *The recommended grade for high-speed finishing of ductile cast iron*

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron<br>● Ductile cast iron | Conventional lathes | Wear resistance |

# C7X

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



| AT clutch | |
|---|---|
| SS |  |
| 800 SFM | |
| .0008-.0016 IPR | |
| .060" DOC | |
| WET | |
| NTK : **C7X** | 200 pcs |
| Competitor's cermet | 100 pcs |

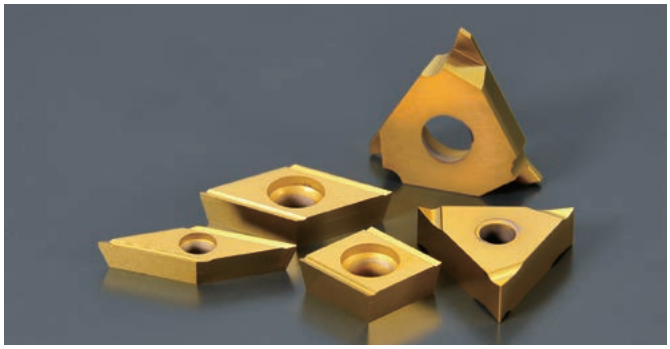
### Features

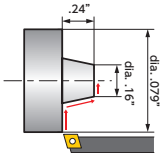
- *Overcomes the traditional weakness of conventional cermet grades with improved thermal shock resistance*
- *Excellent grade for grooving and bearing machining*

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron | Swiss-type lathes<br>Conventional lathes | Balance |

# C7Z

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



| Spring | |
|---|---|
| SS |  |
| 430 SFM | |
| .002 IPR | |
| .012" DOC | |
| WET | |
| NTK : **C7Z** | 1600 pcs |
| Competitor's cermet | 1200 pcs |

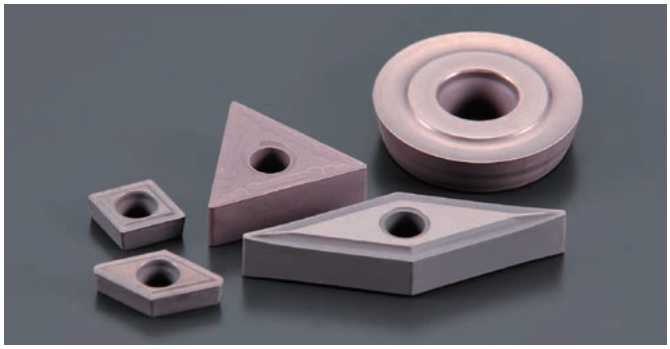
### Features

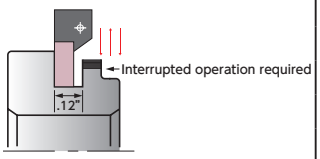
- *Further improvement in wear resistance and thermal shock resistance with a TiN-based coating*
- *Excellent performance in grooving and bearing machining*
- *The most recommended grade for high-speed machining of steel*

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels<br>● Cast iron | Swiss-type lathes<br>Conventional lathes | Balance |

# XN4

## Toughest cermet grade with excellent fracture resistance !



| Gear | |
|---|---|
| 5120H |  |
| 360 SFM | |
| .004 IPR | |
| | |
| WET | |
| NTK : **XN4** | 300 pcs |
| Competitor's cermet | 200 pcs |

### Features

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

| Best for | Optimized for | Excellent in |
|---|---|---|
| ● Carbon steels<br>● Stainless steels<br>● Alloy steels | Conventional lathes | Toughness |

# EZCUBE

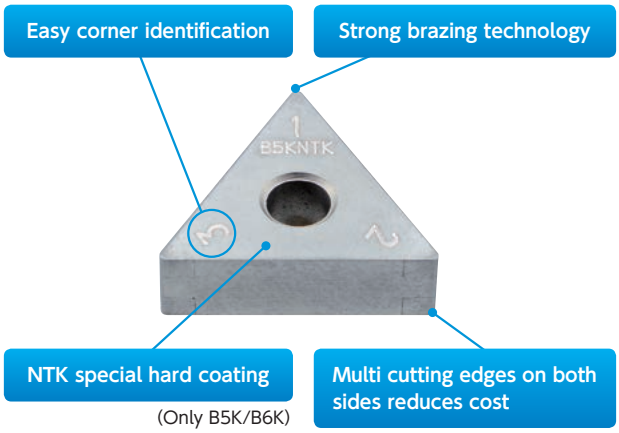
**Excellent performance with superb versatility at a low price !**



## CBN (Cubic Boron Nitride)

### Features

- ***Seven grades available to cover a variety of work materials***
- ***A wide selection in geometries***
- ***Multiple corners on both insert sides contributes to cost reduction***




● **NTK*EZCUBE* / EZ CUBE**

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

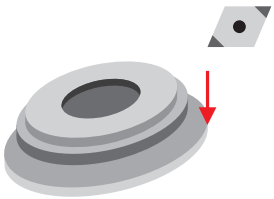
# B23

### Features

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

【Recommended cutting conditions】

| Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|
| Cast iron | Turning | Rough Semi finish | 1300–3300 | .004–.020 | .008–.080 | ○ | ● |
| Sintered alloy | Turning | Rough–Finish | 150–1000 | .001–.008 | .002–.020 | ● | ● |

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

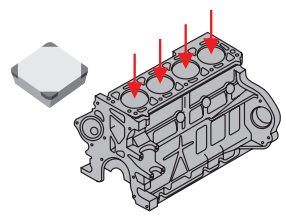
# B30

### Features

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

【Recommended cutting conditions】

| Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|
| Cast iron | Turning | Semi finish Finish | 1300–3300 | .004–.020 | .008–.080 | ○ | ● |

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

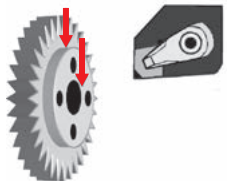
# NEW B6K/B36

## 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 |

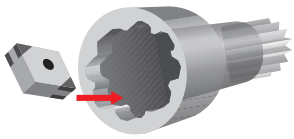
# B40

## 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 |

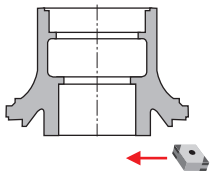
# NEW B5K/B52

## Features

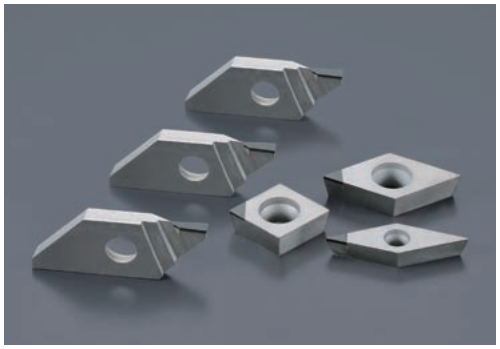
- ***Excellent wear resistance due to optimum CBN content with special TiC binders***
- ***Ideal for finishing ductile cast iron and continuous cuts for finishing hardened materials***

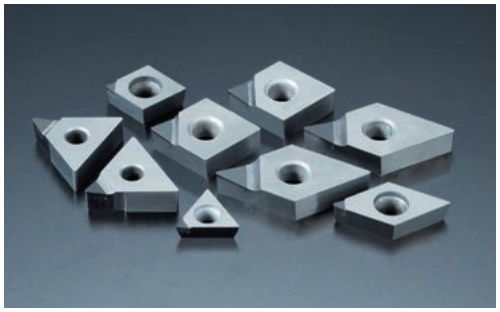
【Recommended cutting conditions】

| 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 |

## 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】

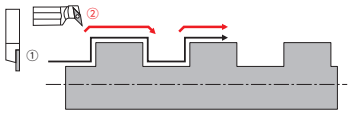
| Work material | Application | Purpose | Cutting speed (SFM) | Feed (IPR/IPT) | Depth of cut (inch) | DRY | WET |
|---|---|---|---|---|---|---|---|
| Aluminum alloy Non-ferrous material | Turning | Rough–Finish | –6500 | –.006 | –.200 | | ● |
| | Milling | Rough–Finish | –25000 | –.008 | –.200 | | ●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

# 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 |

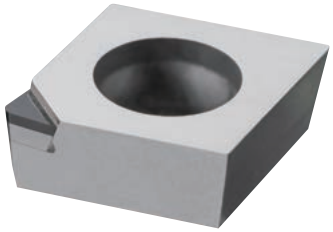



| | |
|---|---|
| ①NTK : **PD1** | 30,000 pcs |
| ②NTK : **PD1** | 30,000 pcs |

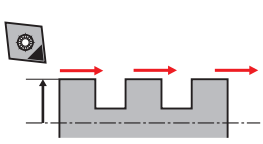
# NEW PD2

### 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 |

# 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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 150 **300** 500<br>C7Z(X) 400 **500** 800 | |
| Recommended Chipbreaker Feed Rate (IPR) | ≤.004 DOC | AMX KHG<br>.0004 **.0008** .0012 | | | | AMX KHG<br>.0004 **.0012** .0016 | | |
| | .004 to .060 DOC | CL S AM3<br>.0008 **.0016** .0024 | | | | CL AM3 AZ7 ZR S U/U1 UL<br>.0008 **.0020** .0032 | | |
| | ≥ .060 DOC | CL S AM3<br>.0008 **.0015** .0025 | | | | CL AM3 ZP<br>.0012 **.0024** .0040 | | |

# Back Turning

**CSVB**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>1046 |
| Grade | 1st choice | ZM3 | | | | | ZM3 | |
| | 2nd choice | | | | | | Z15 | |
| Cutting Speed (SFM) | | 50 **100** 150 | | | | ZM3 150 **300** 425<br>Z15 400 **600** 800 | | |
| Feed Rate (IPR) | X Direction | .0004 **.0012** .0020 | | | | .0004 **.0012** .0020 | | |
| | Z Direction | .0016 **.0020** .0031 | | | | .0016 **.0031** .0059 | | |

# Recommended Insert Grade and Cutting Conditions

## Cut Off

**CSVT**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 150 300 500<br>C7Z(X) 400 500 800 | |
| Feed Rate (IPR)<br>A. Grooving<br>B. Side turning* | Width .010-.020 | A. .0002 - .0012<br>B. .0001 - .0002 | | | | | | |
| | .020-.040 | A. .0008 - .0024<br>B. .0002 - .0004 | | | | | | A. .0008 - .0028<br>B. .0002 - .0004 |
| | .040-.080 | A. .0012 - .0028<br>B. .0008 - .0020 | | | | | | A. .0012 - .0031<br>B. .0012 - .0024 |
| | > .080 | A. .0012 - .0079<br>B. .0012 - .0024 | | | | | | |

*When side turining, 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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>1046 |
| Grade | 1st choice | QM3 | | | | | | |
| | 2nd choice | | | | | | | |
| Cutting Speed (SFM) | | 75 125 225 | 100 200 275 | | 130 230 330 | 150 300 600 | 150 300 500 | |
| Feed Rate (IPR)<br>A. Grooving<br>B. Side turning* | Width .118-.157 | A. .0020 - .0059 | | | | | | |
| | .157-.197 | A. .0039 - .0079 | | | | | A. .0039 - .0098<br>B. .0059 - .0118 | |
| | > .197 | A. .0059 - .0138 | | | | | | |

*Max DOC is 80% of width

**GTPA**

| Work Material | | Aluminum Alloy |
|---|---|---|
| Common Name | | ASTM 5056<br>ASTM 6061 |
| Grade | 1st choice | PD1 |
| | 2nd choice | KM1 |
| Cutting Speed (SFM) | | PD1 330 650 1000<br>KM1 160 330 650 |
| Feed Rate (IPR)<br>A. Grooving<br>B. Side turning | | A. .0020 - .0079<br>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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 | | | | | | |

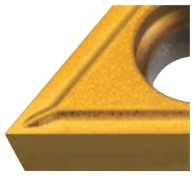
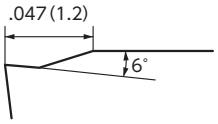
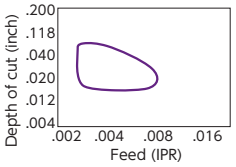
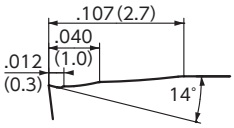
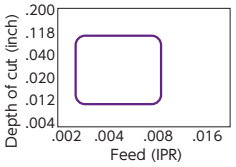
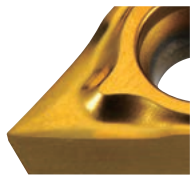
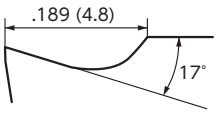
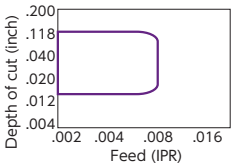
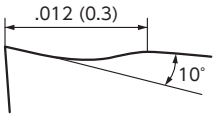
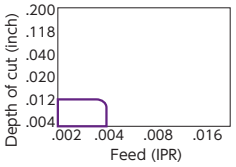
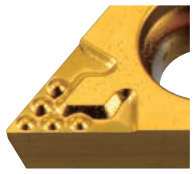
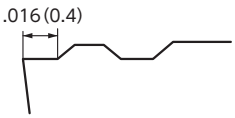
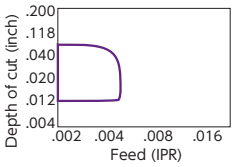
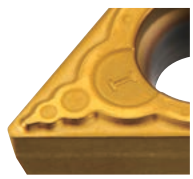
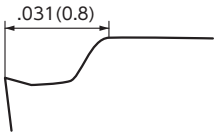
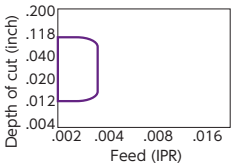
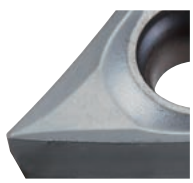
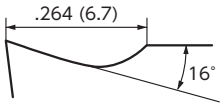
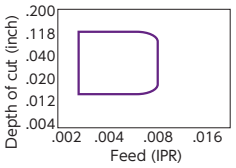
**diameter > .240"**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 150 300 500<br>C7Z(X) 400 500 800 | |
| Feed Rate (IPR) | | .0008 .0024 .0047 | | | | | | |
| Depth Of Cut (DOC) | | .0039 .0197 .0787 | | | | | | |

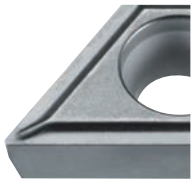
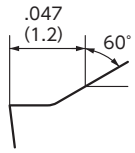
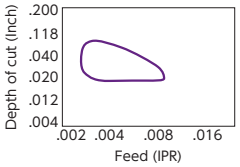
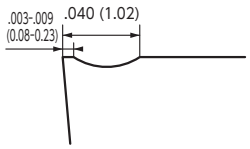
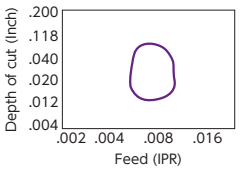
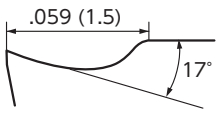
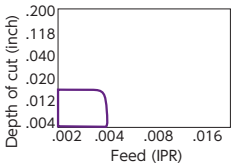
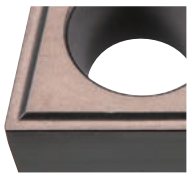
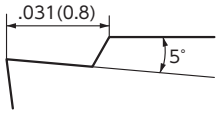
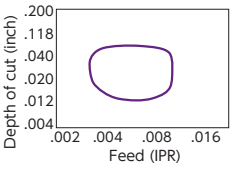
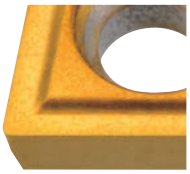
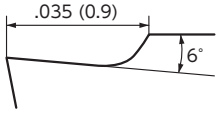
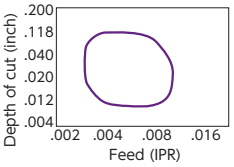
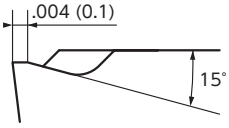
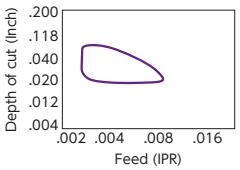
[ Recommended cutting conditions ]

For Swiss-type Lathes

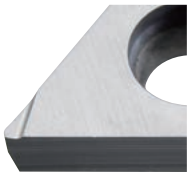
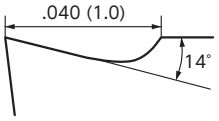
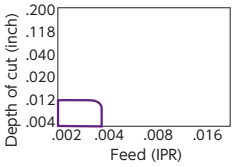
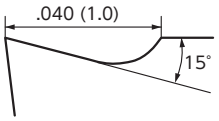
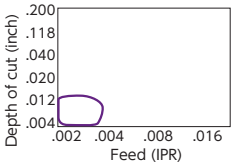
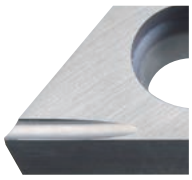
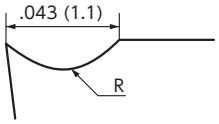
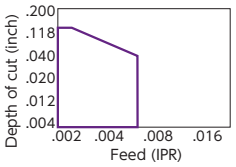
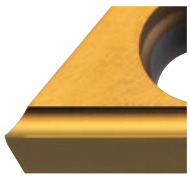
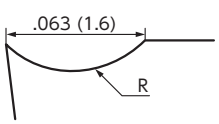
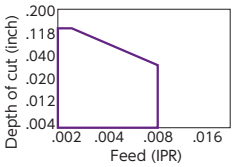
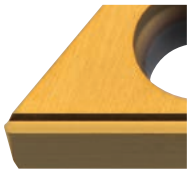
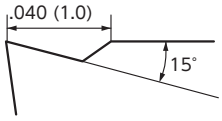
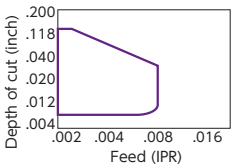
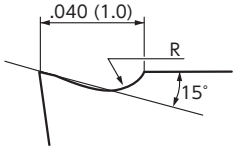
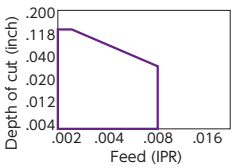
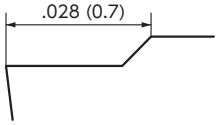
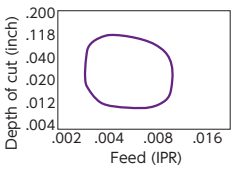
## Molded Chipbreakers for Positive Inserts

| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **AM3** |  ➡J6 |   DCGT32.508 shown | ●All purpose chipbreaker<br>●Sharp edge with toughness |   |
| **YL** | NEW  WATCH ON YouTube ➡J6 |   DCGT11T302MYL | ●Great combination of sharpness and toughness<br>●Covers extremely wide range<br>●Excellent chip control |   |
| **CL** |  WATCH ON YouTube ➡J6 |   DCGT32.508M shown | ●Sharpest molded Chipbreaker<br>●Excellent chip control<br>●Less tool pressure |   |
| **AMX** |  WATCH ON YouTube ➡J6 |   DCGT32.508M shown | ●Designed for very light depth of cut<br>●Good sharpness |   |
| **AZ7** |  WATCH ON YouTube |   DCGT32.508M shown | ●Excellent chip control at light feed and light depth of cut |   |
| **ZR** |  |   DCMT32.508 shown | ●Covers a wide depth of cut range under high-speed and low-feed conditions |   |
| **1L** |  |   DCGT32.508 shown | ●Double-positive design with low tool pressure<br>●Tough cutting edge and excellent performance in combination with QM3 |   |

## Molded Chipbreakers for Positive Inserts (continued)

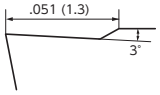
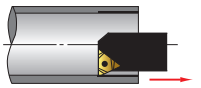
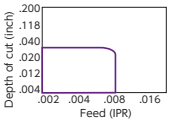
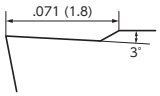
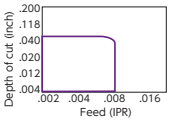
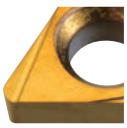
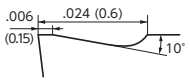
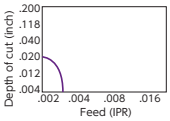
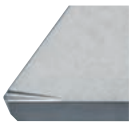
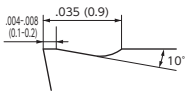
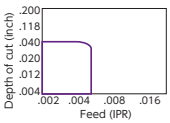
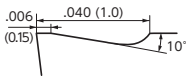
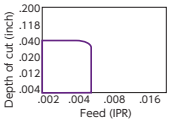
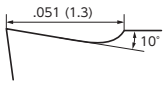
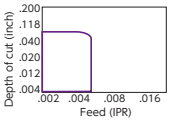
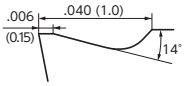
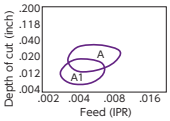
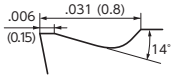
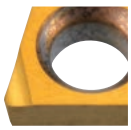
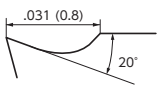
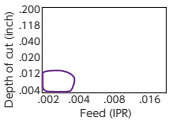
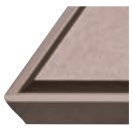
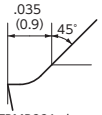
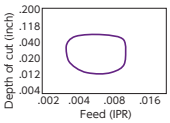
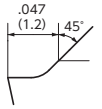
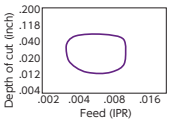
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **AF3** |  |  DCGT32.508 shown | ●Good chip control |  |
| **GA** |  |  VBGT332 shown | ●Sharp and tough cutting edge |  |
| **FG** ➡J25 |  |  TPGH221 shown | ●Exclusively designed for ID boring<br>●Evacuates chips BACKWARD at light depth of cut<br>●Sharp cutting edge with high rake angle |  |
| **AF1** |  |  CCGT32.508 shown | ●Produces remarkable surfaces in semi-finishing of steels |  |
| **AM5** |  |  CPGH21.508 shown | ●Chipbreaker for boring<br>●Provides both good cutting performance and chip control |  |
| **QB** |  |  WCGT5208 shown | ●Sharp and tough cutting edge |  |

# Ground Chipbreakers for Positive Inserts

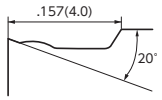
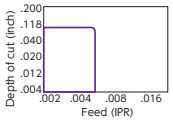
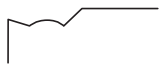
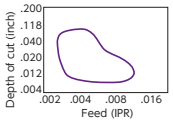
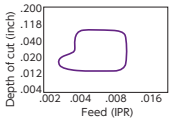
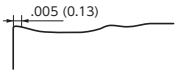
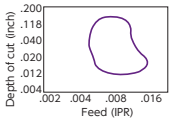
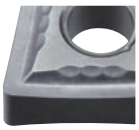
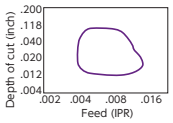
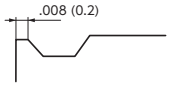
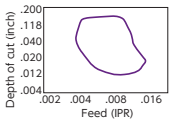
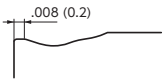
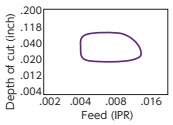
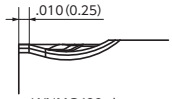
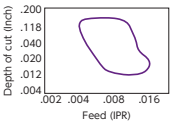
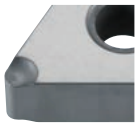
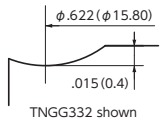
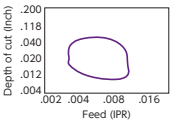
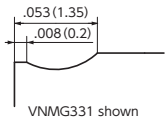
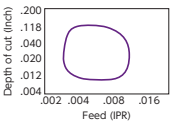
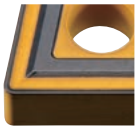
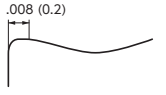
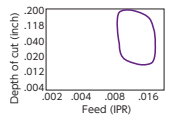
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **KHG** |  |  DCET32.508 shown | ●Excellent chip control on finishing cuts<br>●For super high-precision machining<br>* Precision tolerance in corner radius: ±.0004" |  |
| **K** |  |  TPGHP7308 shown | ●Superb chip control on finishing applications<br>●Sharp cutting edge with the high rake angle |  |
| **UHG** |  |  DCET32.504M shown | ●Sharp cutting edge<br>●Covers wide cutting condition range<br>* Precision tolerance in corner radius: ±.0004" |  |
| **U/U1** |  |  DCGT32.508 shown | ●Sharp cutting edge prevents materials from work hardening |  |
| **S** |  |  DCGT320.508 shown | ●Standard ground chipbreaker with wide cutting condition coverage<br>●Sharp cutting edge with excellent chip control |  |
| **AT** |  |  DCGT32.508 shown | ●Excellent adhesion resistance with dimensional stability<br>●Best for small diameter parts and for machining low carbon steels |  |
| **FM** |  |  DCGT32.508 shown | ●Full-peripheral ground chipbreaker |  |

# Chipbreakers for Positive inserts

## Ground Chipbreakers for Positive Inserts (continued)

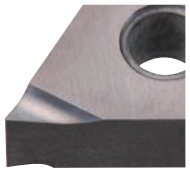
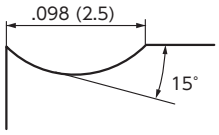
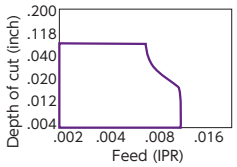
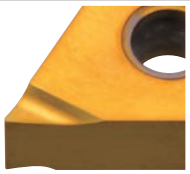
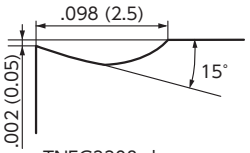
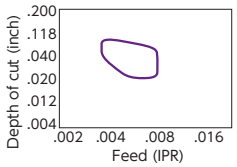
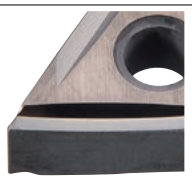
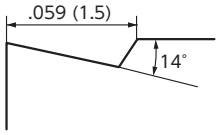
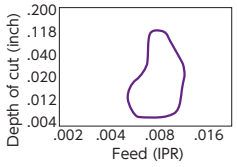
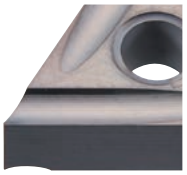
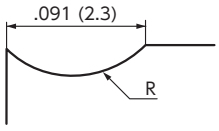
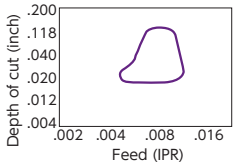
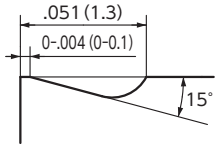
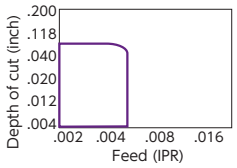
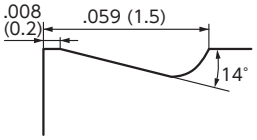
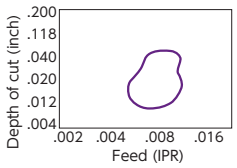
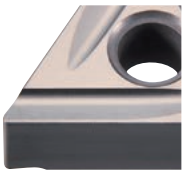
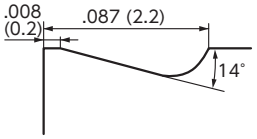
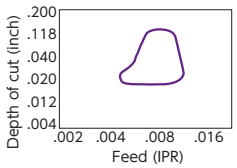
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **F05** |  ➡J25 |   TPGP5208 shown | ●Exclusively designed for ID boring<br>●Evacuates chips BACKWARD<br>●Excellent choice for blind hole machining   |   |
| **F1** |  ➡J25 |   TPGP2208 shown | |   |
| **B1** |  |   TCGP5208 shown | ●Stable cutting when boring thanks to sharp and tough cutting edge |   |
| **P1** |  |   TPGR321R shown | |   |
| **B2** |  |   TPGP7308 shown | |   |
| **B3** |  |   TPGP6308 shown | |   |
| **A** |  |   CPGP0308 shown | ●Tough cutting edge and good chip control<br>●General-purpose ID chipbreaker |   |
| **A1** |  |   CPGP8308 shown | | |
| **A2** |  |   ERGP52Y shown | ●Control chips at light feed and light depth of cut<br>●Sharp cutting edge due to large rake angle |   |
| **A283** |  |   TPMR221 shown | ●Breaks chip into small pieces |   |
| **A305** |  |   TPMR332 shown | |   |

## Molded Chipbreakers for Negative Inserts

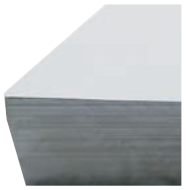
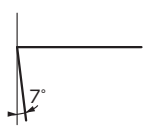
| Name | Chipbreaker Geometry | | Features | Chip Control Range |
|---|---|---|---|---|
| **UL** |  WATCH ON YouTube ➡J43 |   TNGG3304M shown | ●Negative insert with a positive insert's chipbreaker<br>●Reduced burr<br>●Improved microfinish<br>●Superb advantage in cost per corner over positive inserts |   |
| **ZF1** |  |  CNMG432 shown | ●Produce small curled chips on finishing cuts |   |
| **WM** |  |  CNMG431 shown | ●Remarkable chip control in the low feed range |   |
| **ZW1** |  |   CNMG432 shown | ●Versatile chipbreaker with remarkable chip control performance in a wide range of conditions |   |
| **ZP** |  |  CNMG432 shown | ●Double-positive rake and sharp cutting edge<br>●Low tool pressure even at heavy depth of cut |   |
| **Z5** |  |   CNMG432 shown | ●Very tough insert<br>●Designed for machining with heavy interruption |   |
| **WV** |  |   CNMG432 shown | ●Offers the advantages of both a tough cutting edge and chip control |   |
| **WR** |  |   WNMG432 shown | ●Designed for cermet<br>●Covers wide range of conditions |   |
| **R1** |  |   TNGG332 shown | ●Sharp cutting edge<br>●Good chip control |   |
| **GE** |  |   VNMG331 shown | ●Sharp and tough cutting edge |   |
| **G** |  |   CNMG432 shown | ●Tough chipbreaker for roughing with exceptional stability |   |

# Chipbreakers for Negative inserts

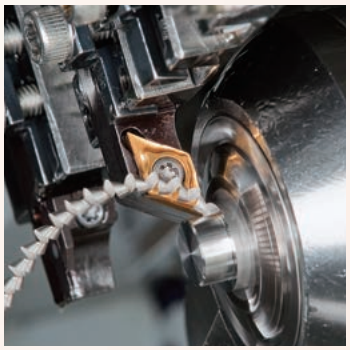
## Ground Chipbreakers for Negative Inserts

| Name | Chipbreaker Geometry | Features | Chip Control Range |
|---|---|---|---|
| **DA** |    TNGG3304 shown | ●Excellent chip control and sharp cutting edge |   |
| **D1** |    TNEG3308 shown | |   |
| **N1** |    TNGG3308 shown | ●Double-positive design with the large rake angle<br>●Excellent chip control |   |
| **U2** |    TNGG3308 shown | ●Reduced burr and work hardening due to high rake design |   |
| **L2** |    TNGG332R shown | ●General-purpose chipbreaker with excellent toughness and chip control |   |
| **B** |    TNGG331 shown | |   |
| **C** |    TNGG3308 shown | |   |

## Flat Top with Mirror Finish

| Name | Chipbreaker Geometry | Features | Chip Control Range |
|---|---|---|---|
| **V**<br>**P**<br>**H** |    | ●Very up-sharp edge with mirror finish<br>V: Mirror finish on Top and Flank side with R0 nose radius<br>P: Mirror finish on Top and Flank side<br>H: Mirror finish on Top side | — |

# K

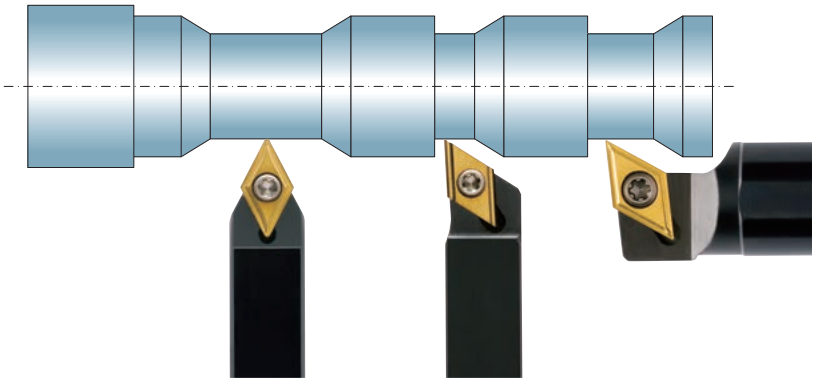


## General Turning / Front Turning


- Front Turning Tools ····· K28
- Recommended Cutting Conditions··· K30
- General Information ····· K30
- ANSI / ISO Insert Nomenclature ··· K32
- Tool List ····· K34

CSV Series ····· K34
CC.. Series····· K36
DC.. Series ····· K42
VB.. Series····· K50
VC.. Series ····· K51
VP.. Series····· K56
TFT Series····· K58
TC.. Series····· K59
TN.. Series····· K60
CN.. Series ····· K63
DN.. Series ····· K64

# NTK General / Front Turning Tools - Product Lines

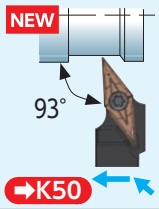
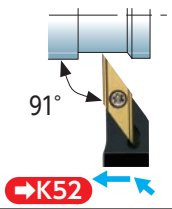
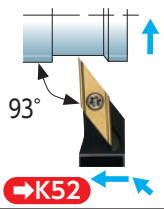
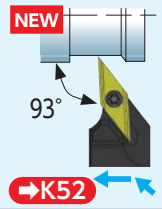
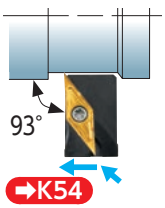
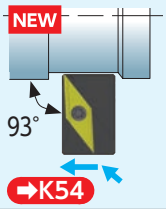


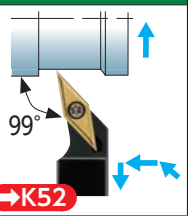
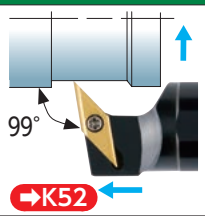
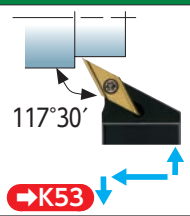
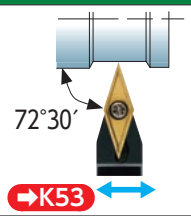
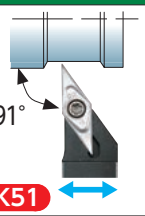
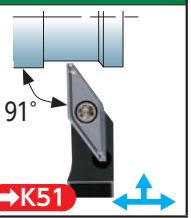
| Insert | CSVF ➡K35 | |
|---|---|---|
| Holder | CSV | DS-CSV |
| | 91° ➡K34 | 91° ➡K34 |

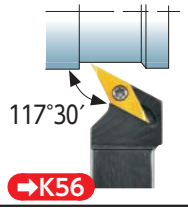
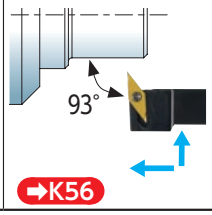
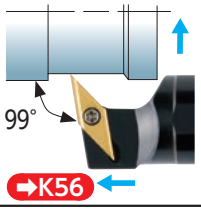
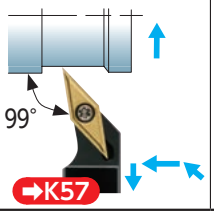
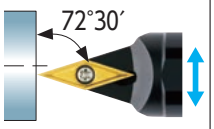
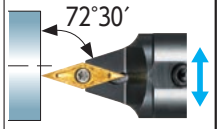
| Insert | CC..21/32.5.. ➡K38 | | | | | |
|---|---|---|---|---|---|---|
| Holder | SCAC | SCLC | SCLC-OH | SCLC-F | DS-SCLL | DS-SCLL-ACH |
| | 91° ➡K36 | 95° ➡K36 | NEW 95° ➡K36 | 95° ➡K36 | 95° ➡K36 | 95° ➡K36 |
| | | | Coolant through | Shifted | | DS-ACH |

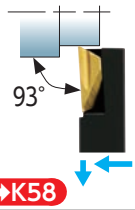
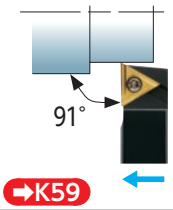
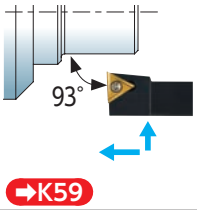
| Insert | DC..21/32.5.. DC..21/32.5..WP.. ➡K46 | | | | | |
|---|---|---|---|---|---|---|
| Holder | SDJC | SDJC-OH | SDJC-F | Y-SDJC | Y-SDJC-OH | CH-SDUC |
| | 93° ➡K42 | NEW 93° ➡K42 | 93° ➡K42 | 93° ➡K44 | NEW 93° ➡K44 | 93° ➡K43 |
| | | Coolant through | Shifted | Y-axis | Y-axis w/ Coolant through | |

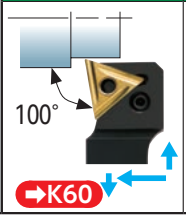
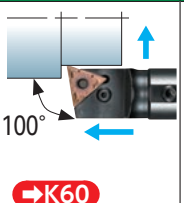
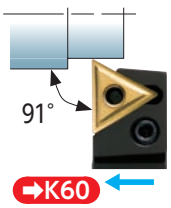
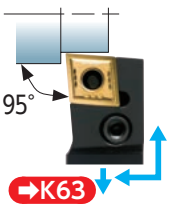
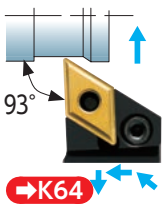
| Insert | DC..21/32.5..WP.. ➡K46 | | DC..21/32.5.. ➡K46 | | | | |
|---|---|---|---|---|---|---|---|
| Holder | DS-SDUL | DS-SDUL-ACH | SDXC | DS-SDX | SDQC | SDNC | Y-SDNC |
| | 93° ➡K45 | 93° ➡K45 | 96° ➡K42 | 96° ➡K45 | 107°30′ ➡K42 | 62°30′ ➡K42 | 62°30′ ➡K44 |
| | | DS-ACH | | | | | Y-axis |

| Insert | VB..33 ➡K50 | VC..22..-WP | VC..22.. ➡K55 | | | | |
|---|---|---|---|---|---|---|---|
| Holder | SVJB-OH | SVAC | SVJC | SVJC-OH | SVJC-F | Y-SVJC | Y-SVJC-OH |
| | NEW   ➡K50 |   ➡K52 |   ➡K52 | NEW   ➡K52 |   ➡K52 |   ➡K54 | NEW   ➡K54 |
| | Coolant through | | | Coolant through | Shifted | Y-axis | Y-axis w/ Coolant through |

| Insert | VC..22.. ➡K55 | | | | VCGT21.5.. ➡K51 | VCGT13030.. ➡K51 |
|---|---|---|---|---|---|---|
| Holder | SVXC | DS-SVXC | SVQC | SVVCN | SVAC-1L | SVAC-W |
| |   ➡K52 |   ➡K52 |   ➡K53 |   ➡K53 |   ➡K51 |   ➡K51 |

| Insert | VP..08020.. ➡K56 | | | VP..22.. ➡K57 | | |
|---|---|---|---|---|---|---|
| Holder | SVQP | CH-SVUP | DS-SVXP | SVXP | DS-SVVPN | DS-SVVPN-ACH |
| |   ➡K56 |   ➡K56 |   ➡K56 |   ➡K57 |   ➡K57 |   ➡K57 |
| | | | | | | DS-ACH |

| Insert | TF33.. ➡K58 | TC..73../..21..-WP | TC..73../..21.. ➡K59 |
|---|---|---|---|
| Holder | TFT | STAC | CH-STUC |
| |   ➡K58 |   ➡K59 |   ➡K59 |

| Insert | TN..33.. ➡K62 | | | | | CN..43.. ➡K63 | DN..43.. ➡K64 |
|---|---|---|---|---|---|---|---|
| Holder | PTXN | DS-PTX | DS-PTX-ACH | PTAN | PTLN | PCLN | PDJN |
| |   ➡K60 |   ➡K60 |   ➡K60 |   ➡K60 |   ➡K60 |   ➡K63 |   ➡K64 |
| | | | DS-ACH | | | | |

# Recommended Insert Grade and Cutting Conditions

## Front Turning

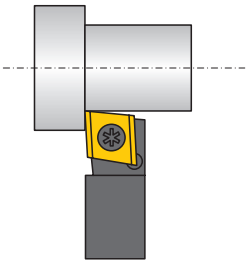
**CSVF / CC.. / DC.. / VC.. / VB.. / TN.. / TF**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 150 **300** 500<br>C7Z(X) 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

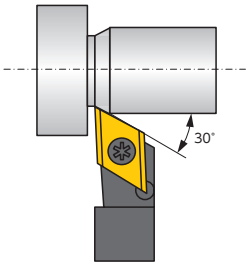
### Advantage for each geometry

#### CC.. Style (80°)



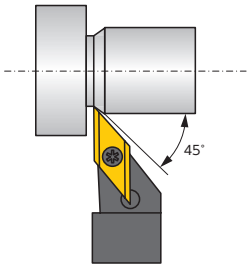
- Increased toughness. Cutting edge is close to insert pocket.
- Not applicable to undercut

#### DC.. Style (55°)




- Versatile geometry. Toughness of CC.. with flexibility of VC..
- Up to 30 deg. undercuts

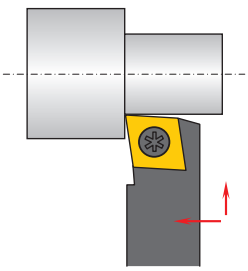
#### VB / VC / VP Style (35°)




- Wide coverage in work geometry.
- Up to 45 deg. undercuts

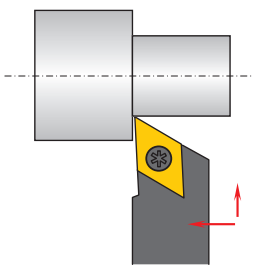
### Chip Control and Finish

#### SCLCR ➡K36



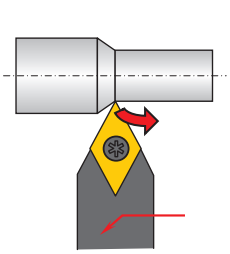
Rigid clamping
High dimensional repeatability

#### SDJCR ➡K42



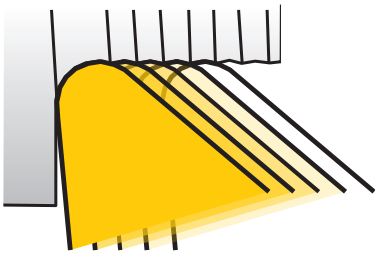
Increased room for chip evacuation
Prevent chips from scratching works

#### SDNCN ➡K42

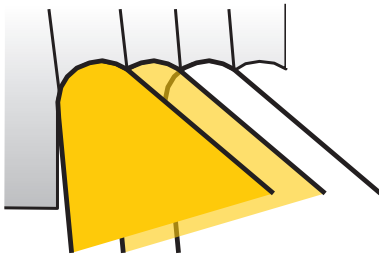


Chips flow away from the work

## Surface Finish in General Turning by Inserts with Wiper Flat

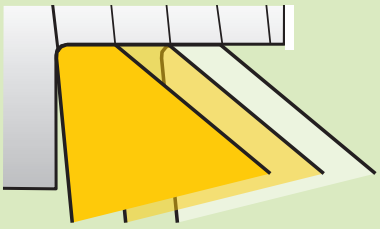


Slower feed rates create better finishes but sacrifices cycle time, chip control, and tool life.



Fast feed rates improve chip control but produce a bad surface finish.

**Inserts with wiper**



Inserts with a wiper flat creates good chip control and surface finish.

### Wiper Flat Insert - WP series

**DCGT.. -WP (TFD)** ➡K46



for SDJC toolholders

**TCGT.. -WP (TFT)** ➡K59



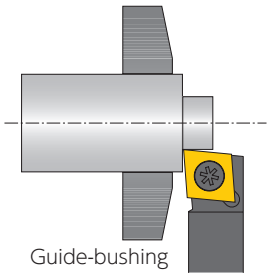
for STAC toolholders

**VCGT.. -WP (TFV)** ➡K55

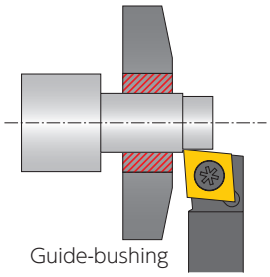


for SVAC toolholders

## Roughing and Finishing Long Work on Swiss Lathes

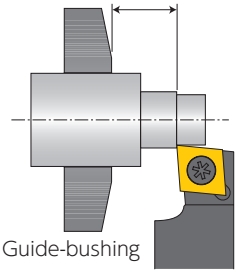



Single pass machining is common in Swiss front turning operations.




Conventional toolholders are not suitable for roughing or finishing of long parts. The guide-bushing cannot hold machined bar stock.

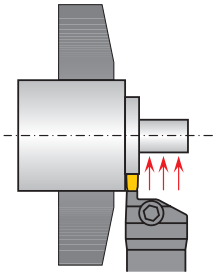
### ●Shifted Holders




Shifted Holders make a finishing process possible without worrying about the bar stock coming out of the guide-bushing.
Coolant flows effectively which improves chip control thanks to the increased room between the tools and guide-bushing.

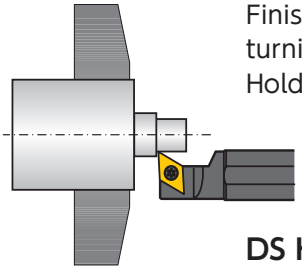
**SCLC-N-F** ➡K36
**SDJC-N-F** ➡K42
**SVJC-N-F** ➡K52

### ●Combination of Grooving Tool and DS Holders



Rough with grooving tool for good chip control

**GTWP Holders** ➡K111

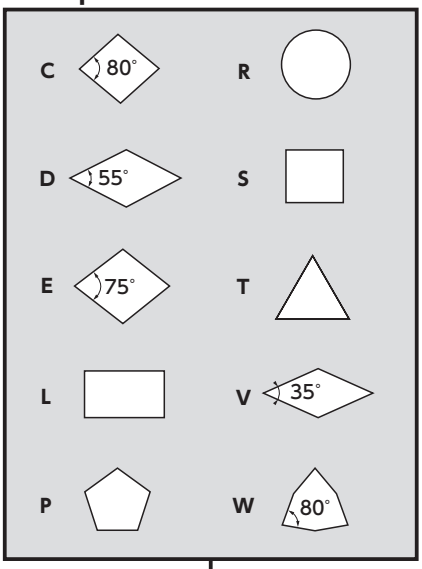


Finish by using general turning inserts with DS Holders

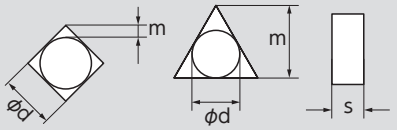
**DS Holders**

# 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 |

C S T

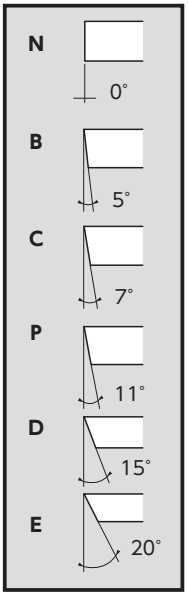
| Inscribed Circle | M tolerance d (inch) | M tolerance m (inch) |
|---|---|---|
| 1/4 | ±.002 | ±.003 |
| 3/8 | ±.002 | ±.003 |
| 1/2 | ±.003 | ±.005 |
| 5/8 | ±.004 | ±.006 |
| 3/4 | ±.004 | ±.006 |
| 1 | ±.005 | ±.007 |

D K

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

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Inch | C | C | G | T |
| Metric | C | C | G | T |

## 2 Clearances




## 4 Type

| Type | Symbol | Type | Symbol |
|---|---|---|---|
| | N (E) | 70°–90° | H |
| | F | | |
| | R | 70°–90° | B |
| | A | | |
| | G | 40°–60° | T |
| | M | 40°–60° | W |
| Special design | X | | |

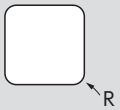
## 6 Thickness

| 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 Cutting Edge Length

| Inch | | Metric | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Inscribed Circle | | C | D | R | S | T | V | W |
| 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 | 00 |
| .003 | 04M | 01M |
| .004 | 04 | 01 |
| .007 | 08M | 02M |
| .008 | 08 | 02 |
| .015 | 1M | 04M |
| .016 (1/64) | 1 | 04 |
| .031 (1/32) | 2 | 08 |

| 3 | 2.5 | 08M | F | N | AM3 |
|---|---|---|---|---|---|
| 5 | 6 | 7 | 8 | 9 | 10 |
| 09 | T3 | 02M | F | N | AM3 |

## 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

# CSV Series

**Best for up to .200" diameter material**

## CSV-NC

For Gang-style machine

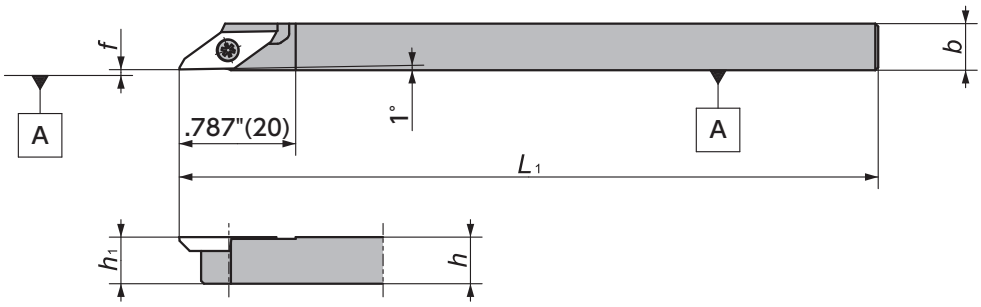



Figure-1

Right-Hand style shown

## CSV

For Cam-style machine

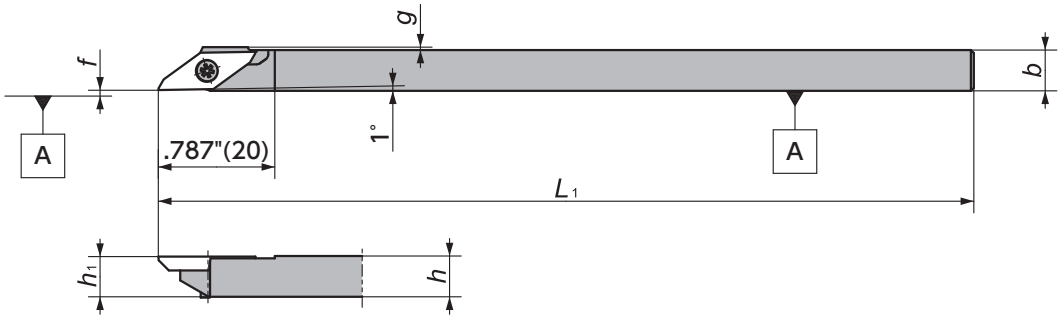



Figure-2

Right-Hand style shown

## DS-CSVL

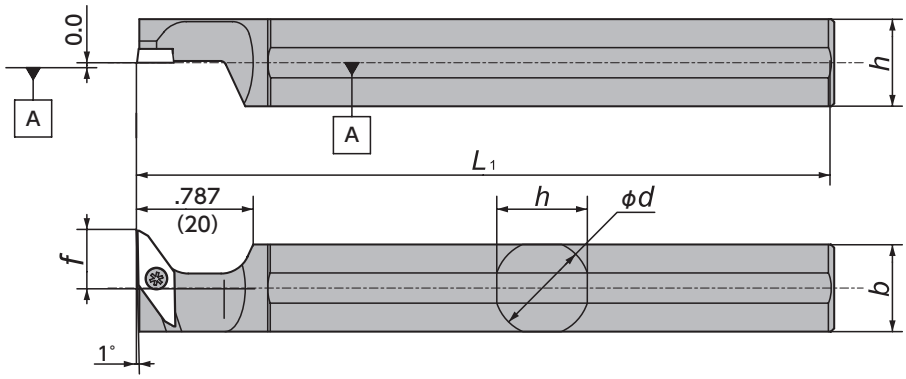



Figure-3

Left-Hand style shown
Takes Right-hand insert

# CSV Series - Toolholders

## ■CSVR/L / CSVR/L-NC

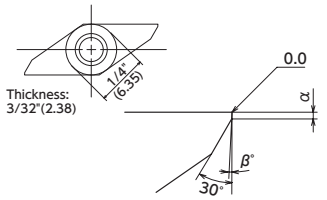
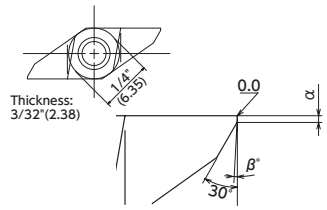
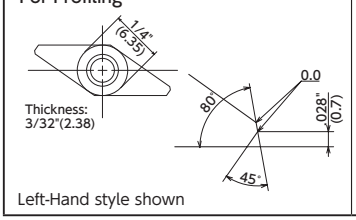
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11.. | CSVR/L06-IN-NC | 1 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .004 | 0.1 | – | – | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08-IN-NC | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .004 | 0.1 | – | – | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08NC | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .004 | 0.1 | – | – | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08NC-F | 1 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | 0–.004 | 0.0–0.1 | – | – | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L10GXNC | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .004 | 0.1 | – | – | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L10NC | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .004 | 0.1 | – | – | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L12NC | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .004 | 0.1 | – | – | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L07GX | 2 | ○ | | .275 | 7 | .275 | 7 | .275 | 7 | 3.346 | 85 | .004 | 0.1 | .020 | 0.5 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L07 | 2 | ○ | ● | .275 | 7 | .275 | 7 | .275 | 7 | 5.512 | 140 | .004 | 0.1 | .020 | 0.5 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08GX | 2 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08 | 2 | ● | ● | .315 | 8 | .315 | 8 | .315 | 8 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L095 | 2 | ○ | | .374 | 9.5 | .374 | 9.5 | .374 | 9.5 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L10 | 2 | ● | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L12GX | 2 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L12 | 2 | ● | | .472 | 12 | .472 | 12 | .472 | 12 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |

## ■DS-CSVL (Takes right-hand insert)

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11FR.. | DS-CSVL15 | 3 | | ● | 5/8 | 15.875 | .591 | 15 | .591 | 15 | 4.724 | 120 | .394 | 10 | LR1S-2.5 × 7 | CLR-15S |

# CSV Series - Inserts

## ■CSVF - Front Turning Mirror finish

| Shape | Item Number | Chip-breaker | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | Edge Geometry (α × β°) (Inch) | Edge Geometry (α × β°) (mm) | Coated Carbide DT4 R | DT4 L | VM1 R | VM1 L | ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | CSVF11FR/LV Ⓜ | No | – | – | .012 × 5° | 0.3 × 5° | | | ○ | ○ | | |
| | CSVF11FR/LV-A Ⓜ | | – | – | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVF11FR/LV-M Ⓜ | | – | – | .006 × 2° | 0.15 × 2° | ● | | ● | ● | ○ | |
| | CSVF11FR/LV-C Ⓜ | | – | – | .006 × 5° | 0.15 × 5° | | | ○ | | | |
|  Right-Hand style shown | CSVF11FR/LVB Ⓜ | Yes | .118 | 3 | .012 × 5° | 0.3 × 5° | | | ● | ○ | | |
| | CSVF11FR/LVB-A Ⓜ | | .118 | 3 | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVF11FR/LVB-M Ⓜ | | .118 | 3 | .006 × 2° | 0.15 × 2° | ● | | ● | ● | ○ | |
| | CSVF11FR/LVB-C Ⓜ | | .118 | 3 | .006 × 5° | 0.15 × 5° | | | ○ | | | |
| For Profiling  Left-Hand style shown | CSVF11FR/LVX Ⓜ | No | – | – | | | | | | ○ | | |

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

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

CSV series ➡J36 Cutting condition ➡K30

# Toolholders for CC.. Inserts

## SCAC-N

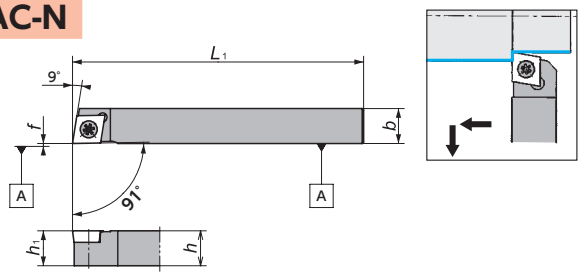



Figure-1

Right-Hand style shown

## SCLC-N

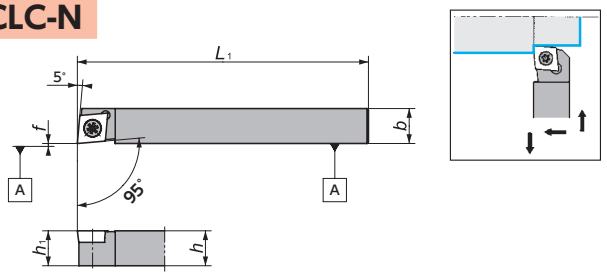
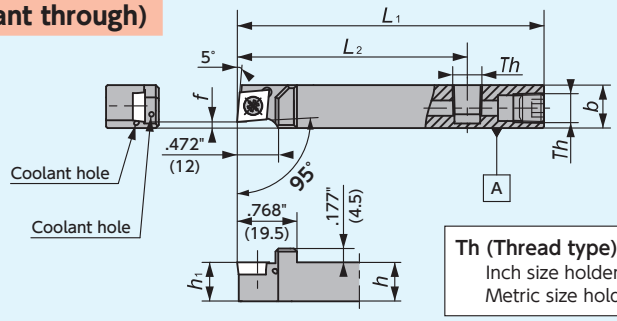



Figure-2

Right-Hand style shown

## SCLC-N-OH (Coolant through)

NEW




**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

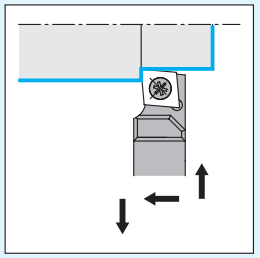
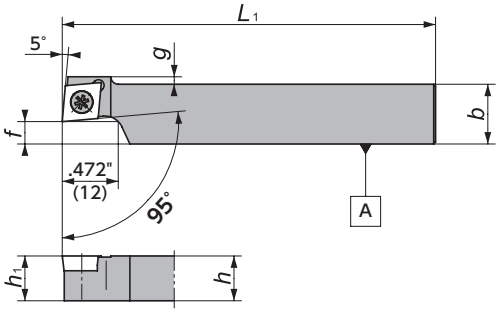


Figure-3

Right-Hand style shown

## SCLC-N-F (Shifted)



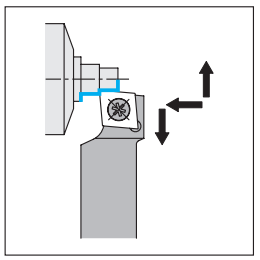



Figure-4

Right-Hand style shown

## DS-SCL

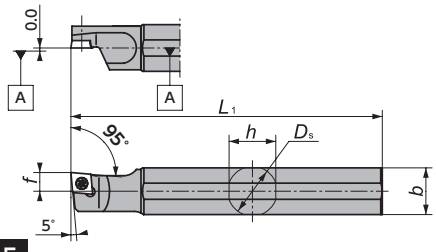



Figure-5

## DS-SCL (Coolant through)

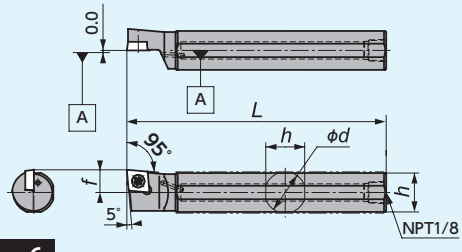
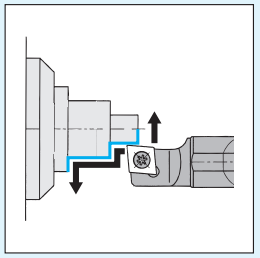



Figure-6



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) |
| ϕ3/4" (19.05) | | |
| ϕ.787" (20) | | WS060419-004 (5799226) |
| ϕ.866" (22) | | |
| ϕ1" (25.4) | ACH-W24 (5805619) | |

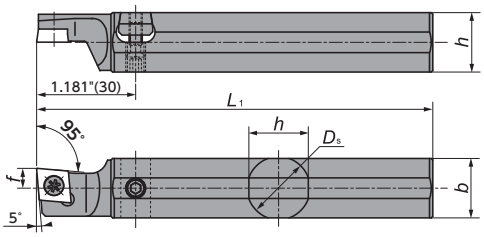
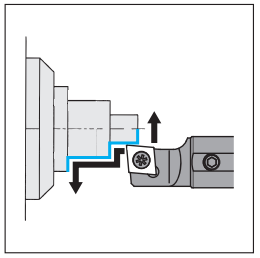



Figure-7



Left-Hand style shown
Takes Right-hand or Neutral insert

[ Front Turning ]

For Swiss-type Lathes

# CC.. Series - Toolholders



## ■SCAC

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..21.5.. | SCAC□062C | 1 | ■ | ■ | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | 0.0 | 0.0 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SCAC□082C | 1 | ■ | ■ | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0.0 | 0.0 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SCAC□0808X06N | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | 0.0 | 0.0 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SCAC□1010X06N | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | – | – | LRIS-2.5 × 7 | CLR-15S |
| CC..32.5.. | SCAC□083C | 1 | ■ | ■ | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0.0 | 0.0 | – | – | LRIS-4 × 10 | LLR-25S |
| | SCAC□103C | 1 | ■ | ■ | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0.0 | 0.0 | – | – | LRIS-4 × 10 | LLR-25S |
| | SCAC□1212GX09N | 1 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0.0 | 0.0 | – | – | LRIS-4 × 10 | LLR-25S |
| | SCAC□1212X09N | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0.0 | 0.0 | – | – | LRIS-4 × 10 | LLR-25S |

## ■SCLC

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | g (Inch) | g (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..21.5.. | SCLC□-062C | 2 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SCLC□-082C | 2 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SCLC□0808X06N | 2 | ○ | ● | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SCLC□1010X06N | 2 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| CC..32.5.. | SCLC□-083C | 2 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□-103C | 2 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1010H09N | 2 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.937 | 100 | 0.0 | 0.0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1010X09N | 2 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1212GX09N | 2 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0.0 | 0.0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1212X09N | 2 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1616X09N | 2 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0.0 | 0.0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| CC..21.5.. | SCLC□082H-F079-OH 💧 | 3 | ● | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-2.5×7 | CLR-15S |
| CC..32.5.. | SCLC□083H-F079-OH 💧 | 3 | ● | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SCLC□103H-F079-OH 💧 | 3 | ● | | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SCLC□1014F09N-F02OH 💧 | 3 | ○ | | .394 | 10 | .551 | 14 | .394 | 10 | 3.150 | 80 | .079 | 2.0 | 2.165 | 55 | – | – | M6 × 1 | LRIS-4 × 10 | LLR-25S |
| | SCLC□1214H09N-F02OH 💧 | 3 | ○ | | .472 | 12 | .551 | 14 | .472 | 12 | 3.937 | 100 | .079 | 2.0 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4 × 10 | LLR-25S |
| | SCLC□1616H09N-F02OH 💧 | 3 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .079 | 2.0 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4 × 10 | LLR-25S |
| | SCLC□083C-F250 | 4 | ● | | 1/2 | | .984 | 25 | 1/2 | | 4.724 | 120 | 1/4 | | – | – | 0 | 0 | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□083C-F500 | 4 | ● | | 1/2 | | .984 | 25 | 1/2 | | 4.724 | 120 | 1/2 | | – | – | 0 | 0 | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1015X09N-F05 | 4 | ○ | | .394 | 10 | .591 | 15 | .394 | 10 | 4.724 | 120 | .197 | 5 | – | – | .079 | 2 | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1020X09N-F10 | 4 | ○ | | .394 | 10 | .787 | 20 | .394 | 10 | 4.724 | 120 | .394 | 10 | – | – | .079 | 2 | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1218X09N-F06 | 4 | ● | | .472 | 12 | .709 | 18 | .472 | 12 | 4.724 | 120 | .236 | 6 | – | – | 0 | 0 | – | LRIS-4 × 10 | LLR-25S |
| | SCLC□1224X09N-F12 | 4 | ● | | .472 | 12 | .945 | 24 | .472 | 12 | 4.724 | 120 | .472 | 12 | – | – | 0 | 0 | – | LRIS-4 × 10 | LLR-25S |

## ■DS-SCL (Takes right-hand or neutral insert)

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..21.5.. | DS-SCL□14F-06 | 5 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□15H-06 | 5 | | ○ | 5/8 | 15.875 | .591 | 15 | .591 | 15 | 3.937 | 100 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□16F-06 | 5 | | ○ | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.150 | 80 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□19-06 | 5 | | ● | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□20X-06 | 5 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 3.740 | 95 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□20-06 | 5 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□22-06 | 5 | | ○ | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□25-06MET | 5 | | ● | .984 | 25.000 | .945 | 24 | .945 | 24 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SCL□25-06 | 5 | | ● | 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 | 5 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□15H-09 | 5 | | ○ | 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 | 5 | | ○ | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.150 | 80 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□19GX-09 | 5 | | ○ | 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 | 5 | | ● | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCLL19-09-004 💧 | 6 | | ● | 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 | 5 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 3.740 | 95 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□20-09 | 5 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□22-09 | 5 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCLL22-09-005 💧 | 6 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .472 | 12.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□25-09MET | 5 | | ○ | .984 | 25.000 | .945 | 24 | .945 | 24 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□25-09 | 5 | | ● | 1 | 25.400 | .945 | 24 | .945 | 24 | 5.906 | 150 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□16F-09-ACH | 7 | | ● | .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 | 7 | | ● | 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 | 7 | | ● | .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 | 7 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |
| | DS-SCL□25-09-ACH | 7 | | ● | 1 | 25.400 | .945 | 24.0 | .945 | 24.0 | 5.906 | 150 | .236 | 6.0 | LRIS-4 × 8 | LLR-25S-20 × 65 |

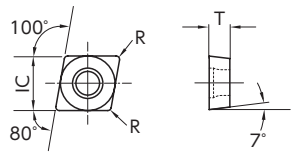
● : Stock ○ : 1-2 week delivery ■ : While stock lasts 💧 : Coolant through

Inserts ➡K38 Cutting condition ➡K30

# CC.. inserts - Carbide / Cermet

## [Molded Chipbreakers]

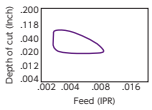
| (inch) | IC | T |
|---|---|---|
| CC..21.5 | 1/4 | 3/32 |
| CC..32.5 | 3/8 | 5/32 |

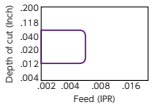


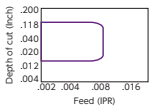

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● |
| Hardened Material | H | ● ● ● |

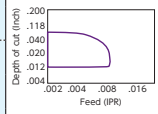
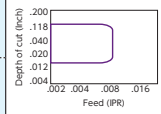
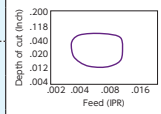
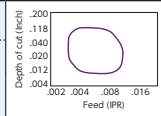
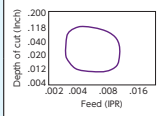
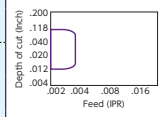
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 3/8 | .016 | | | | | | | | | ● | | | |
| | CCGT 32.52 FNAM3 | CCGT 09T308 FNAM3 | 3/8 | .031 | ● | | | | | | | | | | | |
| | CCGT 32.52 FNXAM3 | CCGT 09T308 FNXAM3 | 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 | | | | | | | | | ● | | | ○ |
| | 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 32.504M 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 | | ● | | ● | | | | | | | | |



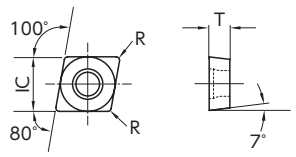



| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | PVD Coated Q15 | C7Z | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | CCGT 21.501 FNAZ7 | CCGT 060200 FNAZ7 | 1/4 | .001 | ○ | | | | | | | | | | | |  |
| | CCGT 21.504M FNAZ7 | CCGT 060201M FNAZ7 | 1/4 | .003 | ○ | | | | | | | | | | | | |
| | CCGT 21.508M FNAZ7 | CCGT 060202M FNAZ7 | 1/4 | .007 | ○ | | | | | | | | | | | | |
| | CCGT 32.501 FNAZ7 | CCGT 09T300 FNAZ7 | 3/8 | .001 | ● | ○ | | ○ | | ○ | | | | | | | |
| | CCGT 32.504M FNAZ7 | CCGT 09T301M FNAZ7 | 3/8 | .003 | ● | ○ | | ○ | | ○ | | | | | | | |
| | CCGT 32.508M FNAZ7 | CCGT 09T302M FNAZ7 | 3/8 | .007 | ● | ○ | | ○ | | ○ | | | | | | | |
| | CCGT 32.51M FNAZ7 | CCGT 09T304M FNAZ7 | 3/8 | .015 | ● | ○ | | ○ | | ○ | | | | | | | |
|  | CCGT 21.508 FN1L | CCGT 060202 FN1L | 1/4 | .008 | ○ | | | | | | | | | | | |  |
| | CCGT 32.51 FN1L | CCGT 09T304 FN1L | 3/8 | .016 | ○ | | | | | | | | | | | | |
|  | 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 | | | | | | | | | ○ | | | ○ | |

● : Stock ○ : 1-2 week delivery

Holders ➡K36
Cutting condition ➡K30
Chipbreaker ➡K21

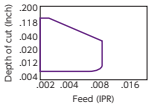
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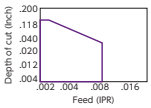


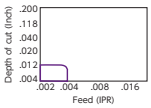

| | | |
|---|---|---|
| Steel | P | ● |
| Stainless Steel | M | ● |
| Cast Iron | K | ● |
| Non-Ferrous Material | N | ● |
| Heat Resistant Alloy | S | ● |
| Hardened Material | H | ● |

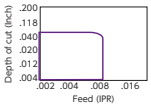
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CCGT 21.501 R/L S | CCGT 060200 R/L S | 1/4 | .001 | R | Ⓡ | | | ⓇⓁ | ⓇL | | | | | | |
| | CCGT 21.504M R/L S | CCGT 060201M R/L S | 1/4 | .003 | R | Ⓡ | | | | | | | | | | |
| | CCGT 21.504 R/L S | CCGT 060201 R/L S | 1/4 | .004 | | | | | ⓇⓁ | RⓁ | | | ⓇⓁ | | | |
| | CCGT 21.508M R/L S | CCGT 060202M R/L S | 1/4 | .007 | R | | | | | | | | | | | |
| | CCGT 21.508 R/L S | CCGT 060202 R/L S | 1/4 | .008 | | | | | RⓁ | ⓇⓁ | | | ⓇⓁ | | | |
| | CCGT 21.51 R/L S | CCGT 060204 R/L S | 1/4 | .016 | R | | | | | | | | | | | |
| | CCGT 32.501 R/L S | CCGT 09T300 R/L S | 3/8 | .001 | R | R | | R | ⓇⓁ | Ⓡ | | | | | | |
| | CCGT 32.504M R/L S | CCGT 09T301M R/L S | 3/8 | .003 | Ⓡ | R | | R | | | | | | | | |
| | CCGT 32.504 R/L S | CCGT 09T301 R/L S | 3/8 | .004 | R | | | | ⓇⓁ | ⓇⓁ | | | | | | |
| | CCGT 32.508M R/L S | CCGT 09T302M R/L S | 3/8 | .007 | Ⓡ | R | | R | | | | | | | | |
| | CCGT 32.508 R/L S | CCGT 09T302 R/L S | 3/8 | .008 | R | | | | RⓁ | Ⓡ | | | | | | |
| | CCGT 32.51M R/L S | CCGT 09T304M R/L S | 3/8 | .015 | Ⓡ | | | R | | | | | | | | |
| | CCGT 32.51 R/L S | CCGT 09T304 R/L S | 3/8 | .016 | R | | | | | | | | | | | |
| | CCMT 21.504 TR/L AS | CCMT 060201 TR/L AS | 1/4 | .004 | | | | | | | | | ⓇⓁ | | | ⓇⓁ |
| | CCMT 21.508 TR/L AS | CCMT 060202 TR/L AS | 1/4 | .008 | | | | | | | | | ⓇⓁ | | | ⓇⓁ |
| | CCMT 21.51 TR/L AS | CCMT 060204 TR/L AS | 1/4 | .016 | | | | | | | | | ⓇⓁ | | | ⓇⓁ |
| | CCMT 32.504 TR/L AS | CCMT 09T301 TR/L AS | 3/8 | .004 | | | | | | | | | ⓇⓁ | | | ⓇⓁ |
| | CCMT 32.508 TR/L AS | CCMT 09T302 TR/L AS | 3/8 | .008 | | | | | | | | | ⓇⓁ | | | ⓇⓁ |
| | CCMT 32.51 TR/L AS | CCMT 09T304 TR/L AS | 3/8 | .016 | | | | | | | | | ⓇⓁ | | | ⓇⓁ |
| | CCGT 21.501 R/L U | CCGT 060200 R/L U | 1/4 | .001 | | Ⓡ | | | | Ⓡ | | | | | | |
| | CCGT 21.504 R/L U | CCGT 060201 R/L U | 1/4 | .004 | | Ⓡ | | | | ⓇⓁ | | | | | | |
| | CCGT 21.508 R/L U | CCGT 060202 R/L U | 1/4 | .008 | | Ⓡ | | | | ⓇⓁ | | | | | | |
| | CCGT 32.501 R/L U1 | CCGT 09T300 R/L U1 | 3/8 | .001 | | | | Ⓡ | | ⓇⓁ | | | | | | |
| | CCGT 32.504 R/L U1 | CCGT 09T301 R/L U1 | 3/8 | .004 | | Ⓡ | | Ⓡ | | ⓇⓁ | | | | | | |
| | CCGT 32.508 R/L U1 | CCGT 09T302 R/L U1 | 3/8 | .008 | | Ⓡ | | Ⓡ | | ⓇⓁ | | | | | | |
| | CCGT 32.51 R/L U1 | CCGT 09T304 R/L U1 | 3/8 | .016 | | | | Ⓡ | | ⓇⓁ | | | | | | |
| | CCET 21.502 R/L KHG | CCET 0602005 R/L KHG | 1/4 | .002 | | | | | ⓇⓁ | | | | | | | |
| | CCET 21.503 R/L KHG | CCET 0602008 R/L KHG | 1/4 | .003 | | | | | ⓇⓁ | | | | | | | |
| | CCET 21.507 R/L KHG | CCET 0602018 R/L KHG | 1/4 | .007 | | | | | ⓇⓁ | | | | | | | |
| | CCET 21.508 R/L KHG | CCET 060202 R/L KHG | 1/4 | .008 | | | | | ⓇⓁ | | | | | | | |
| | CCET 32.502 R/L KHG | CCET 09T3005 R/L KHG | 3/8 | .002 | | | | Ⓡ | ⓇⓁ | | | | | | | |
| | CCET 32.503 R/L KHG | CCET 09T3008 R/L KHG | 3/8 | .003 | | | | Ⓡ | ⓇⓁ | | | | | | | |
| | CCET 32.507 R/L KHG | CCET 09T3018 R/L KHG | 3/8 | .007 | | | | Ⓡ | ⓇⓁ | | | | | | | |
| | CCET 32.508 R/L KHG | CCET 09T302 R/L KHG | 3/8 | .008 | | | | Ⓡ | ⓇⓁ | | | | | | | |
| | CCGT 21.508 FR/L F1 | CCGT 060202 FR/L F1 | 1/4 | .008 | | | | Ⓡ | | | | | | | | |
| | CCGT 21.51 FR/L F1 | CCGT 060204 FR/L F1 | 1/4 | .016 | | | | Ⓡ | | | | | | | | |
| | CCGT 32.508 FR/L F1 | CCGT 09T302 FR/L F1 | 3/8 | .008 | | | | Ⓡ | | | | | | | | |
| | CCGT 32.51 FR/L F1 | CCGT 09T304 FR/L F1 | 3/8 | .016 | | | | Ⓡ | | | | | | | | |
| | CCGW 21.501 FN | CCGW 060200 FN | 1/4 | .001 | | | | | | ○ | | | | | | |
| | CCGW 21.501 H Ⓜ | CCGW 060200 H | 1/4 | .001 | | | | | | | ○ | | | | | |
| | CCGW 21.504 FN | CCGW 060201 FN | 1/4 | .004 | | | | | | ○ | | | | | | |
| | CCGW 21.504 H Ⓜ | CCGW 060201 H | 1/4 | .004 | | | | | | | ○ | | | | | |
| | CCGW 21.508 H Ⓜ | CCGW 060202 H | 1/4 | .008 | | | | | | | ○ | | | | | |
| | CCGW 21.51 FN | CCGW 060204 FN | 1/4 | .016 | | | | | | ○ | | | | | | |
| | CCGW 21.52 FN | CCGW 060208 FN | 1/4 | .031 | | | | | | ■ | | | | | | |
| | CCGW 32.500 V Ⓜ | CCGW 09T30 V | 3/8 | 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 | | | | | ○ | | | | | | | |



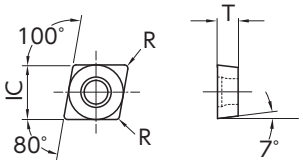



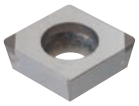
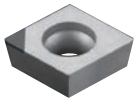




—

# 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 | | ● | | | | | | | |
| | **CCGW 32.52 PD** | CCGW 09T308 PD | S0635 | 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 | – | | | | | | | | ○ | |
| NEW  with chipbreaker | **CCMT 32.508 PF** | CCMT 09T302PF | None | 3/8 | .008 | 1 | – | | | | | | | | | ● |
| | **CCMT 32.51 PF** | CCMT 09T304PF | None | 3/8 | .016 | 1 | – | | | | | | | | | ● |

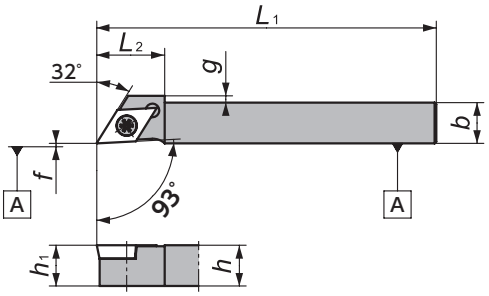


● : Stock ○ : 1-2 week delivery ■ : While stock lasts
R : Stock (Right-hand only) L : Stock (Left-hand only)
Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only) Ⓜ : Mirror finish

Holders ➡K36
Cutting condition ➡K30
Chipbreaker ➡K21

# Toolholders for DC.. Inserts

## SDJC-N



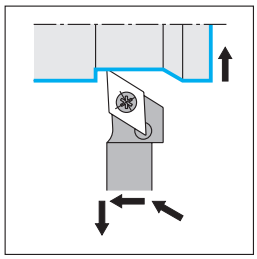
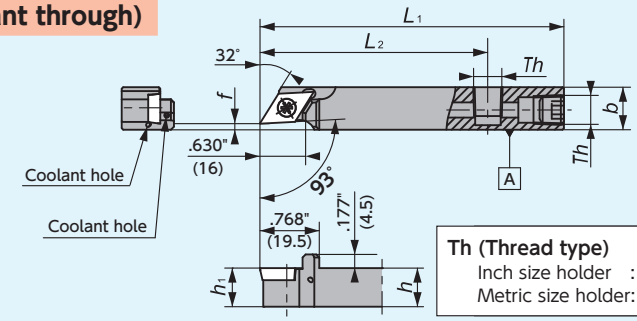



Figure-1

Right-Hand style shown

## SDJC-N-OH (Coolant through)

NEW




**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

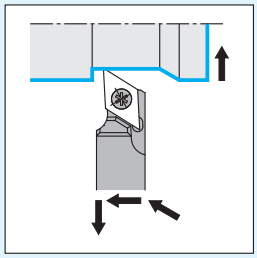
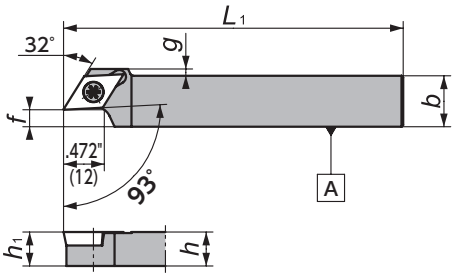


Figure-2

Right-Hand style shown

## SDJC-N-F (Shifted)



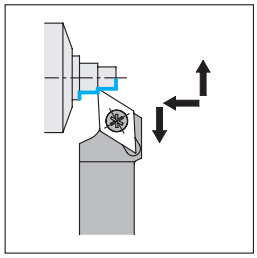
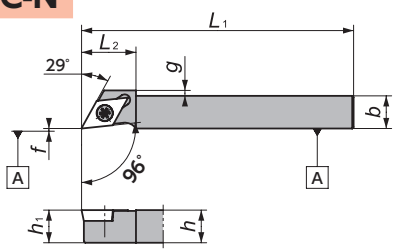



Figure-3

Right-Hand style shown

## SDXC-N



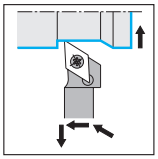
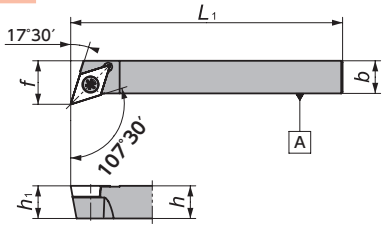



Figure-4

Right-Hand style shown

## SDQC



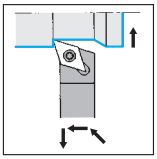
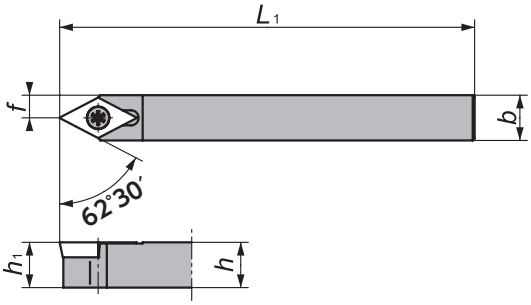



Figure-5

Right-Hand style shown

## SDNC



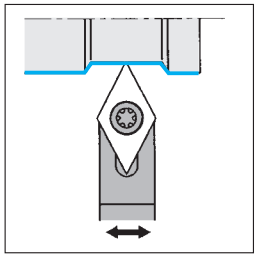



Figure-6

## CH-SDUC

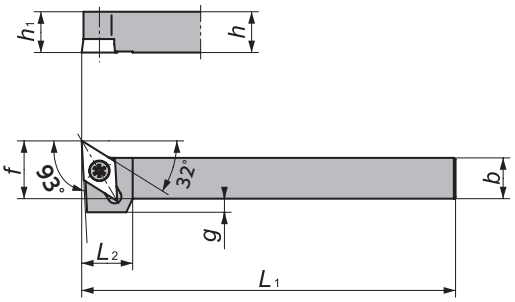
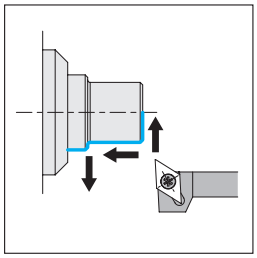
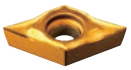



Figure-7



Left-Hand style shown
Takes Right-hand or Neutral insert

# DC.. Series - Toolholders I



| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | g (Inch) | g (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | N | | | | | | | | | | | | | | | | | | |
| 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-15S |
| | SDJC℅-082C | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SDJC℅0808X07N | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SDJC℅1010GX07N | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | 0 | 0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SDJC℅1010X07N | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| DC..32.5.. DC..32.5..WP | SDJC℅-083C | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅-103C | 1 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1010H11N | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.937 | 100 | 0 | 0 | .748 | 19 | .079 | 2 | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1010X11N | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0 | 0 | .748 | 19 | .079 | 2 | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1210X11N | 1 | ○ | | .394 | 10 | .472 | 12 | .394 | 10 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1212GX11N | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1216GX11N | 1 | ○ | | .472 | 12 | .630 | 16 | .472 | 12 | 3.346 | 85 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1212X11N | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1616X11N | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅20-X11 | 1 | ○ | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 4.724 | 120 | .984 | 25 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| 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 | – | – | NPT1/8 | LRIS-2.5 × 7 | CLR-15S |
| DC..32.5.. DC..32.5..WP | SDJC℅083H-F079-OH 💧 | 2 | ● | | 1/2 | | .551 | 14 | 1/2 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SDJC℅103H-F079-OH 💧 | 2 | ● | | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1014F11N-F02OH 💧 | 2 | ○ | | .392 | 10 | .551 | 14 | .394 | 10 | 3.150 | 80 | .079 | 2 | 2.165 | 55 | – | – | M6 × 1 | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1214H11N-F02OH 💧 | 2 | ● | | .472 | 12 | .551 | 14 | .472 | 12 | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1616H11N-F02OH 💧 | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .079 | 2 | 2.953 | 75 | – | – | Rc1/8(PT1/8) | LRIS-4 × 10 | LLR-25S |
| 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-15S |
| | SDJC℅1020X07N-F10 | 3 | ○ | | .394 | 10 | .787 | 20 | .394 | 10 | 4.724 | 120 | .394 | 10 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| DC..32.5.. DC..32.5..WP | SDJC℅083C-F250 | 3 | ● | | 1/2 | | .728 | 18.5 | 1/2 | | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅083C-F500 | 3 | ● | | 1/2 | | 1 | | 1/2 | | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1015X11N-F05 | 3 | ○ | | .394 | 10 | .591 | 15 | .394 | 10 | 4.724 | 120 | .197 | 5 | .748 | 19 | .079 | 2 | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1020X11N-F10 | 3 | ○ | | .394 | 10 | .787 | 20 | .394 | 10 | 4.724 | 120 | .394 | 10 | .748 | 19 | .079 | 2 | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1218X11N-F06 | 3 | ● | | .472 | 12 | .709 | 18 | .472 | 12 | 4.724 | 120 | .236 | 6 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDJC℅1224X11N-F12 | 3 | ● | | .472 | 12 | .945 | 24 | .472 | 12 | 4.724 | 120 | .472 | 12 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| 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-25S |
| | SDXC℅1016X11N | 4 | ○ | | .394 | 10 | .630 | 16 | .394 | 10 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDXC℅1212X11N | 4 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | .787 | 20 | .039 | 1 | – | LRIS-4 × 10 | LLR-25S |
| | SDXC℅1216X11N | 4 | ○ | | .472 | 12 | .630 | 16 | .472 | 12 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDXC℅1616X11N | 4 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| DC..21.5.. | SDQC℅10-X07 | 5 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .472 | 12 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| DC..32.5.. | SDQC℅12-X11 | 5 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .630 | 16 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDQC℅16-X11 | 5 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .787 | 20 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDQC℅20-X11 | 5 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 4.724 | 120 | .984 | 25 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| DC..21.5.. | SDNCN-062 | 6 | | ● | 3/8 | | 3/8 | | 3/8 | | 2.5 | 63.5 | 3/16 | | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SDNCN-082 | 6 | | ● | 1/2 | | 1/2 | | 1/2 | | 3.5 | 88.9 | 1/4 | | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SDNCN08-X07 | 6 | | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .157 | 4 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| | SDNCN10-X07 | 6 | | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .197 | 5 | – | – | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| DC..32.5.. | SDNCN-083 | 6 | | ● | 1/2 | | 1/2 | | 1/2 | | 3.937 | 100 | 1/4 | | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDNCN-103 | 6 | | ● | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | 5/16 | | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDNCN12-X11 | 6 | | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .236 | 6 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDNCN16-X11 | 6 | | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .315 | 8 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| | SDNCN20-X11 | 6 | | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 4.724 | 120 | .394 | 10 | – | – | – | – | – | LRIS-4 × 10 | LLR-25S |
| 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-15S |
| | CH-SDUC℅1212H11 | 7 | | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.937 | 100 | .669 | 17 | .591 | 15 | .157 | 4 | – | LRIS-4 × 10PW | CLR-15S |

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

Inserts ➡K46 Cutting condition ➡K30

# Y-Axis Holders for DC.. Inserts

## Y-SDJC

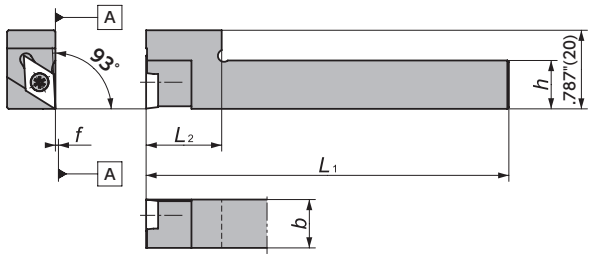
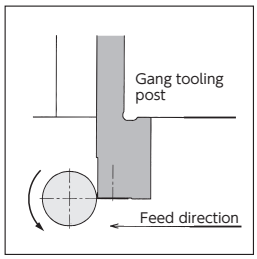


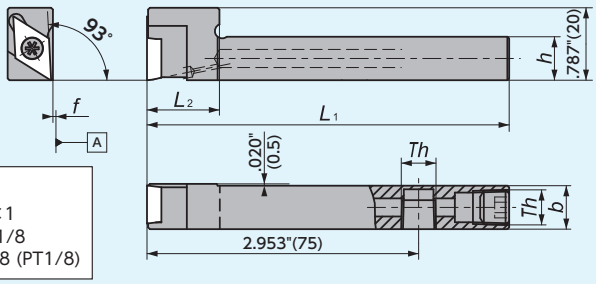

Figure-1




Right-Hand style shown
Takes Right-hand or Neutral insert

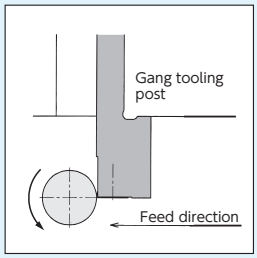
## Y-SDJC-OH (Coolant through)

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

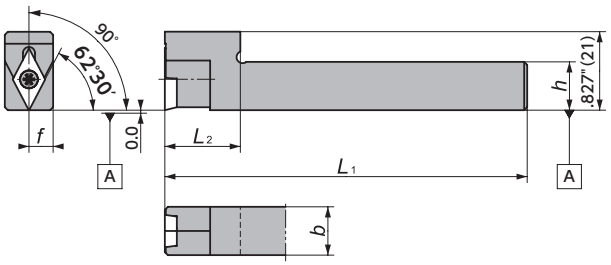
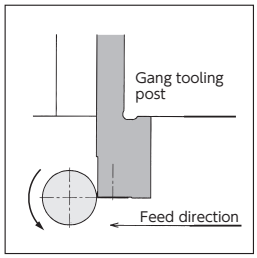
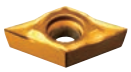



Figure-3




Takes Right-hand or Neutral insert

# DC.. Series - Toolholders II



| Gage Insert | Item Number | Figure | Stock R | Stock L | Stock N | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-SDJCR12-11S | 1 | ○ | | | .472 | 12.0 | .630 | 16 | 4.724 | 120 | 0 | 0 | .787 | 20 | – | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | Y-SDJCR16-11S | 1 | ○ | | | .630 | 16.0 | .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 |
| DC..32.5.. DC..32.5..WP | 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 |
| | 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 |
| 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 |

# DS Toolholders for DC.. Inserts

## DS-SDU

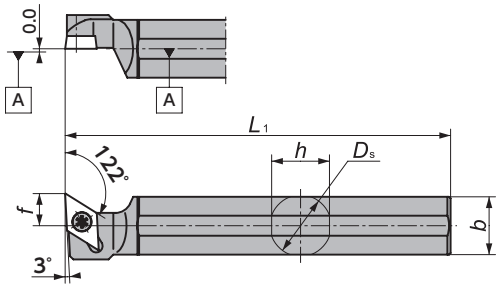
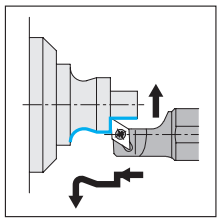



Figure-4



Left-Hand style shown
Takes Right-hand or Neutral insert

## 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) | | WS060419-004 (5799226) |
| ϕ.866" (22) | | |
| ϕ1" (25.4) | ACH-W24 (5805619) | |

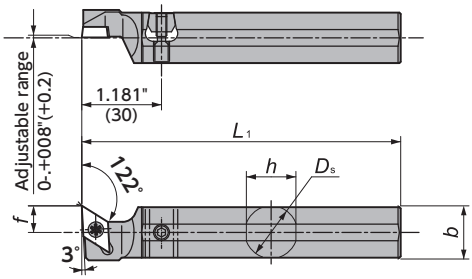
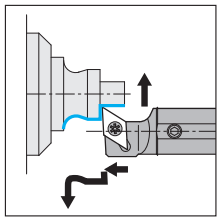



Figure-5



Left-Hand style shown
Takes Right-hand or Neutral insert

## DS-SDX / DS-SDX (Coolant through)

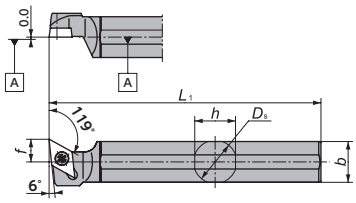
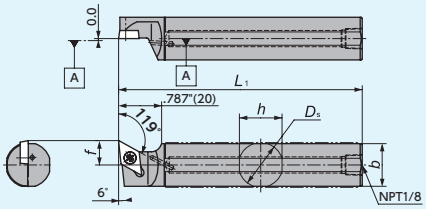
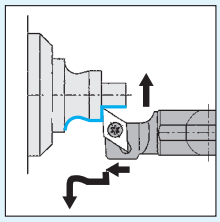



Figure-6

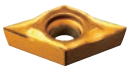
DS-SDXL22-11-006 (Coolant through)



Left-Hand style shown
Takes Right-hand or Neutral insert

# DC.. Series - Toolholders Ⅲ



| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SDU□15H-07 | 4 | | ○ | 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 | 4 | | ○ | .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 | 4 | | ○ | .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 | 4 | | ○ | 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 | 4 | | ○ | .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 | 4 | | ● | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SDU□22-07 | 4 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .236 | 6.0 | LRIS-2.5 × 7 | CLR-15S |
| DC..32.5.. DC..32.5..WP | DS-SDU□14F-11 | 4 | | ○ | .551 | 14.000 | .512 | 13.0 | .512 | 13.0 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□16F-11 | 4 | | ○ | .630 | 16.000 | .591 | 15.0 | .591 | 15.0 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□19-11 | 4 | | ● | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□19-11SPL | 4 | | ○ | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 6.300 | 160 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□20X-11 | 4 | | ○ | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 3.740 | 95 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□20-11 | 4 | | ● | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□22-11 | 4 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□23-11-007 | 4 | | ○ | .906 | 23.000 | .866 | 22.0 | .866 | 22.0 | 2.756 | 70 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□25-11MET | 4 | | ● | .984 | 25.000 | .945 | 24.0 | .945 | 24.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□25-11 | 4 | | ● | 1 | 25.400 | .945 | 24.0 | .945 | 24.0 | 5.906 | 150 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□25-11SPL | 4 | | ○ | 1 | 25.400 | .945 | 24.0 | .945 | 24.0 | 5.906 | 150 | .492 | 12.5 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□16F-11-ACH | 5 | | ● | .630 | 16.000 | .610 | 15.5 | .610 | 15.5 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□19-11-ACH | 5 | | ● | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□20-11-ACH | 5 | | ● | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□22-11-ACH | 5 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDU□25-11-ACH | 5 | | ● | 1 | 25.400 | .945 | 24.0 | .945 | 24.0 | 5.906 | 150 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX□22-11-006 💧 | 6 | | ● | .866 | 22.000 | .827 | 21.0 | .827 | 21.0 | 4.724 | 120 | .472 | 12.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX□19-11 | 6 | | ○ | 3/4 | 19.050 | .709 | 18.0 | .709 | 18.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX□20X-11 | 6 | | ○ | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 3.740 | 95 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX□20-11 | 6 | | ○ | .787 | 20.000 | .748 | 19.0 | .748 | 19.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-SDX□25-11MET | 6 | | ○ | .984 | 25.000 | .945 | 24.0 | .945 | 24.0 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |

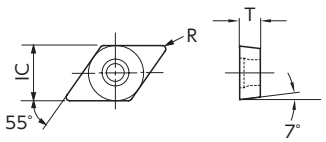
● : Stock ○ : 1-2 week delivery 💧 : Coolant through

Inserts ➡K46 Cutting condition ➡K30

# DC.. inserts - Carbide / Cermet

## [Molded Chipbreakers]

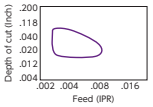
| (inch) | IC | T |
|---|---|---|
| DC..21.5 | 1/4 | 3/32 |
| DC..32.5 | 3/8 | 5/32 |

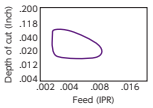


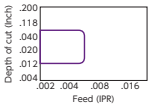

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● |
| Hardened Material | H | ● ● ● |

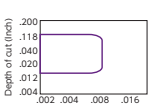
● : 1st Choice
● : Alternate choice

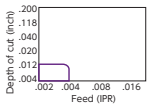
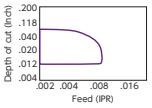
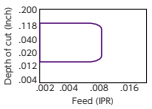
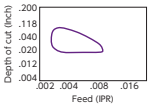
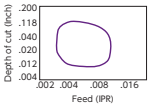
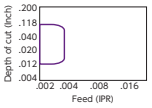
| Shape | Item Number | ISO Item Number | IC | R | Carbide: PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DCGT 21.501 FNAM3 | DCGT 070200 FNAM3 | 1/4 | .001 | ● | ● | | | ○ | ○ | | | | | | |
| | 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 wiper insert | DCGT 32.502 AM3-WP* | TFD 11FR05AM3 | 3/8 | .002 | | ● | | | | | | | | | | |
| | 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 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 | | ● | | ● | | | | | | | | |

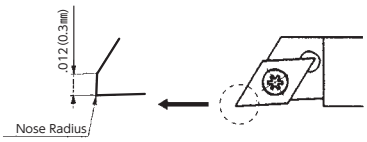


| Shape | Item Number | ISO Item Number | IC | R | Carbide | | | | | | | Cermet | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PVD Coated | | | | | | | | | | PVD Coated | | |
| | | | | | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z | |
|  | DCGT 21.504M 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 FNAZ7 | DCGT 070200 FNAZ7 | 1/4 | .001 | ○ | | | | | | | | | | | |  |
| | DCGT 21.504M FNAZ7 | DCGT 070201M FNAZ7 | 1/4 | .003 | ○ | | | | | | | | | | | | |
| | DCGT 21.508M FNAZ7 | DCGT 070202M FNAZ7 | 1/4 | .007 | ○ | | | | | | | | | | | | |
| | DCGT 32.501 FNAZ7 | DCGT 11T300 FNAZ7 | 3/8 | .001 | ● | ○ | | ○ | | ○ | | | | | | | |
| | DCGT 32.504M FNAZ7 | DCGT 11T301M FNAZ7 | 3/8 | .003 | ● | ○ | | ○ | | ○ | | | | | | | |
| | DCGT 32.508M FNAZ7 | DCGT 11T302M FNAZ7 | 3/8 | .007 | ● | ○ | | ○ | | ○ | | | | | | | |
| | DCGT 32.51M FNAZ7 | DCGT 11T304M FNAZ7 | 3/8 | .015 | ● | ○ | | ○ | | ○ | | | | | | | |
| | DCGT 32.52 FNAZ7 | DCGT 11T308 FNAZ7 | 3/8 | .031 | ● | ○ | | | | ○ | | | | | | | |
|  | DCGT 21.51 FN1L | DCGT 070204 FN1L | 1/4 | .016 | ○ | | | | | | | | | | | |  |
| | DCGT 32.508 FN1L | DCGT 11T302 FN1L | 3/8 | .008 | ○ | | | | | | | | | | | | |
| | DCGT 32.51 FN1L | DCGT 11T304 FN1L | 3/8 | .016 | ○ | | | | | | | | | | | | |
|  | 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 | | | | | | | | | ○ | | | ○ | |




＊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.

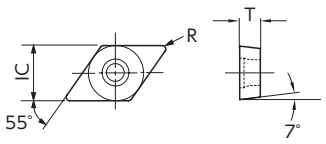
● : Stock ○ : 1-2 week delivery

Holders ➡K42 • 44 • 45
Cutting condition ➡K30
Chipbreaker ➡K21

# DC..11.. inserts - Carbide / Cermet

## [Ground Chipbreakers]

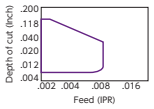
| (inch) | IC | T |
|---|---|---|
| DC..21.5 | 1/4 | 3/32 |
| DC..32.5 | 3/8 | 5/32 |



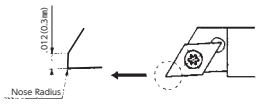

| | | |
|---|---|---|
| Steel | P | ● |
| Stainless Steel | M | ● |
| Cast Iron | K | ● |
| Non-Ferrous Material | N | ● |
| Heat Resistant Alloy | S | ● |
| Hardened Material | H | ● |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | DCGT 21.501 R/L S | DCGT 070200 R/L S | 1/4 | .001 | R | | | | Ⓡ Ⓛ | R Ⓛ | | | | | | |
| | 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 | | | | | R Ⓛ | 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 | | | | | Ⓡ Ⓛ | R Ⓛ | | | Ⓡ Ⓛ | | | |
| | DCGT 21.51 R/L S | DCGT 070204 R/L S | 1/4 | .016 | R | | | | Ⓡ | | | | | | | |
| | DCGT 32.501 R/L S | DCGT 11T300 R/L S | 3/8 | .001 | R | R | | R | Ⓡ Ⓛ | 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 | | | | | | |
| | DCGT 32.508M R/L S | DCGT 11T302M R/L S | 3/8 | .007 | Ⓡ | R | | Ⓡ | | | | | | | | |
| | DCGT 32.508 R/L S | DCGT 11T302 R/L S | 3/8 | .008 | R | | | | Ⓡ Ⓛ | 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 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | DCMT 21.508 T R/L AS | DCMT 070202 T R/L AS | 1/4 | .008 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | DCMT 21.51 T R/L AS | DCMT 070204 T R/L AS | 1/4 | .016 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | DCMT 32.504 T R/L AS | DCMT 11T301 T R/L AS | 3/8 | .004 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | DCMT 32.508 T R/L AS | DCMT 11T302 T R/L AS | 3/8 | .008 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | DCMT 32.51 T R/L AS | DCMT 11T304 T R/L AS | 3/8 | .016 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
|  wiper insert | DCGT 21.502 R/L S-WP* | TFD 07F R/L 05 | 1/4 | .002 | R | | | | Ⓡ | R Ⓛ | | | | | | |
| | DCGT 21.506 R/L S-WP* | TFD 07F R/L 15 | 1/4 | .006 | R | | | | | R Ⓛ | | | | | | |
| | DCGT 32.502 R/L S-WP* | TFD 11F R/L 05 | 3/8 | .002 | R | | | | Ⓡ | Ⓡ | | | | | | |
| | DCGT 32.506 R/L S-WP* | TFD 11F R/L 15 | 3/8 | .006 | R | | | | | Ⓡ | | | | | | |
|  | DCGT 21.501 R/L U | DCGT 070200 R/L U | 1/4 | .001 | | | | | Ⓡ | Ⓡ | | | | | | |
| | DCGT 21.504 R/L U | DCGT 070201 R/L U | 1/4 | .004 | | | | | Ⓡ | Ⓡ | | | | | | |
| | DCGT 21.508 R/L U | DCGT 070202 R/L U | 1/4 | .008 | | | | | Ⓡ | R Ⓛ | | | | | | |
| | DCGT 32.501 R/L U1 | DCGT 11T300 R/L U1 | 3/8 | .001 | | | | Ⓡ | Ⓡ | R Ⓛ | | | | | | |
| | DCGT 32.504 R/L U1 | DCGT 11T301 R/L U1 | 3/8 | .004 | | Ⓡ | | Ⓡ | Ⓡ | R Ⓛ | | | | | | |
| | DCGT 32.508 R/L U1 | DCGT 11T302 R/L U1 | 3/8 | .008 | | Ⓡ | | Ⓡ | Ⓡ | R Ⓛ | | | | | | |
| | DCGT 32.51 R/L U1 | DCGT 11T304 R/L U1 | 3/8 | .016 | | | | Ⓡ | Ⓡ | R Ⓛ | | | | | | |
|  wiper insert | DCGT 21.502 R/L U-WP* | TFD 07F R/L 05U | 1/4 | .002 | Ⓡ | | | | Ⓡ | Ⓡ | | | | | | |
| | DCGT 21.506 R/L U-WP* | TFD 07F R/L 15U | 1/4 | .006 | Ⓡ | | | | | Ⓡ | | | | | | |
| | DCGT 32.502 R/L U1-WP* | TFD 11F R/L 05U1 | 3/8 | .002 | Ⓡ | | | | Ⓡ | Ⓡ | | | | | | |
| | DCGT 32.506 R/L U1-WP* | TFD 11F R/L 15U1 | 3/8 | .006 | Ⓡ | | | | | Ⓡ | | | | | | |
|  | DCET 21.502 R/L KHG | DCET 0702005 R/L KHG | 1/4 | .002 | | | | | Ⓡ Ⓛ | | | | | | | |
| | DCET 21.503 R/L KHG | DCET 0702008 R/L KHG | 1/4 | .003 | | | | | Ⓡ Ⓛ | | | | | | | |
| | DCET 21.507 R/L KHG | DCET 0702018 R/L KHG | 1/4 | .007 | | | | | Ⓡ Ⓛ | | | | | | | |
| | DCET 21.508 R/L KHG | DCET 070202 R/L KHG | 1/4 | .008 | | | | | Ⓡ Ⓛ | | | | | | | |
| | DCET 32.502 R/L KHG | DCET 11T3005 R/L KHG | 3/8 | .002 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | DCET 32.503 R/L KHG | DCET 11T3008 R/L KHG | 3/8 | .003 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | DCET 32.507 R/L KHG | DCET 11T3018 R/L KHG | 3/8 | .007 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | DCET 32.508 R/L KHG | DCET 11T302 R/L KHG | 3/8 | .008 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
|  | DCET 21.503 UHG | DCET 0702008 R/L UHG | 1/4 | .003 | | | | | Ⓡ | | | | | | | |
| | DCET 32.503 UHG | DCET 11T3008 R/L UHG | 3/8 | .003 | | | | | Ⓡ | | | | | | | |

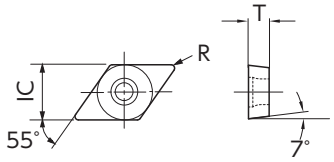


| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | DCGW 21.500 V Ⓜ | DCGW 07020 V | 1/4 | 0 | | | | | ○ | | | | | | | | — |
| | 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 | | | | | | | ○ | | | | | | |
|  wiper insert | DCGW 21.502RH-WP* Ⓜ | TFD 07FR05H | 1/4 | .002 | | | | | | | ○ | | | | | | — |
| | DCGW 32.502RH-WP* Ⓜ | TFD 11FR05H | 3/8 | .006 | | | | | | | ○ | | | | | | |

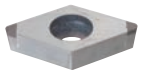
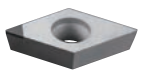
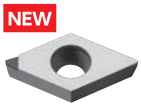



*Note: NTK WP style inserts have a wiper facet design.
The insert has a 0.3mm (.012") flat on the cutting edge when the insert is set into the toolholder.
The flat on the cutting edge ensures a superior surface finish when feed rates are increased.
WP style inserts can be used in toolholders: SDJC, CH-SDUC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

## DC.. Inserts - CBN / PCD




| | | |
|---|---|---|
| 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) Coated B5K | B52 | Coated B6K | B36 | B40 | B23 | B30 | PCD PD1 | PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | – | | | | | | | | ○ | |
| NEW  with chipbreaker | DCMT 32.508 PF | DCMT 11T302 PF | None | 3/8 | .008 | 1 | – | | | | | | | | | ● |
| | DCMT 32.51 PM | 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 ➡K42 • 44 • 45
Cutting condition ➡K30
Chipbreaker ➡K21

# Toolholders for VB.. Inserts

## SVJB-OH (Coolant through)

NEW

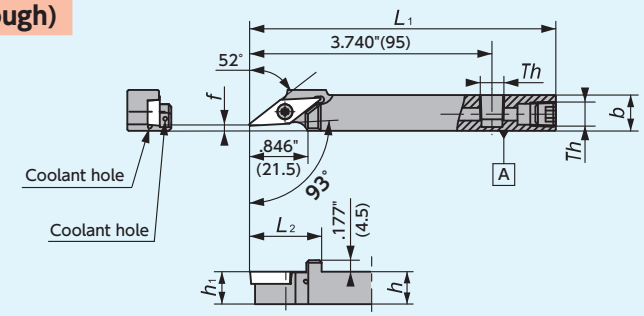



Figure-1

● Left-Hand coolant through holders are designed for Right-Hand machines

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Right-Hand style shown

### ■VBGT33

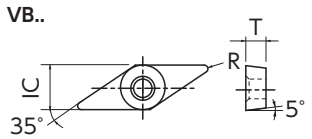
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VBGT33.. | SVJB※083C-F079-OH | 1 | ● | ● | 1/2 | | .551 | 14 | 1/2 | | 4.724 | 120 | .079 | 2 | .079 | 2 | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SVJB※103C-F079-OH | 1 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .079 | 2 | 0 | 0 | NPT1/8 | LRIS-4 × 10 | LLR-25S |
| | SVJB※1214-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※1616-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 |

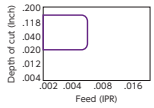



| | | P | M | K | N | S | H | Carbide QM3 | Carbide DT4 | Carbide DM4 | Carbide TM4 | Carbide VM1 | Carbide ZM3 | Carbide KM1 | Cermet XT3 | Cermet C7X | Cermet XN4 | Cermet Q15 | Cermet C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cast Iron | K | | | | | | | | | | | | | | ● | ● | | ● | ● |
| Non-Ferrous Material | N | | | | ● | ● | ● | ● | | | | | | | ● | ● | | | ● |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | | | | | | | | | |
| Hardened Material | H | ● | ● | ● | | | | | | | | | | | | | | | |

● : 1st Choice
● : Alternate choice

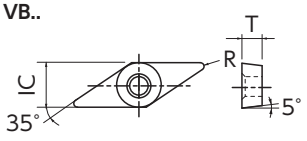
| Shape | Item Number | ISO Item Number | IC | R |
|---|---|---|---|---|
| NEW  | VBGT 3308 YL* | VBGT 160402 YL | 3/8 | .008 |
| | VBGT 331 YL | VBGT 160404 YL | 3/8 | .016 |
| | VBGT 332 YL* | VBGT 160408 YL | 3/8 | .031 |

| | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VBGT 3308 YL* | ● | | ● | ○ | | | | | | | | |
| VBGT 331 YL | ● | | ● | ○ | | | | | | | | |
| VBGT 332 YL* | ● | | ● | ○ | | | | | | | | |

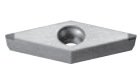



*To be released in March 2015

# VB.. inserts - CBN / PCD

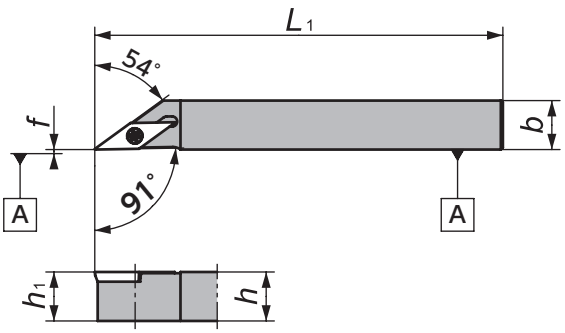



| | | P | M | K | N | S | H | CBN (Brazed) B5K | CBN (Brazed) B52 | CBN (Brazed) B6K | CBN (Brazed) B36 | CBN (Brazed) B40 | CBN (Brazed) B23 | CBN (Brazed) B30 | PCD PD1 | PCD PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | | | | | | |
| Stainless 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 | Coated B5K | B52 | Coated B6K | B36 | B40 | B23 | B30 | PD1 | PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | VBGW 332 PD | VBGW 160408 PD | S0415 | 3/8 | .031 | 2 | .063 | | ○ | | | | | | | |

# Toolholders for VC.. Inserts

## SVAC-N-1L



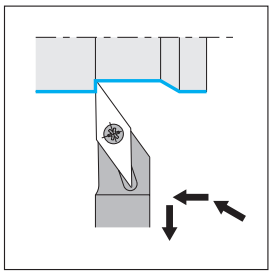



Figure-1

Right-Hand style shown

## ■SVAC-N

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VCGT21.508 | SVAC□1010X11N-1L | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | SVAC□1212X11N-1L | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0.0 | 0.0 | LR1S-2.5 × 7 | RLR-20S |

## ■SVAC-N

| Shape | Item Number | ISO Item Number | IC (Inch) | IC (mm) | T (Inch) | T (mm) | R (Inch) | R (mm) | Coated Carbide QM3 |
|---|---|---|---|---|---|---|---|---|---|
|  | VCGT21.508FN1L | VCGT110202FN1L | 1/4 | 6.35 | 1/8 | 3.175 | .008 | 0.2 | ○ |

## SVAC-NW

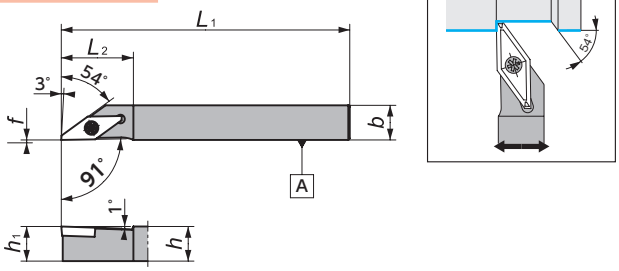



Figure-2

Right-Hand style shown

## SVAC-W

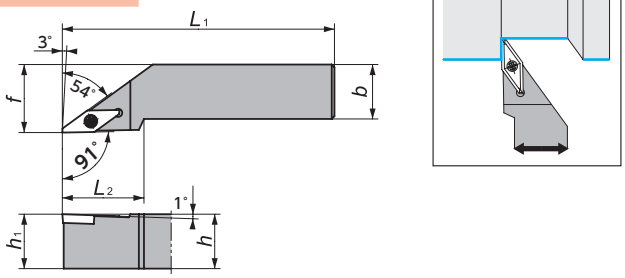



Figure-3

Right-Hand style shown

## ■SVAC□L

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | L2 (Inch) | L2 (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VCGT13030 | SVAC□1010L13NW | 2 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | 0.0 | 0.0 | .984 | 25 | LR1S-3 × 8 | RLR-20S |
| | SVAC□1212L13NW | 2 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 5.512 | 140 | 0.0 | 0.0 | .984 | 25 | LR1S-3 × 8 | RLR-20S |
| | SVAC□1616M13NW | 2 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 5.512 | 140 | 0.0 | 0.0 | .984 | 25 | LR1S-3 × 8 | RLR-20S |
| | SVAC□2020M13W | 3 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 5.906 | 150 | .984 | 25.0 | 1.181 | 30 | LR1S-3 × 8 | RLR-20S |

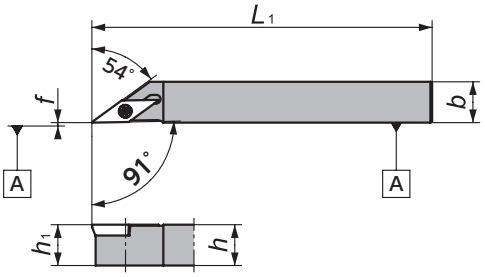
## ■SVAC□L

| Shape | Item Number | ISO Item Number | IC (Inch) | IC (mm) | T (Inch) | T (mm) | R (Inch) | R (mm) | Coated Carbide QM3 |
|---|---|---|---|---|---|---|---|---|---|
|  | VCGT130300F□2M | VCGT130300F□2M | .313 | 7.95 | 1/8 | 3.175 | .001 | 0.02 | ○ |
| | VCGT130301F□2M | VCGT130301F□2M | .313 | 7.95 | 1/8 | 3.175 | .004 | 0.1 | ○ |

● : Stock　○ : 1-2 week delivery　💧 : Coolant through　Cutting condition ➡K30　Chipbreaker ➡K21

# Toolholders for VC.. Inserts

## SVAC-N



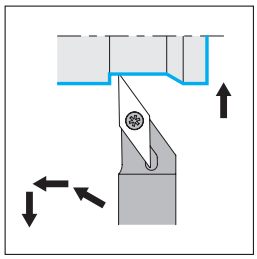
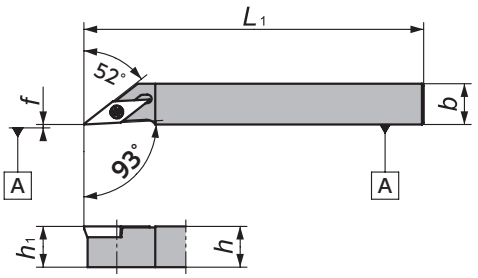



Figure-1

Right-Hand style shown

## SVJC



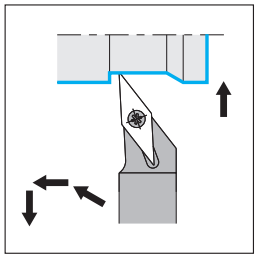
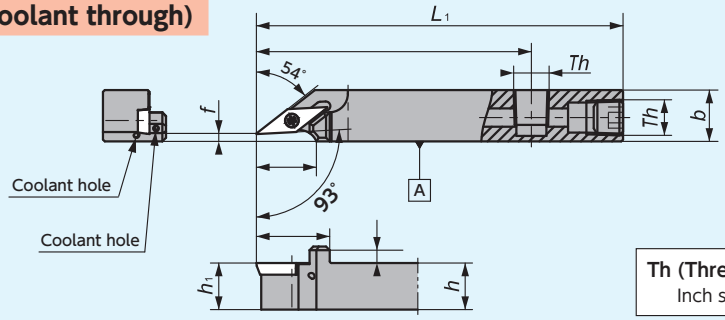



Figure-2

Right-Hand style shown

## SVJC-OH (Coolant through)

NEW



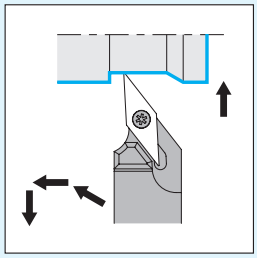
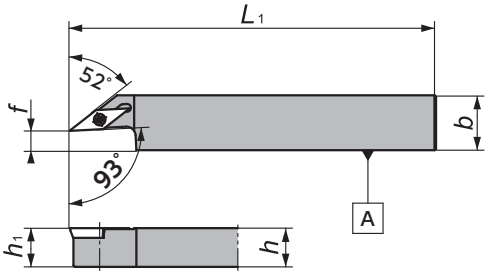



Figure-3

**Th (Thread type)**
Inch size holder: NPT1/8

Right-Hand style shown

## SVJC-F (Shifted)



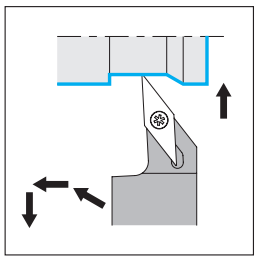
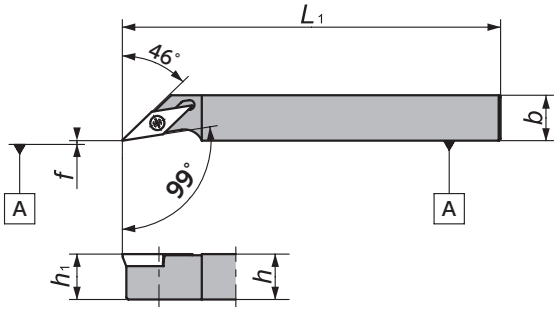



Figure-4

Right-Hand style shown

## SVXC-N



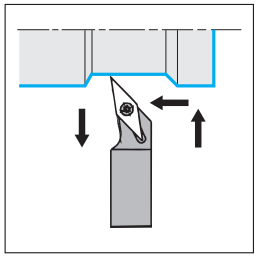
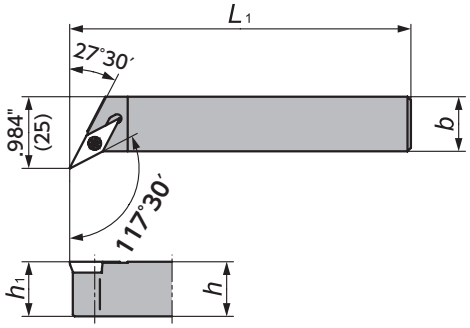



Figure-5

Right-Hand style shown

## SVQC



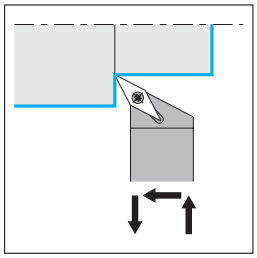



Figure-6

Right-Hand style shown

## SVVC-N

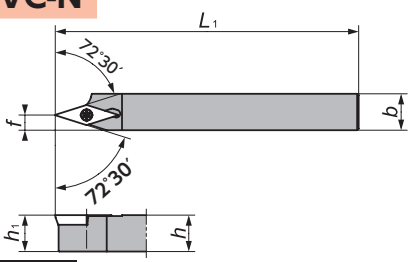



Figure-7

Right-Hand style shown

## SVVC-N

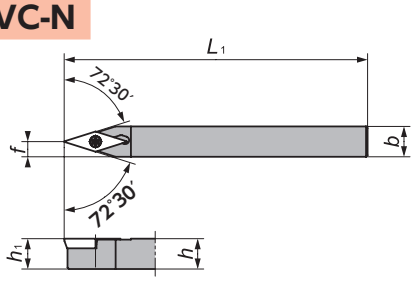
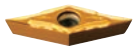



Figure-8

## VC.. Series - Toolholders I



| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | N | N | | | | | | | | | | | | | |
| VC..22 VC..22-WP | SVAC□0808X11N | 1 | ● | ● | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVAC□1010X11N | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVAC□1212X11N | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVAC□1616X11N | 1 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| VC..22 | SVJC□-062C | 4 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVJC□-082C | 4 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVJC□-102C | 4 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVJC□1010X11N | 2 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVJC□1212X11N | 2 | ● | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVJC□1616X11N | 2 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| VC..22 | SVJC□-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□-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□-082C-F250 | 4 | ● | | 1/2 | | 1/2 | | .709 | 18 | 4.724 | 120 | 1/4 | | – | LRIS-2.5 × 7 | CLR-15S |
| | SVJC□-082C-F500 | 4 | ● | | 1/2 | | 1/2 | | .984 | 25 | 4.724 | 120 | 1/2 | | – | LRIS-2.5 × 7 | CLR-15S |
| VC..22 | SVXC□1210X11N | 5 | ○ | ○ | .394 | 10 | .472 | 12 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVXC□1212X11N | 5 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0.0 | 0.0 | – | LRIS-2.5 × 7 | CLR-15S |
| VC..22 | SVQC□20-X11 | 6 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 4.724 | 120 | – | – | – | LRIS-2.5 × 7 | CLR-15S |
| VC..22 | SVVC□1212X11N | 7 | ● | | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .197 | 5 | – | LRIS-2.5 × 7 | CLR-15S |
| | SVVC□1616X11N | 7 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .197 | 5 | – | 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 ➡K55 Cutting condition ➡K30

# Y-axis Toolholders for VC.. Inserts

## Y-SVJCR

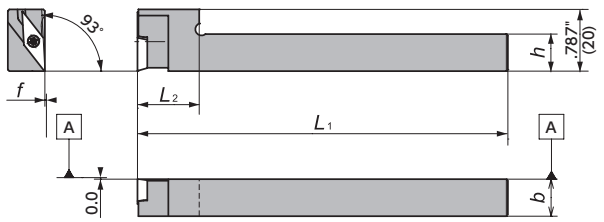



Figure-1

Right-Hand style shown
Takes Right-hand or Neutral insert

## Y-SVJCR-OH (Coolant through)

NEW

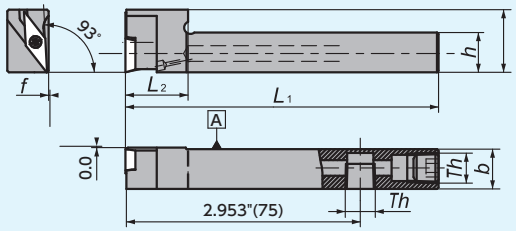



Figure-2

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 R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-SVJCR082SHS-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

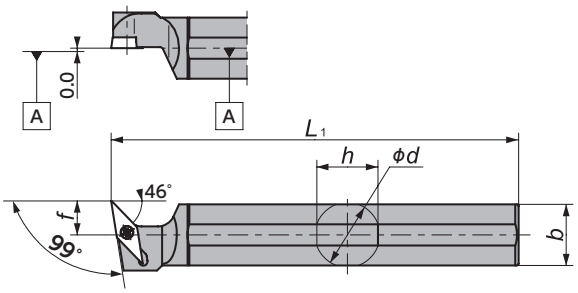
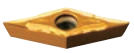



Figure-3

Left-Hand style shown
Takes Right-hand or Neutral insert

# VC.. Series - Toolholders Ⅲ



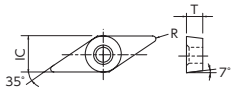
| Gage Insert | Item Number | Figure | Stock R | Stock L | ϕ d (Inch) | ϕ d (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VC..22.. | DS-SVX□14F-11 | 3 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX□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□16F-11 | 3 | | ● | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.150 | 80 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX□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□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□20X-11 | 3 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 3.740 | 95 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX□20-11 | 3 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX□22-11 | 3 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .394 | 10.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-SVX□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 ➡K30
Chipbreaker ➡K21

# VC.. Inserts - Carbide / Cermet

| (inch) | IC | T |
|---|---|---|
| VC..22 | 1/4 | 1/8 |



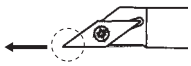

VC_ _

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

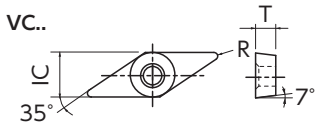
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 FNXAM3 | 1/4 | .008 | | | | | | | | | ○ | | | |
| | VCGT 221M FNAM3 | VCGT 110304M FNAM3 | 1/4 | .015 | ● | ● | | ○ | | | | | | | | |
| | VCGT 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 FNAZ7 | VCGT 110300 FNAZ7 | 1/4 | .001 | ● | | | | | ○ | | | | | | |
| | VCGT 2204M FNAZ7 | VCGT 110301M FNAZ7 | 1/4 | .003 | ● | | | | | ○ | | | | | | |
| | VCGT 2208M FNAZ7 | VCGT 110302M FNAZ7 | 1/4 | .007 | ● | | | | | ○ | | | | | | |
| | VCGT 221M FNAZ7 | VCGT 110304M FNAZ7 | 1/4 | .015 | ● | | | | | ○ | | | | | | |
| | VCMT 2204 T※AS | VCMT 110301 T※AS | 1/4 | .004 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | VCMT 2208 T※AS | VCMT 110302 T※AS | 1/4 | .008 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | VCMT 221 T※AS | VCMT 110304 T※AS | 1/4 | .016 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| wiper insert | VCGT 2202 ※S-WP* | TFV 11F※05SX | 1/4 | .002 | | | | | R | Ⓡ | | | | | | |
| wiper insert | VCGT 2204 ※S-WP* | TFV 11F※10SX | 1/4 | .004 | | | | | R | Ⓡ | | | | | | |
| | VCGT 2201 ※U | VCGT 110300 ※U | 1/4 | .001 | | | | | Ⓡ | Ⓡ | | | | | | |
| | VCGT 2204M ※U | VCGT 110301M ※U | 1/4 | .003 | | Ⓡ | | | | | | | | | | |
| | VCGT 2204 ※U | VCGT 110301 ※U | 1/4 | .004 | | | | | Ⓡ | Ⓡ | | | | | | |
| | VCGT 2208M ※U | VCGT 110302M ※U | 1/4 | .007 | | Ⓡ | | | | | | | | | | |
| | VCGT 2208 ※U | VCGT 110302 ※U | 1/4 | .008 | | | | | Ⓡ | Ⓡ | | | | | | |
| wiper insert | VCGT 2202 ※U-WP* | TFV 11F※05U | 1/4 | .002 | | | | | Ⓡ | Ⓡ | | | | | | |
| wiper insert | VCGT 2204 ※U-WP* | TFV 11F※10U | 1/4 | .004 | | | | | Ⓡ | Ⓡ | | | | | | |
| | VCET 2203 ※UHG | VCET 1103008 ※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 | | | | | | | ● | | | | | |



＊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




| | | |
|---|---|---|
| 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) Coated B5K | B52 | Coated B6K | B36 | B40 | B23 | B30 | PCD PD1 | PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | – | | | | | | | | ○ | |

# Toolholders VP..08 Inserts

## SVQP-N

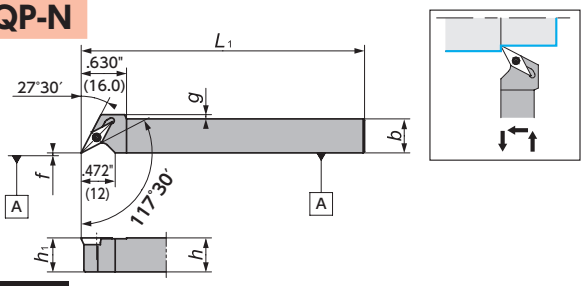



Figure-1

Right-Hand style shown

## CH-SVUP

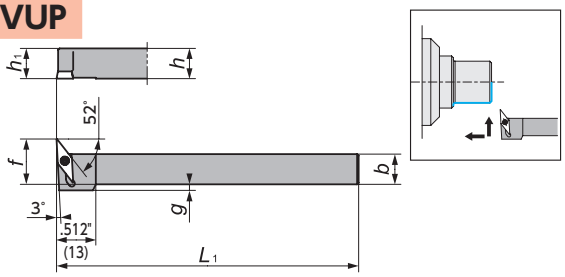



Figure-2

Left-Hand style shown
Takes Right-hand or Neutral insert

## DS-SVXP

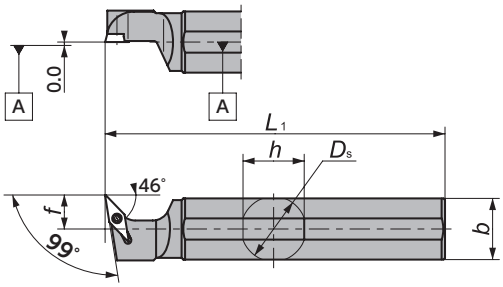
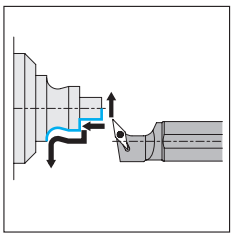



Figure-3



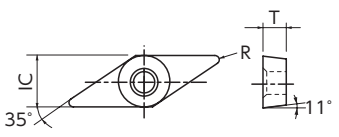
Left-Hand style shown
Takes Right-hand or Neutral insert

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VP..0802 | SVQP□1010X08N | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | .138 | 3.5 | LRIS-2 × 6 | CLR-13S |
| | SVQP□1212X08N | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | .059 | 1.5 | LRIS-2 × 6 | CLR-13S |
| | SVQP□1616X08N | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | 0 | 0 | LRIS-2 × 6 | CLR-13S |
| | CH-SVUP□1010H08 | 2 | | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 3.937 | 100 | .591 | 15 | .079 | 2 | LRIS-2 × 6 | CLR-13S |
| | CH-SVUP□1212H08 | 2 | | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.937 | 100 | .669 | 17 | 0 | 0 | LRIS-2 × 6 | CLR-13S |

| Gage Insert | Item Number | Figure | Stock R | Stock L | Ds (Inch) | Ds (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VP..0802 | DS-SVXP□19-08 | 3 | | ○ | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .394 | 10 | LRIS-2 × 6 | CLR-13S |
| | DS-SVXP□20-08 | 3 | | ○ | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .394 | 10 | LRIS-2 × 6 | CLR-13S |
| | DS-SVXP□22-08 | 3 | | ○ | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .394 | 10 | LRIS-2 × 6 | CLR-13S |
| | DS-SVXP□25-08 | 3 | | ○ | 1 | 25.400 | .945 | 24 | .945 | 24 | 5.906 | 150 | .394 | 10 | LRIS-2 × 6 | CLR-13S |

# VP.. Inserts - Carbide / Cermet

| (inch) | IC | T |
|---|---|---|
| VP..08 | 3/16 | 3/32 |

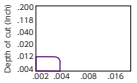


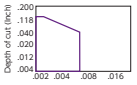

VP□□

| | | |
|---|---|---|
| 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: QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet: XT3 | C7X | XN4 | PVD Coated: Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | VPET 0802005 □KHG | VPET 0802005 □KHG | .187 | .002 | | | | | ®Ⓛ | | | | | | | |
| | VPET 0802008 □KHG | VPET 0802008 □KHG | .187 | .003 | | ® | | ® | ®Ⓛ | | | | | | | |
| | VPET 0802018 □KHG | VPET 0802018 □KHG | .187 | .007 | | | | ® | ®Ⓛ | | | | | | | |
| | VPET 080202 □KHG | VPET 080202 □KHG | .187 | .008 | | | | ® | ®Ⓛ | | | | | | | |
|  | VPET 0802008 □UHG | VPET 0802008 □UHG | .187 | .003 | | ®Ⓛ | | | | | | | | | | |



# Toolholders for VP..22 Inserts

## SVXP-N

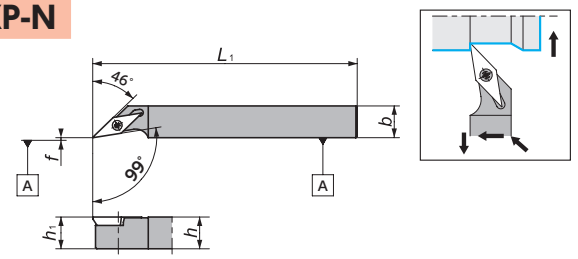



Figure-1

Right-Hand style shown

## DS-SVVP

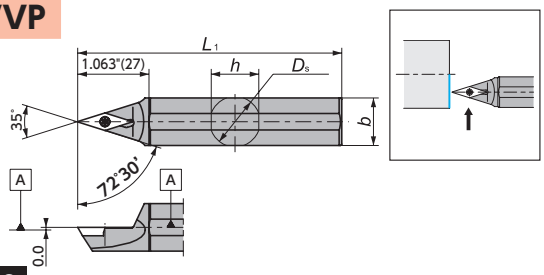



Figure-2

## DS-SVVP-ACH (Adjustable centerline height)

〈Parts〉

| Shank | Wedge | Screw for Wedge |
|---|---|---|
| ϕ.630" (16) | ACH-W18 (5805601) | WS060415-003 (5795539) |
| ϕ3/4" (19.05) | | |
| ϕ.787" (20) | | WS060419-004 (5799226) |
| ϕ.866" (22) | | |
| ϕ1" (25.4) | ACH-W24 (5805619) | |

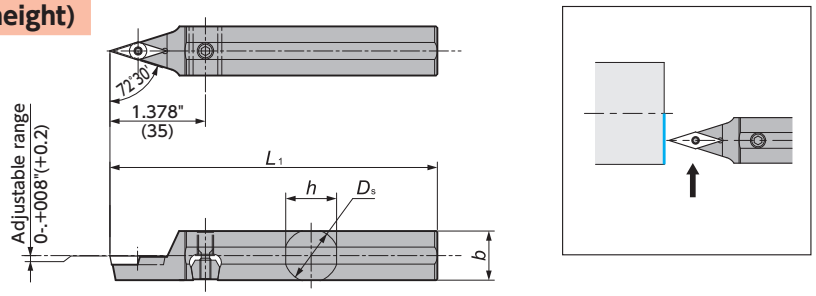


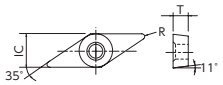

Figure-3

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VP..22 | SVXP[R/L]1012X11N | 1 | ○ | ○ | .394 | 10 | .472 | 12 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | SVXP[R/L]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 R | Stock L | Ds (Inch) | Ds (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | L1 (Inch) | L1 (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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 | 22.00 | .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 |

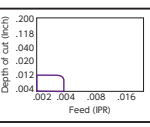


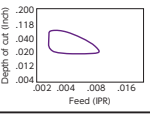

VP__

| | | |
|---|---|---|
| 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 PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | VPET 2202 R/KHG | VPET 1103005 R/KHG | 1/4 | .002 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | VPET 2203 R/KHG | VPET 1103008 R/KHG | 1/4 | .003 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | VPET 2207 R/KHG | VPET 1103018 R/KHG | 1/4 | .007 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | VPET 2208 R/KHG | VPET 110302 R/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 | ● | ● | | ○ | | | | | | | | |



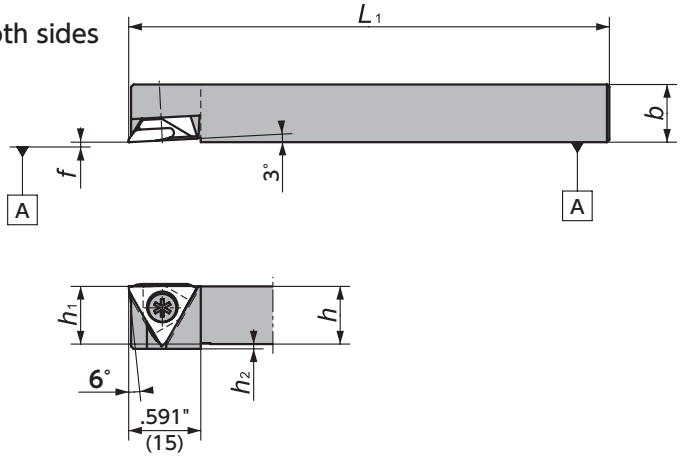

● : Stock ○ : 1-2 week delivery Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only)

Cutting condition →K30
Chipbreaker →K21

## Toolholders for TFT series

### TFT

Screw accessible from both sides



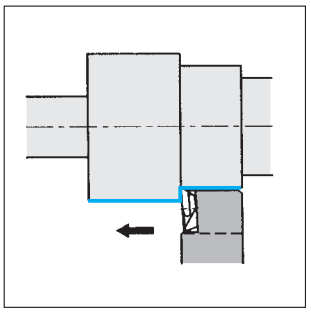
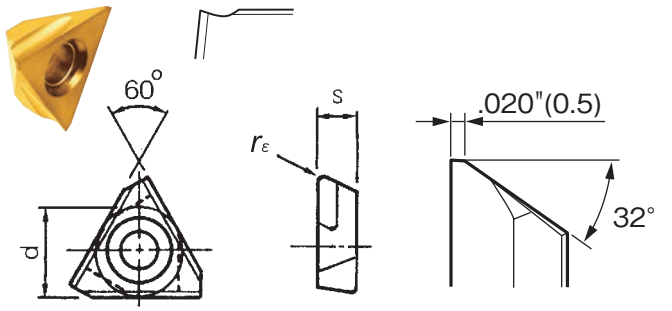



Figure-1

Right-Hand style shown

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | h2 (Inch) | h2 (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TF33 | TFT□06-IN | 1 | ● | | 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 | | 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




Right-Hand style shown

Note: Up to .157"(4.0mm) D.O.C.
All angles shown are obtained when insert is set in the holder.

| Item Number | d (Inch) | d (mm) | s (Inch) | s (mm) | rε (Inch) | rε (mm) | ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|
| 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

## STAC-N

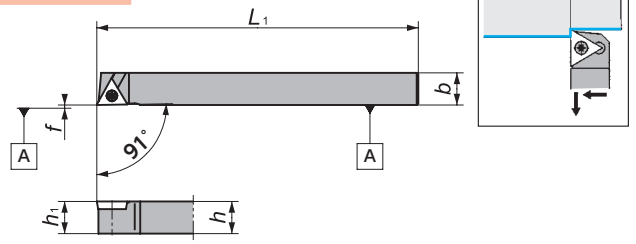



Figure-1

Right-Hand style shown

## CH-STUC

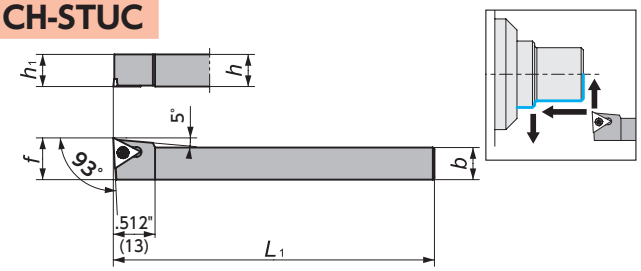


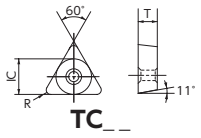

Figure-2

Left-Hand style shown
Takes Right-hand or Neutral insert

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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

| (inch) TC..21 | IC 1/4 | T 3/32 | (inch) TC..73 | IC 7/32 | T 3/32 |
|---|---|---|---|---|---|

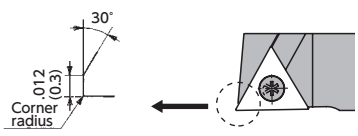



TC__

| | | |
|---|---|---|
| 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 PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | TCGT 21.508 FNAM3 | TCGT 110202 FNXAM3 | 1/4 | .008 | | | | | | | | | ○ | | | |
|  | TCGT 7304 □S | TCGT 090201 □S | 7/32 | .004 | | | | | Ⓡ Ⓛ | Ⓡ | | | Ⓡ | | | |
| | TCGT 7308 □S | TCGT 090202 □S | 7/32 | .008 | | | | | | Ⓡ | | | Ⓡ Ⓛ | | | |
| | TCGT 21.504 □S | TCGT 110201 □S | 1/4 | .004 | | | | | Ⓡ Ⓛ | Ⓡ | | | | | | |
|  wiper insert | TCGT 7302 □S-WP* | TFT 09F□05 | 7/32 | .002 | | | | | | Ⓡ | | | | | | |
| | TCGT 7306 □S-WP* | TFT 09F□15 | 7/32 | .006 | | | | | | Ⓡ | | | | | | |
| | TCGT 21.502 □S-WP* | TFT 11F□05 | 1/4 | .002 | | | | | | Ⓡ | | | | | | |
| | TCGT 21.506 □S-WP* | TFT 11F□15 | 1/4 | .006 | | | | | | Ⓡ | | | | | | |
|  | TCGT 7304 □U | TCGT 090201 □U | 7/32 | .004 | | | | | | Ⓡ | | | | | | |
| | TCGT 7308 □U | TCGT 090202 □U | 7/32 | .008 | | | | | | Ⓡ | | | | | | |
|  wiper insert | TCGT 7302 □U-WP* | TFT 09F□05U | 7/32 | .002 | | | | | | Ⓡ | | | | | | |
| | TCGT 7306 □U-WP* | TFT 09F□15U | 7/32 | .006 | | | | | | Ⓡ | | | | | | |
| | TCGT 21.502 □U1-WP* | TFT 11F□05U1 | 1/4 | .002 | | | | | | Ⓡ | | | | | | |
| | TCGT 21.506 □U1-WP* | TFT 11F□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) Ⓛ : 1-2 week delivery (Left-hand only)

Cutting condition ➡K30
Chipbreaker ➡K21

# Toolholders for TN.. Inserts

## PTXN-N

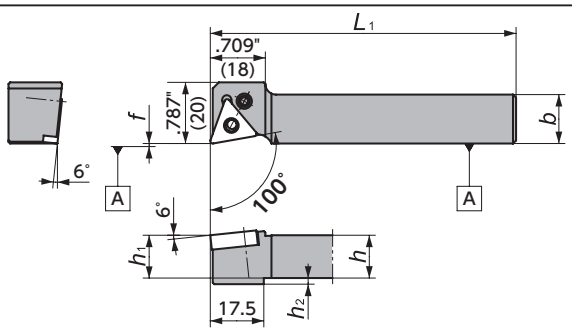
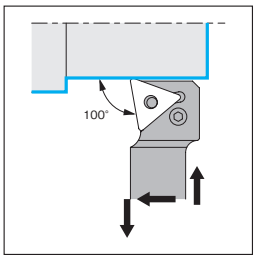



Figure-1

| Shim | Clamp Pin | Spring |
|---|---|---|
| – | LCL33N | – |




Right-Hand style shown

## PTAN-N

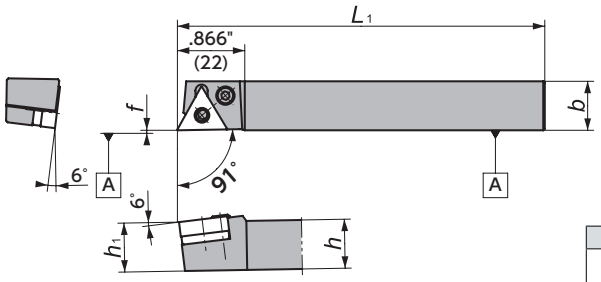
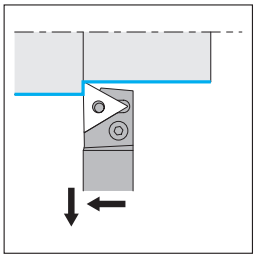



Figure-2

| Shim | Clamp Pin | Spring |
|---|---|---|
| LST317 | LCL3 | LSP3 |



Right-Hand style shown

## PTLN

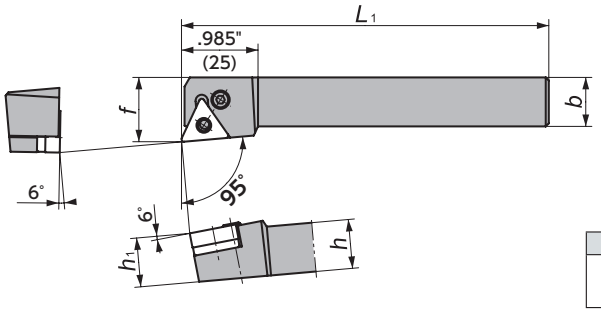
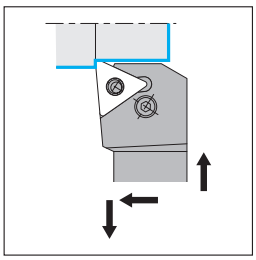



Figure-3

| Shim | Clamp Pin | Spring |
|---|---|---|
| LST317 | LCL3 | LSP3 |



Right-Hand style shown

## DS-PTX

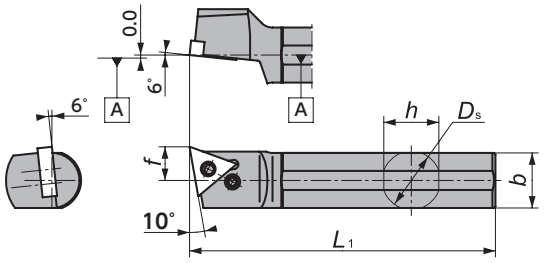
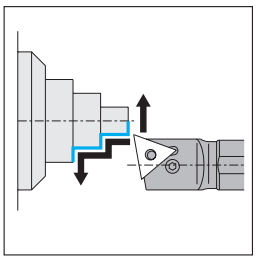



Figure-4

| Shim | Clamp Pin | Spring |
|---|---|---|
| – | LCL33N | – |



Left-Hand style shown
Takes Right-hand or Neutral insert

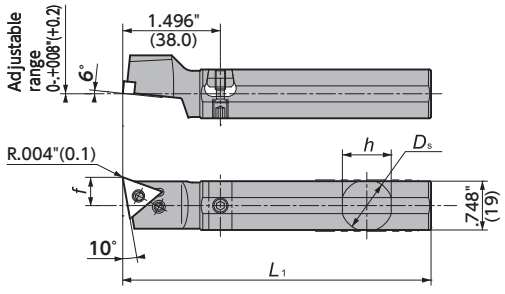
## DS-PTX-ACH (Adjustable centerline height)

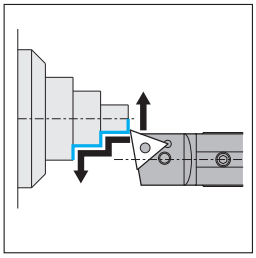
〈Parts〉

| Shank | Wedge | Screw for Wedge |
|---|---|---|
| ϕ.630" (16) | ACH-W18 (5805601) | WS060415-003 (5795539) |
| ϕ3/4" (19.05) | | |
| ϕ.787" (20) | | WS060419-004 (5799226) |
| ϕ.866" (22) | | |
| ϕ1" (25.4) | ACH-W24 (5805619) | |

| Shim | Clamp Pin | Spring |
|---|---|---|
| – | LCL33N | – |

Figure-5



Left-Hand style shown
Takes Right-hand or Neutral insert

# TN.. Series - Toolholders



## ■PTXN-N / PTAN-N / PTLN

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TN..33.. | PTXN※063C | 1 | ● | | 3/8 | | 5/8 | | 3/8 | | 4.724 | 120 | .097 | 2.475 | 0.0 | 0.0 | LCS33 | LW-2 |
| | PTXN※083C | 1 | ● | | 1/2 | | 5/8 | | 1/2 | | 4.724 | 120 | – | – | 0.0 | 0.0 | LCS33 | LW-2 |
| | PTXN※103C | 1 | ● | | 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 R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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※25-33-ACH | 5 | | ● | 1 | 25.400 | .945 | 24.0 | .945 | 24 | 5.906 | 150 | .512 | 13.0 | LCS33 | LW-2 |

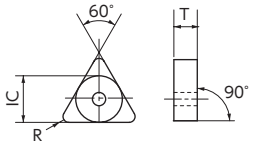
Note: All angles shown are obtained when insert is set in the holder

● : Stock ○ : 1-2 week delivery

Inserts ➡K62
Cutting condition ➡K30

## TN..33 inserts - Carbide / Cermet

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

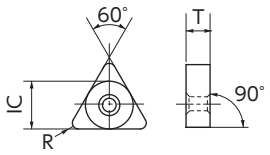



| | | Carbide | | | | | | | Cermet | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PVD Coated | | | | | | | | | | PVD Coated | |
| | | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cast Iron | K | | | | | | | | ● | ● | | ● | ● |
| Non-Ferrous Material | N | | | | ● | ● | ● | ● | ● | ● | | | ● |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | | | |
| Hardened Material | H | ● | ● | ● | | | | | | | | | |

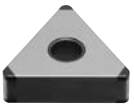
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 FR/LU2 | TNGG 160401 FR/LU2 | 3/8 | .004 | | | | | Ⓡ | Ⓡ | | Ⓡ | | | | |
| | TNGG 3308 FR/LU2 | TNGG 160402 FR/LU2 | 3/8 | .008 | | | Ⓡ/Ⓛ | | | Ⓡ/Ⓛ | | Ⓡ/Ⓛ | | | | |
| | TNGG 331 FR/LU2 | TNGG 160404 FR/LU2 | 3/8 | .016 | | | Ⓡ/Ⓛ | | | Ⓡ/Ⓛ | | Ⓡ/Ⓛ | | | | |
| | TNGG 332 FR/LU2 | TNGG 160408 FR/LU2 | 3/8 | .031 | | | | | | Ⓡ/Ⓛ | | | | | | |
|  | TNEG 3304M FR/LD1 | TNEG 160401M FR/LD1 | 3/8 | .003 | | | | | | | | | | | | Ⓡ/Ⓛ |
| | TNEG 3308 FR/LD1 | TNEG 160402 FR/LD1 | 3/8 | .008 | | | | Ⓡ/Ⓛ | | | | | | | | Ⓡ/Ⓛ |
| | TNEG 331 FR/LD1 | TNEG 160404 FR/LD1 | 3/8 | .016 | | | | Ⓡ/Ⓛ | | | | | | | | Ⓡ/Ⓛ |
| | TNEG 332 FR/LD1 | TNEG 160408 FR/LD1 | 3/8 | .031 | | | | Ⓡ/Ⓛ | | | | | | | | Ⓡ/Ⓛ |
|  | TNGG 3304 FR/LDA | TNGG 160401 FR/LDA | 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




| | | CBN (Brazed) | | | | | | | PCD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Coated | | Coated | | | | | | |
| | | B5K | B52 | B6K | B36 | B40 | B23 | B30 | PD1 | PD2 |
| 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 | 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 | | | | | ● | | | | |
| NEW  with chipbreaker | 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 ➔K60 Cutting condition ➔K30 Chipbreaker ➔K25

# Toolholders for CN.. Inserts

## PCLN-N

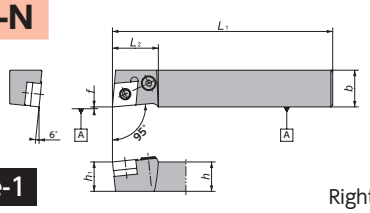
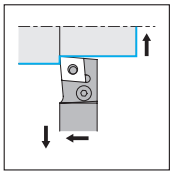


Figure-1



Right-Hand style shown

## PCLN

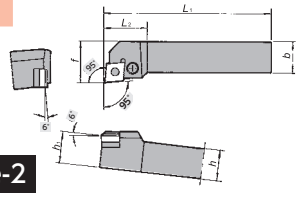
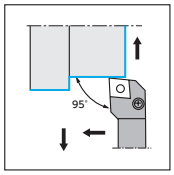


Figure-2

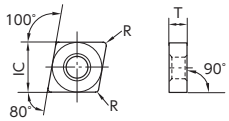


Right-Hand style shown

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Shim | Clamp Pin | Clamp Screw | Spring | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CN..43.. | 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

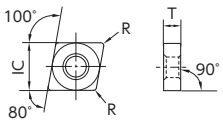
| (inch) | IC | T |
|---|---|---|
| CN..43 | 1/2 | 3/16 |



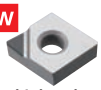
| | | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cast Iron | K | | | | | | | | ● | ● | | ● | ● |
| Non-Ferrous Material | N | | | | ● | ● | ● | ● | ● | ● | | | ● |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | | | |
| Hardened Material | H | ● | ● | ● | | | | | | | | | |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | | | | | | | | ● | | | | |



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

| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | CBN (Brazed) Coated B5K | B52 | Coated B6K | B36 | B40 | B23 | B30 | PCD 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 | | | | | ● | | | | |
|  with wiper | 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  with chipbreaker | CNMX 431 PF | CNMX 120404 PF | none | 1/2 | .016 | 1 | – | | | | | | | | | ● |
| | CNMX 432 PF | CNMX 120408 PF | none | 1/2 | .031 | 1 | – | | | | | | | | | ● |

# Toolholders for DN.. Inserts

## PDJN-N

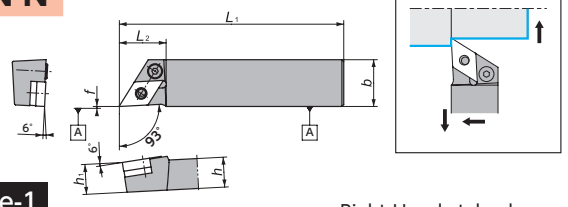


Figure-1

Right-Hand style shown

## PDJN

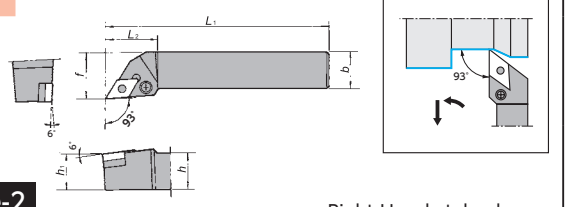
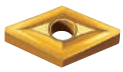


Figure-2

Right-Hand style shown

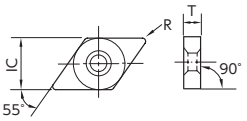
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Shim | Clamp Pin | Clamp Screw | Spring | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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]

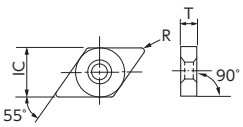
| (inch) | IC | T |
|---|---|---|
| DN..43 | 1/2 | 3/16 |



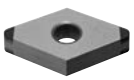
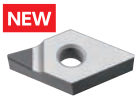
| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● |
| Hardened Material | H | ● ● ● |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated 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 | | | | | | | | ● | | | | |



| | | |
|---|---|---|
| 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) Coated B5K | B52 | Coated B6K | B36 | B40 | B23 | B30 | PCD PD1 | PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | | | | | ● | | | | |
| NEW  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 ➡K30 Chipbreaker ➡K25

[ Front Turning ]

For Swiss-type Lathes

K

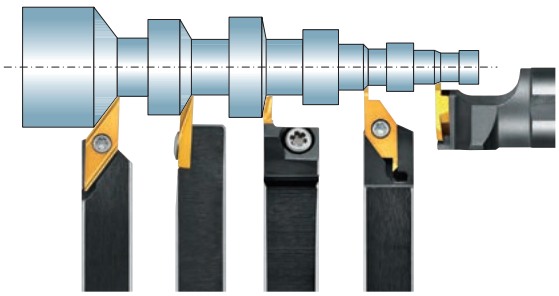


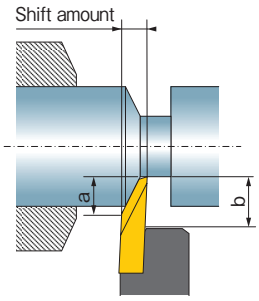
# Back Turning


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- Recommended Cutting conditions··· K67
- General Information ····· K68
- Tool list ····· K70

CSV Series ····· K70
CTPS Series ····· K71
TBP Series ····· K72
TBPA Series ····· K74
TBDP Series ····· K76
SVAC Series ····· K77
TBVC Series ····· K78
TB Series ····· K80
TBMH Series ····· K82

# NTK Back Turning Tools - Product Lines

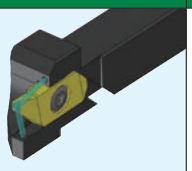
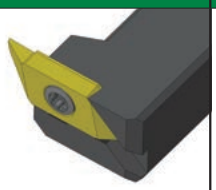


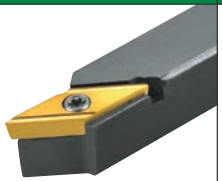
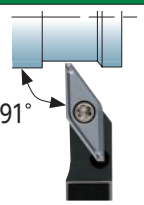


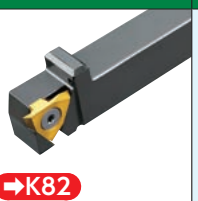

a: Length of Blade
b: Max Depth of Cut

| Insert | CSVB ➡K70 | |
|---|---|---|
| | CSV-NC | DS-CSV |
| Holder |  ➡K70 |  ➡K70 |
| a | ~.039" (~1.0mm) | |
| b | ~.079" (~2.0mm) | |
| Shift amount | .043"-.055" (1.1-1.5mm) | |

| Insert | CTPS ➡K71 | TBP ➡K73 | | | | |
|---|---|---|---|---|---|---|
| | CTPS | TBP | TBP-OH | Y-TBP | Y-TBP-OH | DS-TBP |
| Holder |  ➡K71 |  ➡K72 | NEW  ➡K72 Coolant through |  ➡K72 Y-axis | NEW  ➡K72 Y-axis w/ Coolant through |  ➡K73 |
| a | ~.189" (~4.8mm) | ~.189" (~4.8mm) | | | | |
| b | ~.189" (~4.8mm) | ~.209" (~5.3mm) | | | | |
| Shift amount | .094" (2.4mm) | .138" (3.5mm) | | | | |

| Insert | TBPA ➡K75 | | | | TB ➡K81 |
|---|---|---|---|---|---|
| | CTPA | CTPA-OH | Y-CTPA | CH-TBPA | TB |
| Holder |  ➡K74 | NEW  ➡K74 Coolant through |  ➡K74 Y-axis |  ➡K74 |  ➡K80 |
| a | ~.248" (~6.3mm) | | | | ~.157" (~4.0mm) |
| b | ~.268" (~6.8mm) | | | | ~.335" (~8.8mm) |
| Shift amount | .134" (3.4mm) | | | | .157" (4.0mm) |

| Insert | TBDP ➡K76 | | VC..22 ➡K79 TBVC ➡K78 | | VCGT1303 ➡K77 |
|---|---|---|---|---|---|
| | TBDP | Y-TBDP | TBVC | CH-SVXCL | SVAC-W |
| Holder |  ➡K76 | NEW  ➡K76 Y-axis |  ➡K78 |  ➡K78 |   ➡K77 |
| a | .138" (3.5mm) | | .315" (8.0mm) | — | — |
| b | ~.204" (~5.0mm) | | .315" (8.0mm) | — | — |
| Shift amount | .081" (2.05mm) | | .295"/.394" (7.5/10mm) | .394" (10mm) | — |

| Insert | TBMH ➡K83 | | | | | |
|---|---|---|---|---|---|---|
| Holder | GTT | GTT-OH | Y-GTT | Y-GTT-OH | DS-GTT | CH-GTT |
| |  ➡K82 | NEW  ➡K82 Coolant through |  ➡K82 Y-axis | NEW  ➡K82 Y-axis w/ Coolant through |  ➡K82 |  ➡K82 |
| a | ~.051" (~1.3㎜) | | | | | |
| b | ~.106" (~2.7㎜) | | | | | |
| Shift amount | .039"/.059" (1.0/1.5㎜) | | | | | |

# Recommended Cutting conditions

## Back Turning

**CSVB**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel Hastelloy MP35N | Ti-6Al-4V | ASTM F-75 | 304 316 17-4PH | 303 430F | 5120 4137 | 1045 1046 |
| Grade | 1st choice | 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 | | | | | | |

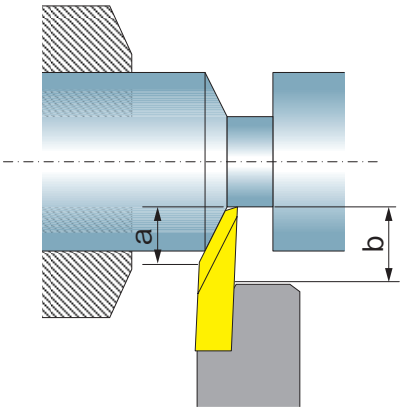
**TBDP / TBMH / TBP / TBPA / TBVC**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | 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 / 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 |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel Hastelloy MP35N | Ti-6Al-4V | ASTM F-75 | 304 316 17-4PH | 303 430F | 5120 4137 | 1045 1046 |
| Grade | 1st choice | ZM3 | | | | | ZM3 | |
| | 2nd choice | | | | | | Z15 | |
| Cutting Speed (SFM) | | 50 100 150 | | | | ZM3 150 300 425<br>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



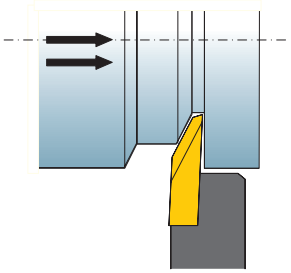

## Recommended max. depth of cut for each pass

(Multiply this ratio by the length of blade (a) to obtain the max. depth of cut for each pass)

| Work material \ Grade | PVD Coated Carbide QM3·DT4·DM4·TM4·VM1·ZM3 | Cermet XT3・XN4 |
|---|---|---|
| Steel | .028"(0.7㎜) | .020"(0.5㎜) |
| Stainless Steel | .024"(0.6㎜) | .016"(0.4㎜) |
| Non-ferrous material | .035"(0.9㎜) | .031"(0.8㎜) |
| Plastic | .035"(0.9㎜) | .035"(0.9㎜) |

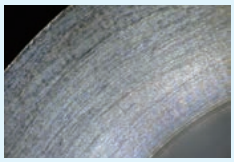
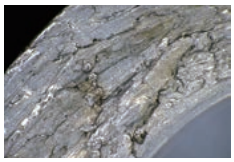
a : Length of Blade　b : Max. Depth of Cut

## When the length of blade (a) is not long enough

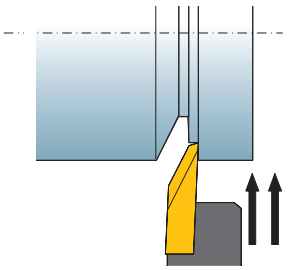


Back turning can be performed multiple times until the total depth of cut reaches (b).

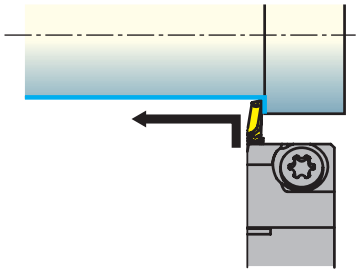
End face

| NTK BM-chipbreaker | Competitor |
|---|---|
|  |  |
| Excellent surface | Rough surface |

## When experiencing rough finish on shoulder



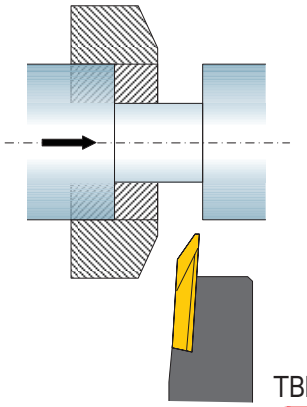
Turning the shoulder twice can improve the finish.
This problem can be solved by using TBP-BM, TBPA-BM, TBDP inserts without increasing the number of passes



TBP-BM, TBPA-BM, TBDP come with NTK's uniquely designed molded chipbreaker providing single pass machining. These inserts can provide excellent surface finish.

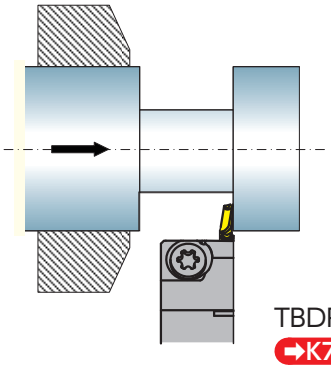
TBP-BM ➡K73
TBPA-BM ➡K75
TBDP ➡K76

## ■Finishing cut



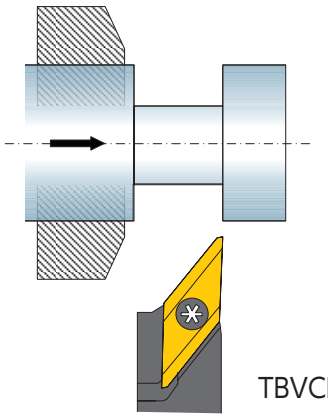
Roughed section goes into the guide bushing when performing finish cuts.
(Deburring may be needed upon roughing)

TBP
➡K72



TBDP-L
➡K76

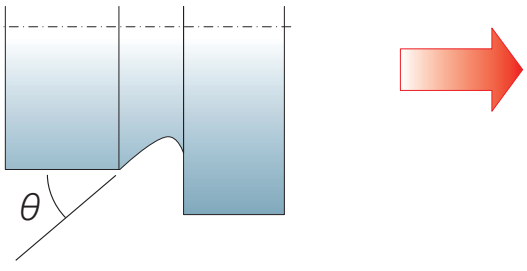
TBDP Left-hand toolholder will eliminate the risky process of pulling back the turned bar stock into the guide-bushing for finishing process, because its cutting point is away from the guide-bushing.



TBVCR··F10
➡K78

Cutting edge is located away from the guide-bushing. Roughing can be performed without retracting roughed part from guide-bushing.

## ■Undercut




Assume undercut exists on back turning section

$\theta = 22^\circ$ type

$\theta = 45^\circ$ type

TBMH style inserts should be used to cut the undercut

TBMH32 ➡K83
GTTR ➡K82
DS-GTTL ➡K82

# CSV Series

**Best for up to .200" diameter material**

## CSV-NC

For Gang-style machine

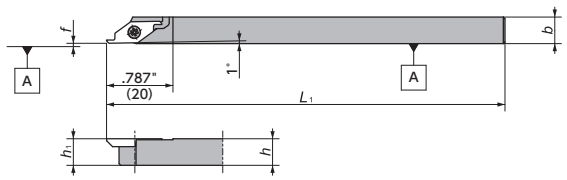



Figure-1

Right-Hand style shown

## CSV

For Cam-style machine

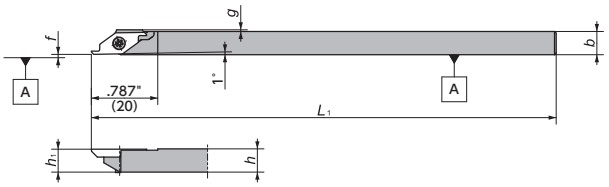



Figure-2

Right-Hand style shown

## DS-CSVL

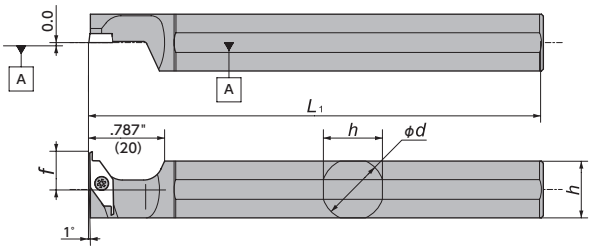



Figure-3

Left-Hand style shown
Takes Right-hand insert

## CSVR/L / CSVR/L-NC

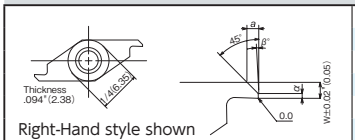
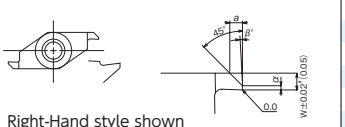
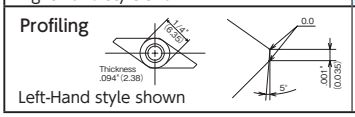
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11.. | CSVR/L06-IN-NC | 1 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08-IN-NC | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08NC | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08NC-F | 1 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | 0–.004 | 0.0–0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L10GXNC | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L10NC | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L12NC | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L07GX | 2 | ○ | | .275 | 7 | .275 | 7 | .275 | 7 | 3.346 | 85 | .004 | 0.1 | .020 | 0.5 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L07 | 2 | ○ | ● | .275 | 7 | .275 | 7 | .275 | 7 | 5.512 | 140 | .004 | 0.1 | .020 | 0.5 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08GX | 2 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L08 | 2 | ● | ● | .315 | 8 | .315 | 8 | .315 | 8 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L095 | 2 | ○ | | .374 | 9.5 | .374 | 9.5 | .374 | 9.5 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L10 | 2 | ● | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L12GX | 2 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | CSVR/L12 | 2 | ● | | .472 | 12 | .472 | 12 | .472 | 12 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |

## DS-CSVL (Takes right-hand insert)

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11FR.. | DS-CSVL15 | 3 | | ● | 5/8 | 15.875 | .591 | 15 | .591 | 15 | 4.724 | 120 | .394 | 10 | LR1S-2.5 × 7 | CLR-15S |

## CSVB - Back Turning

Mirror finish

| Shape | Item Number | Chip-breaker | Length of Blade (Inch) | Length of Blade (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | W (Inch) | W (mm) | Edge Geometry (α × β°) (Inch) | Edge Geometry (α × β°) (mm) | Coated Carbide DT4 R | DT4 L | VM1 R | VM1 L | ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | CSVB11FR/LV | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 5° | 0.3 × 5° | | | ○ | ○ | | |
| | CSVB11FR/LV-A | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVB11FR/LV-M | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 5° | 0.15 × 5° | ● | | ● | ○ | ○ | |
| | CSVB11FR/LV-C | No | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 5° | 0.15 × 5° | | | ○ | | | |
| | CSVB11FR/LV12 | No | .031 | 0.8 | .079 | 2.0 | .047 | 1.20 | .012 × 5° | 0.3 × 5° | | | ○ | | | |
| | CSVB11FR/LV14 | No | .039 | 1.0 | .079 | 2.0 | .055 | 1.40 | .012 × 5° | 0.3 × 5° | | | ○ | | | |
|  Right-Hand style shown | CSVB11FR/LVB | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 5° | 0.3 × 5° | | | ○ | | | |
| | CSVB11FR/LVB-A | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .012 × 2° | 0.3 × 2° | | | ○ | | | |
| | CSVB11FR/LVB-M | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 5° | 0.15 × 5° | ● | | ● | ○ | ○ | |
| | CSVB11FR/LVB-C | Yes | .028 | 0.7 | .079 | 2.0 | .039 | 1.00 | .006 × 5° | 0.15 × 5° | | | ○ | | | |
| | CSVB11FR/LVB12 | Yes | .031 | 0.8 | .079 | 2.0 | .047 | 1.20 | .012 × 2° | 0.3 × 5° | | | ○ | | | |
| | CSVB11FR/LVB14 | Yes | .039 | 1.0 | .079 | 2.0 | .055 | 1.40 | .012 × 2° | 0.3 × 5° | | | ○ | | | |
| Profiling  Left-Hand style shown | CSVB11FR/LVX | No | – | – | – | – | – | – | | | | | | ○ | | |

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

CSV series ➡J36

# CTPS Series

## CTPS

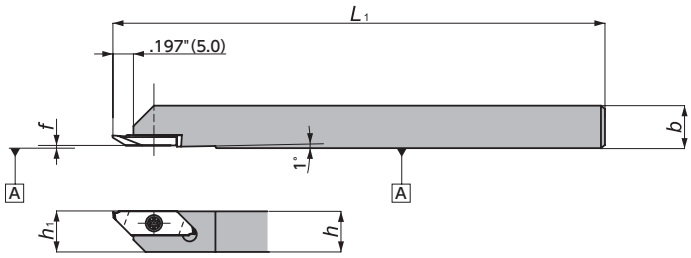



Figure-1

Right-Hand style shown

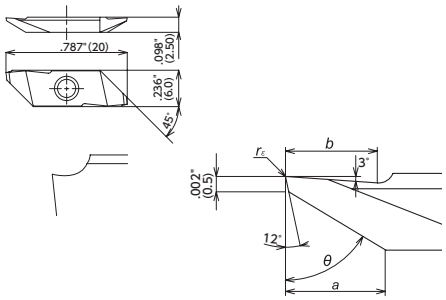
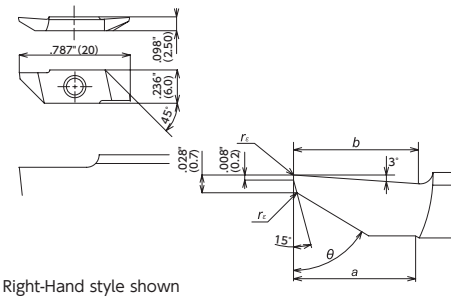
# CTPS Series - Toolholders

## ■CTPS

| Gage Insert | Item Number | Figure | Stock | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBPS.. | **CTPSR06-IN** | 1 | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR08-IN** | 1 | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR10** | 1 | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR12** | 1 | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0.0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |

# TBPS Series - Inserts

## ■TBPS - Back Turning

| Shape | Item Number | Chip-breaker | Length of Blade a (Inch) | a (mm) | Max Depth of Cut b (Inch) | b (mm) | θ | rε (Inch) | rε (mm) | Coated Carbide VM1 | Coated Carbide 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

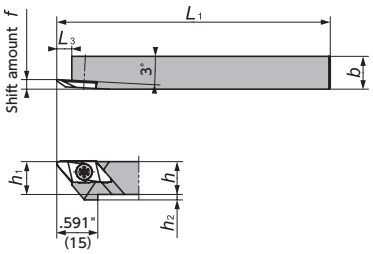
● : Stock ○ : 1-2 week delivery Ⓜ : Mirror finish

CTPS series ➡J40 Cutting condition ➡K67

# TBP Series

## TBP

Screw accessible from both sides



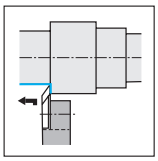



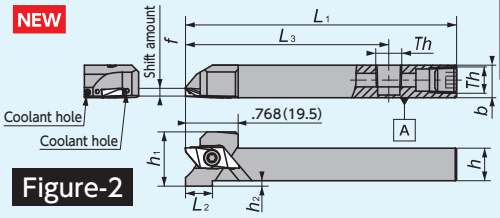
Figure-1

Right-Hand style shown

## TBP-OH (Coolant through)

Screw accessible from both sides

NEW



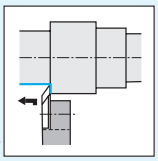



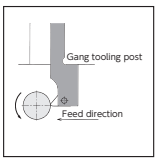
Figure-2

**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



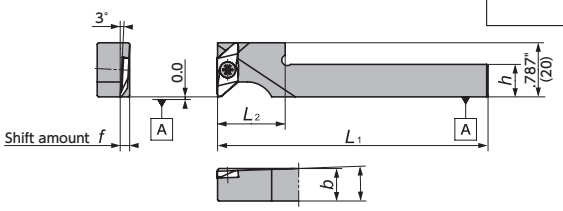



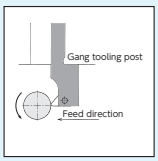

Figure-3

Right-Hand style shown
Takes Right-hand Insert

## Y-TBP-OH (Coolant through)

Screw accessible from both sides

NEW



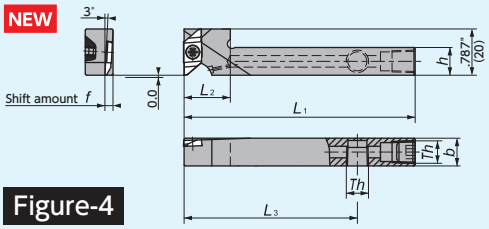




Figure-4

**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)

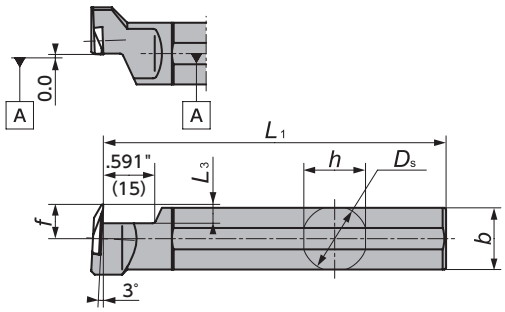
Right-Hand style shown
Takes Right-hand Insert

# TBP Series - Toolholders

## ■TBP

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | $L_3$ (Inch) | $L_3$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBP.. | TBP3/8-06-IN | 1 | ● | | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .138 | 3.5 | — | — | .079 | 2 | .217 | 5.5 | — | LRIS-4×10PW | CLR-15S |
| | TBP3/8-08-IN | 1 | ● | | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .138 | 3.5 | — | — | 0 | 0 | .217 | 5.5 | — | LRIS-4×12PW | CLR-15S |
| | TBP3/8-10-IN | 1 | ● | | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .138 | 3.5 | — | — | 0 | 0 | .217 | 5.5 | — | LRIS-4×12PW | CLR-15S |
| | TBP3/8 | 1 | ○ | ○ | .315 | 8 | .394 | 10 | .315 | 8 | 4.724 | 120 | .138 | 3.5 | — | — | .157 | 4 | .217 | 5.5 | — | LRIS-4×10PW | CLR-15S |
| | TBP3/8-10H | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.937 | 100 | .138 | 3.5 | — | — | .394 | 2 | .217 | 5.5 | — | LRIS-4×10PW | CLR-15S |
| | TBP3/8-10 | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .138 | 3.5 | — | — | .394 | 2 | .217 | 5.5 | — | LRIS-4×10PW | CLR-15S |
| | TBP3/8-12GX | 1 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .138 | 3.5 | — | — | 0 | 0 | .217 | 5.5 | — | LRIS-4×12PW | CLR-15S |
| | TBP3/8-12 | 1 | ● | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .138 | 3.5 | — | — | 0 | 0 | .217 | 5.5 | — | LRIS-4×12PW | CLR-15S |
| | TBP3/8-13 | 1 | ○ | | .512 | 13 | .512 | 13 | .512 | 13 | 4.724 | 120 | .138 | 3.5 | — | — | 0 | 0 | .217 | 5.5 | — | LRIS-4×12PW | CLR-15S |
| | TBP3/8-16H | 1 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .138 | 3.5 | — | — | 0 | 0 | .217 | 5.5 | — | LRIS-4×12PW | CLR-15S |
| | TBP3/8-16 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .138 | 3.5 | — | — | 0 | 0 | .217 | 5.5 | — | LRIS-4×12PW | CLR-15S |
| | TBP3/8-06-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 |
| | TBP3/8-08-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 |
| | TBP3/8-10-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 |
| | TBP3/8-1012H-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 |
| | TBP3/8-12H-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 |
| | TBP3/8-16H-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-TBP3/8-06-IN | 3 | ● | | 3/8 | | 3/8 | | — | — | 2.756 | 70 | .138 | 3.5 | .984 | 25 | — | — | — | — | — | LRIS-4×10PW | CLR-15S |
| | Y-TBP3/8-08-IN | 3 | ● | | 1/2 | | 1/2 | | — | — | 2.756 | 70 | .138 | 3.5 | .984 | 25 | — | — | — | — | — | LRIS-4×12PW | CLR-15S |
| | Y-TBP3/8-10-IN | 3 | ● | | 5/8 | | 5/8 | | — | — | 2.756 | 70 | .138 | 3.5 | .984 | 25 | — | — | — | — | — | LRIS-4×12PW | CLR-15S |
| | Y-TBP3/8-10S | 3 | ○ | | .394 | 10 | .394 | 10 | — | — | 4.724 | 120 | .138 | 3.5 | .787 | 20 | — | — | — | — | — | LRIS-4×10PW | CLR-15S |
| | Y-TBP3/8-12S | 3 | ○ | | .472 | 12 | .472 | 12 | — | — | 4.724 | 120 | .138 | 3.5 | .787 | 20 | — | — | — | — | — | LRIS-4×12PW | CLR-15S |
| | Y-TBP3/8-08H-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-TBP3/8-12HS-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-TBP3/8-16H-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



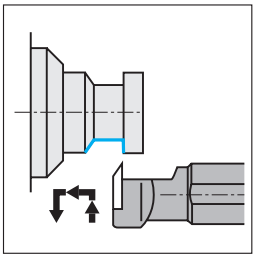



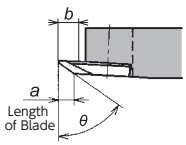
Figure-5

Left-Hand style shown
Takes Right-hand Insert

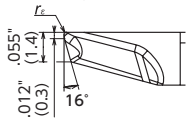
### DS-TBP (Takes right-hand inserts)

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | $h$ (Inch) | $h$ (mm) | $b$ (Inch) | $b$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $f$ (Inch) | $f$ (mm) | $L_3$ (Inch) | $L_3$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBP..FR.. | DS-TBPR/L19 | 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-TBPR/L20 | 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-TBPR/L25 | 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 |

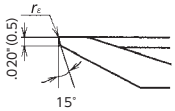
## TBP Series - Inserts

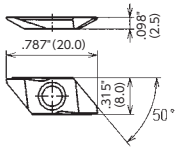



with BM-Chipbreaker NEW



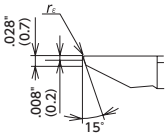

with Chipbreaker



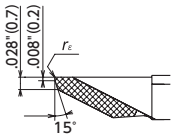




without Chipbreaker

Mirror finish




〈PD1〉 PCD tipped




Right-Hand style shown

### TBP - Back Turning

| Item Number | Chip-breaker | Length of Blade $a$ (Inch) | Length of Blade $a$ (mm) | Max Depth of Cut $b$ (Inch) | Max Depth of Cut $b$ (mm) | $\theta$ | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide QM3 R | QM3 L | DT4 R | DT4 L | DM4 R | DM4 L | TM4 R | TM4 L | VM1 R | VM1 L | ZM3 R | ZM3 L | Carbide KM1 R | KM1 L | Coated Cermet C7Z R | C7Z L | PCD PD1 R | PD1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TBP72FR/L05-BM | Yes-BM | .138 | 3.5 | .209 | 5.3 | 72° | .002 | 0.05 | | | | | ● | | ○ | | | | | | | | | | | |
| TBP72FR/L10M-BM | Yes-BM | .138 | 3.5 | .209 | 5.3 | 72° | .003 | 0.08 | | | | | ● | | ○ | | | | | | | | | | | |
| TBP72FR/L20M-BM | Yes-BM | .138 | 3.5 | .209 | 5.3 | 72° | .007 | 0.18 | | | | | ● | | ○ | | | | | | | | | | | |
| TBP55FR/L00 | Yes | .118 | 3.0 | .209 | 5.3 | 55° | 0.00 | 0.00 | | | | | | | | | ○ | | ● | ○ | | | | | | |
| TBP55FR/L10 | Yes | .118 | 3.0 | .209 | 5.3 | 55° | .004 | 0.10 | | | | | | | | | ○ | | ● | ○ | | | | | | |
| TBP60FR/L00 | Yes | .146 | 3.7 | .209 | 5.3 | 60° | 0.00 | 0.00 | ● | | ● | | | | ○ | | ○ | | ● | ○ | | | | | | |
| TBP60FR/L05 | Yes | .146 | 3.7 | .209 | 5.3 | 60° | .002 | 0.05 | | | | | | | | | | | | | | | ○ | | | |
| TBP60FR/L10 | Yes | .146 | 3.7 | .209 | 5.3 | 60° | .004 | 0.10 | ● | | | | | | ○ | | ● | | ● | ○ | | | ○ | | | |
| TBP60FR/L10M | Yes | .146 | 3.7 | .209 | 5.3 | 60° | .003 | *0.08 | ● | | ● | | | | | | ○ | | | | | | | | | |
| TBP60FR/L20 | Yes | .146 | 3.7 | .209 | 5.3 | 60° | .008 | 0.2 | | | | | | | ○ | | | | | | | | | | | |
| TBP60FR/LV Ⓜ | No | .189 | 4.8 | .209 | 5.3 | 60° | 0.00 | 0.00 | | | | | | | | | ○ | ○ | ○ | | ○ | | | | | |
| TBP60FR/LV00-P | No | .157 | 4.0 | .209 | 5.3 | 60° | 0.00 | 0.00 | | | | | | | | | | | | | | | | | ○ | |
| TBP60FR/LV05 Ⓜ | No | .189 | 4.8 | .209 | 5.3 | 60° | .002 | 0.05 | | | | | | | | | ○ | | | | ○ | | | | | |
| TBP60FR/LV10 Ⓜ | No | .189 | 4.8 | .209 | 5.3 | 60° | .004 | 0.10 | | | | | | | | | ○ | | ○ | | ○ | | | | | |
| TBP60FR/LV10-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 Ⓜ : Mirror finish

Cutting condition ➡K67

# TBPA (CTPA Series) *Can use same holder with CTPA inserts.

## CTPA

Screw accessible from both sides

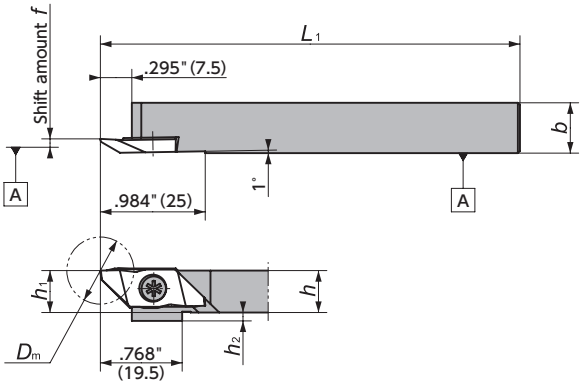
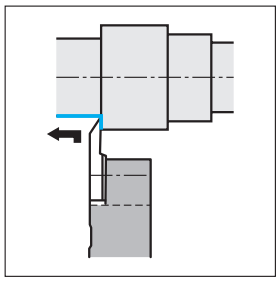



Figure-1

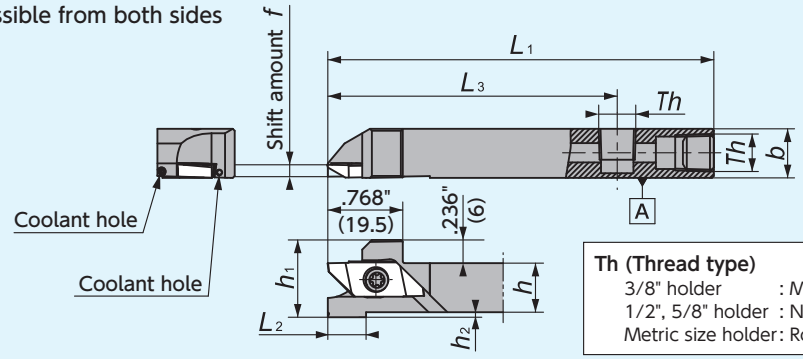


Right-Hand style shown

## CTPA-OH (Coolant through)

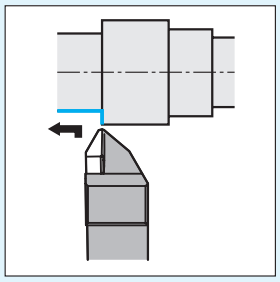
Screw accessible from both sides

NEW




**Th (Thread type)**
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-2



Right-Hand style shown

## Y-CTPA

Screw accessible from both sides

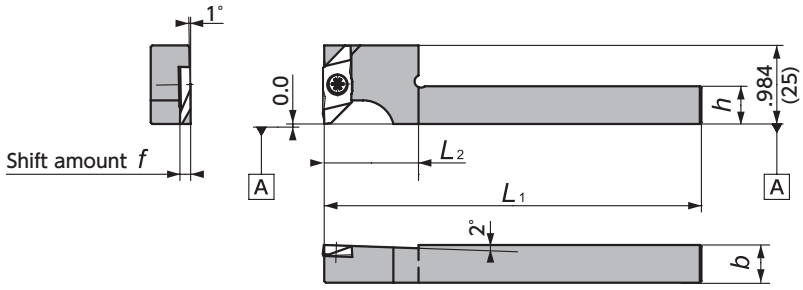
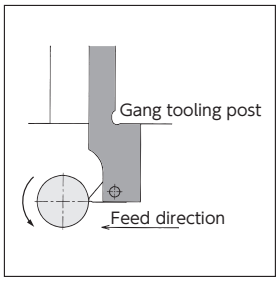



Figure-3




Right-Hand style shown
Takes Right-hand Insert

## CH-TBPA

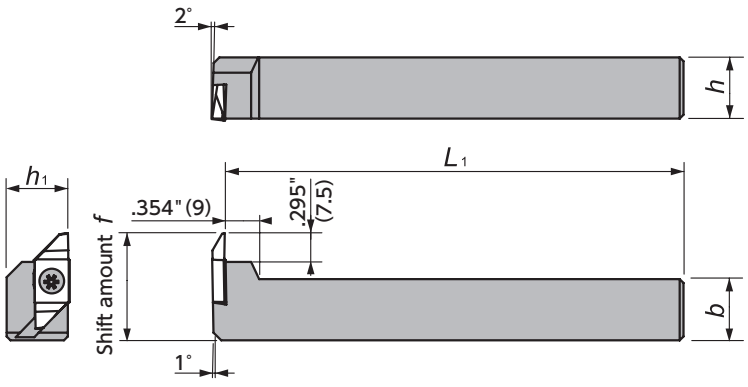
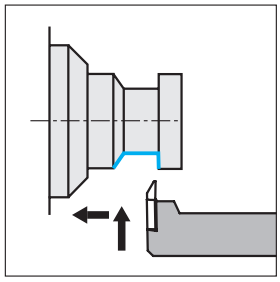



Figure-4



Left-Hand style shown
Takes Right-hand Insert

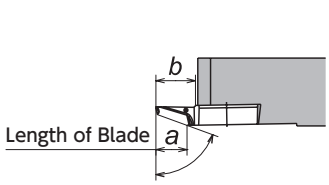
# TBPA (CTPA) Series - Toolholders

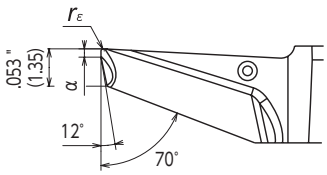
## ■CTPA

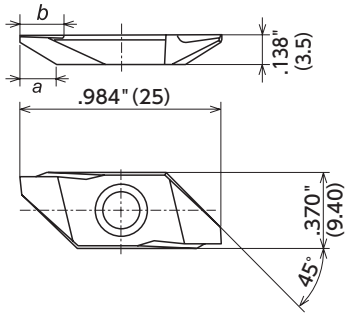
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | $L_3$ (Inch) | $L_3$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBPA.. | CTPA□06-IN | 1 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .134 | 3.4 | – | – | 0 | 0 | – | – | – | LR-S-4 × 10PW | CLR-15S |
| | CTPA□08-IN | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .134 | 3.4 | – | – | 0 | 0 | – | – | – | LR-S-4 × 12PW | CLR-15S |
| | CTPA□10-IN | 1 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .134 | 3.4 | – | – | 0 | 0 | – | – | – | LR-S-4 × 12PW | CLR-15S |
| | CTPA□10 | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .134 | 3.4 | – | – | .790 | 2 | – | – | – | LR-S-4 × 10PW | CLR-15S |
| | CTPA□12 | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .134 | 3.4 | – | – | 0 | 0 | – | – | – | LR-S-4 × 12PW | CLR-15S |
| | CTPA□16 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .134 | 3.4 | – | – | 0 | 0 | – | – | – | LR-S-4 × 12PW | CLR-15S |
| | CTPA□20F | 1 | ○ | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 3.150 | 80 | .134 | 3.4 | – | – | 0 | 0 | – | – | – | LR-S-4 × 10 | LLR-15S |
| | CTPA□06H-IN-OH 💧 | 2 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 3.937 | 100 | .134 | 3.4 | .787 | 20 | .176 | 4.475 | 2.165 | 55 | M6 × 1 | LR-S-4 × 10PW | CLR-15S |
| | CTPA□08H-IN-OH 💧 | 2 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 3.937 | 100 | .134 | 3.4 | .394 | 10 | .051 | 1.3 | 2.953 | 75 | NPT1/8 | LR-S-4 × 12PW | CLR-15S |
| | CTPA□10H-IN-OH 💧 | 2 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .134 | 3.4 | 0 | 0 | 0 | 0 | 2.953 | 75 | NPT1/8 | LR-S-4 × 12PW | CLR-15S |
| | Y-CTPA□08L-IN | 3 | ● | | 1/2 | | 1/2 | | – | – | 4.724 | 120 | 1.34 | 34 | – | – | – | – | – | – | – | LR-S-4 × 12PW | CLR-15S |
| | CH-TBPAL16 | 4 | | ○ | .630 | 16 | .630 | 16 | .630 | | 4.724 | 120 | 1.102 | 28 | – | – | – | – | – | – | – | LR-S-4 × 10 | LLR-15S |
| | CH-TBPAL20 | 4 | | ○ | .787 | 20 | .787 | 20 | .787 | | 4.724 | 120 | 1.260 | 32 | – | – | – | – | – | – | – | LR-S-4 × 10 | LLR-15S |

# TBPA Series - Inserts

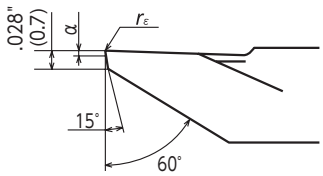
with BM-Chipbreaker NEW



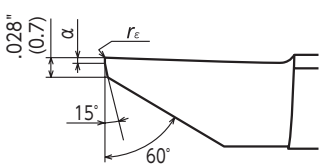




with Chipbreaker




without Chipbreaker




Right-Hand style shown

## ■TBPA - Back Turning

| Item Number | Chip-breaker | Length of Blade a (Inch) | Length of Blade a (mm) | Max Depth of Cut b (Inch) | Max Depth of Cut b (mm) | α (Inch) | α (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide QM3 R | QM3 L | DT4 R | DT4 L | DM4 R | DM4 L | TM4 R | TM4 L | VM1 R | VM1 L | ZM3 R | ZM3 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□VB Ⓜ | 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 ➡K67

## TBDP (Back Duo) Series

### TBDP

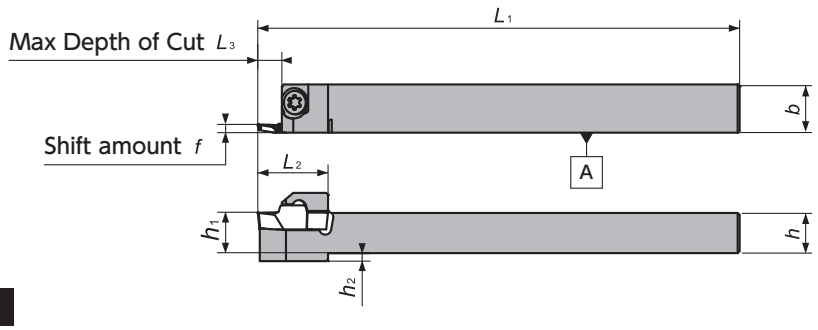
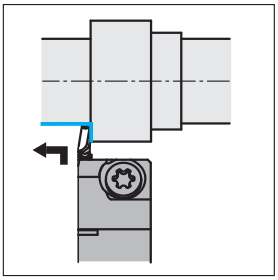



Figure-1



Right-Hand style shown

### Y-TBDP

NEW

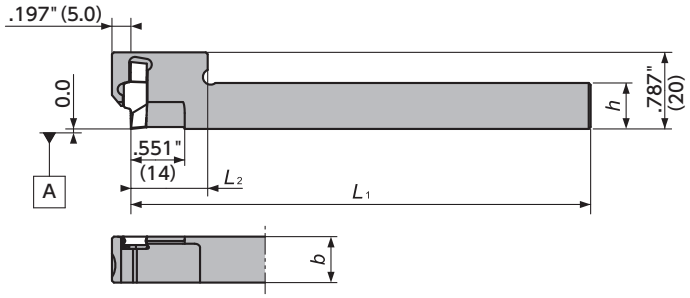
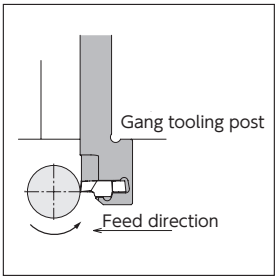



Figure-2




Right-Hand style shown

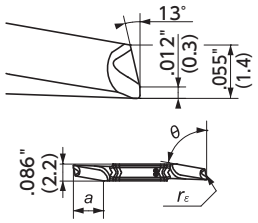
## TBDP Series - Toolholders

### TBDP

| Gage Insert | Item Number | Figure | Stock R | Stock L | $h$ (Inch) | $h$ (mm) | $b$ (Inch) | $b$ (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $f$ (Inch) | $f$ (mm) | $L_2$ (Inch) | $L_2$ (mm) | $L_3$ (Inch) | $L_3$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBDP.. | **TBDPR06-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 |
| | **TBDPR08-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 |
| | **TBDPR10-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 |
| | **TBDPR1012H** | 1 | ○ | | .394 | 10 | .472 | 12 | .394 | 10 | 3.937 | 100 | .081 | 2.05 | .591 | 15 | .118 | 3 | .079 | 2 | LRIS-4 × 12 | LLR-25S |
| | **TBDP⅝1012** | 1 | ○ | ○ | .394 | 10 | .472 | 12 | .394 | 10 | 4.724 | 120 | .081 | 2.05 | .591 | 15 | .118 | 3 | .079 | 2 | LRIS-4 × 12 | LLR-25S |
| | **TBDP⅝12** | 1 | ● | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .081 | 2.05 | .709 | 18 | .197 | 5 | 0 | 0 | LRIS-4 × 12 | LLR-25S |
| | **TBDP⅝16** | 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 |
| | **TBDP⅝20** | 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-TBDPR12S** | 2 | ○ | | .472 | 12 | .472 | 12 | — | — | 4.724 | 120 | .081 | 2.05 | .787 | 20 | .197 | 5 | — | — | LRIS-4 × 12 | LLR-25S |

## TBDP Series - Inserts

### TBDP

| Shape | Item Number | Length of Blade $a$ (Inch) | Length of Blade $a$ (mm) | $\theta$ | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide QM3 | Coated Carbide DM4 | Coated Carbide 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 | ● | ○ | ● |

# SVAC Series

## SVAC-NW

Double-edge tool

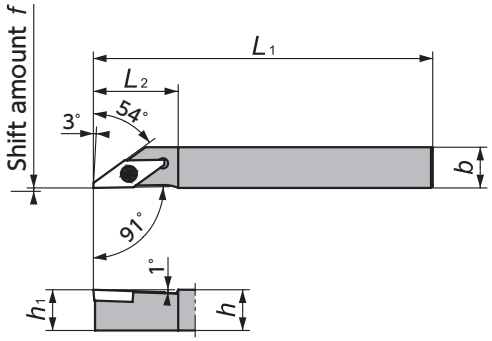
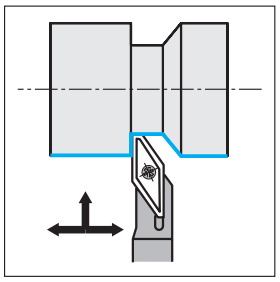



Figure-1



Right-Hand style shown

## SVAC-W

Double-edge tool

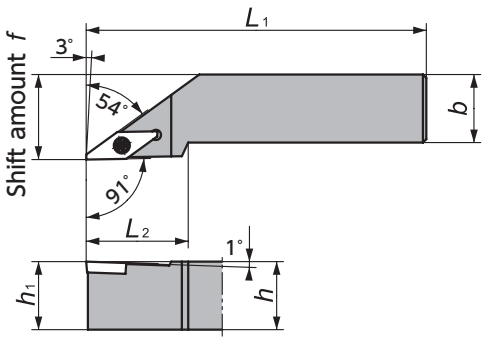
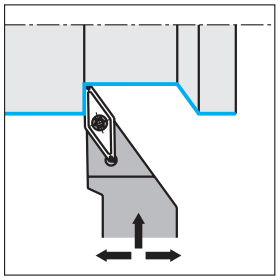



Figure-2



Right-Hand style shown

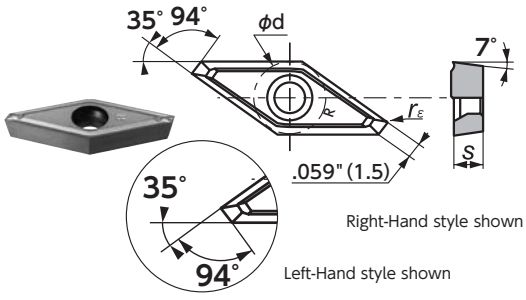
# SVAC Series - Toolholders

## ■SVAC

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  VCGT1303.. | SVAC☐1010L13NW | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | 0.0 | 0.0 | .984 | 25 | LRIS-3 × 8 | RLR-20S |
| | SVAC☐1212L13NW | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 5.512 | 140 | 0.0 | 0.0 | .984 | 25 | LRIS-3 × 8 | RLR-20S |
| | SVAC☐1616M13NW | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 5.906 | 150 | 0.0 | 0.0 | .984 | 25 | LRIS-3 × 8 | RLR-20S |
| | SVAC☐2020M13W | 2 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 5.906 | 150 | .984 | 25.0 | 1.181 | 30 | LRIS-3 × 8 | RLR-20S |

# SVAC Series - Inserts

## ■VCGT1303

| Shape | Item Number | d (Inch) | d (mm) | s (Inch) | s (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide QM3 R | Coated Carbide QM3 L |
|---|---|---|---|---|---|---|---|---|---|
|   Right-Hand style shown Left-Hand style shown | VCGT1303☐00F2M | .313 | 7.94 | .125 | 3.18 | 0.0 | 0.0 | ○ | ○ |
| | VCGT1303☐01F2M | .313 | 7.94 | .125 | 3.18 | .004 | 0.1 | ○ | ○ |

● : Stock ○ : 1-2 week delivery

Cutting condition ➡K67

## TBVC Series

### TBVC

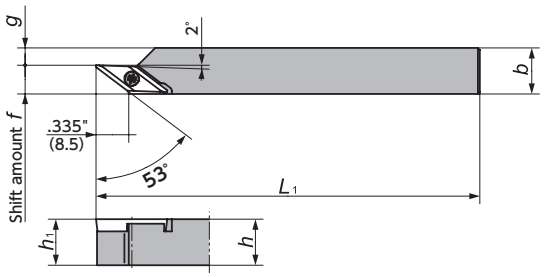
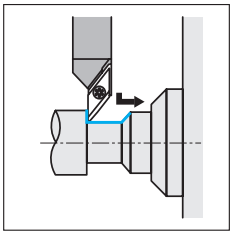



Figure-1



Right-Hand style shown
For non - ferrous material

### TBVC-F10

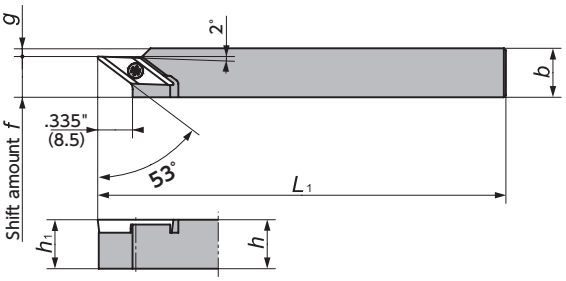
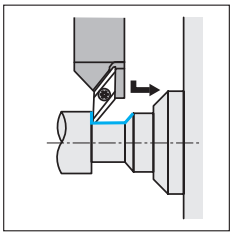



Figure-2



Right-Hand style shown

### CH-SVXCL

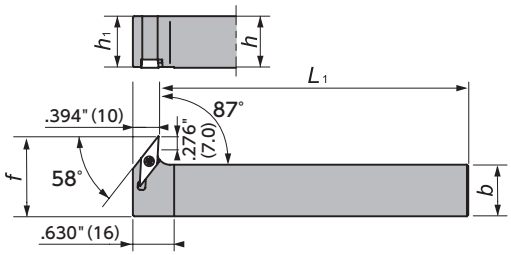
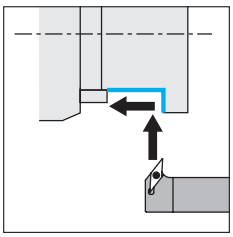



Figure-3

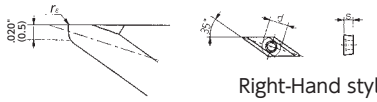


Left-Hand style shown
Takes Right-hand or Neutral chip breaker

## TBVC Series - Toolholders

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBVC VC..22 | **TBVC⅜10** | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .295 | 7.5 | .098 | 2.5 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜12** | 1 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .295 | 7.5 | .098 | 4.5 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜16** | 1 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .295 | 7.5 | .098 | 8.5 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜08-F10-IN** | 2 | ● | | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .394 | 10 | 0 | 0 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜10-F10** | 2 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .394 | 10 | 0 | 0 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜12GX-F10** | 2 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .394 | 10 | .079 | 2 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜12-F10** | 2 | ● | | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .394 | 10 | .079 | 2 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜16H-F10** | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.150 | 100 | .394 | 10 | .234 | 6 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜16-F10** | 2 | ● | | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .394 | 10 | .234 | 6 | LRIS-2.5 × 7 | CLR-15S |
| | **TBVC⅜20F-F10** | 2 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 3.150 | 80 | .394 | 10 | .394 | 10 | LRIS-2.5 × 7 | CLR-15S |
| | **CH-SVXC⅜1616 × 11** | 3 | | ○ | .630 | 16 | .630 | 16 | .787 | 20 | 4.724 | 120 | 1.063 | 27 | — | — | LRIS-2.5 × 7 | CLR-15S |
| | **CH-SVXC⅜2020 × 11** | 3 | | ○ | .630 | 16 | .630 | 16 | .787 | 20 | 4.724 | 120 | 1.220 | 31 | — | — | LRIS-2.5 × 7 | CLR-15S |

## TBVC Series - Inserts

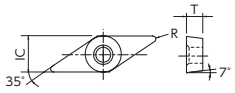
| Shape | Item Number | d (Inch) | d (mm) | s (Inch) | s (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide VM1 R | VM1 L | ZM3 R | ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | **TBVC11F⅜05U** | 1/4 | 6.35 | 1/8 | 3.18 | .002 | 0.05 | | | ● | |
| | **TBVC11F⅜10U** | 1/4 | 6.35 | 1/8 | 3.18 | .004 | 0.10 | ● | | ● | |
| | **TBVC11F⅜10S** | 1/4 | 6.35 | 1/8 | 3.18 | .004 | 0.10 | | | ● | |

● : Stock ○ : 1-2 week delivery

Cutting condition ➡K67

# VC.. Inserts - Carbide / Cermet

| (inch) | IC | T |
|---|---|---|
| VC..22 | 1/4 | 1/8 |

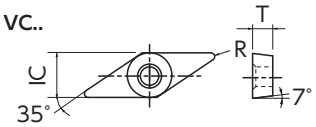



VC_ _

| | | |
|---|---|---|
| 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 PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 FNXAM3 | 1/4 | .008 | | | | | | | | | ○ | | | |
| | VCGT 221M FNAM3 | VCGT 110304M FNAM3 | 1/4 | .015 | ● | ● | | ○ | | | | | | | | |
| | VCGT 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 FNAZ7 | VCGT 110300 FNAZ7 | 1/4 | .001 | ● | | | | | ○ | | | | | | |
| | VCGT 2204M FNAZ7 | VCGT 110301M FNAZ7 | 1/4 | .003 | ● | | | | | ○ | | | | | | |
| | VCGT 2208M FNAZ7 | VCGT 110302M FNAZ7 | 1/4 | .007 | ● | | | | | ○ | | | | | | |
| | VCGT 221M FNAZ7 | VCGT 110304M FNAZ7 | 1/4 | .015 | ● | | | | | ○ | | | | | | |
| | VCMT 2204 TR/LAS | VCMT 110301 TR/LAS | 1/4 | .004 | | | | | | | | | ®L | | | ®L |
| | VCMT 2208 TR/LAS | VCMT 110302 TR/LAS | 1/4 | .008 | | | | | | | | | ®L | | | ®L |
| | VCMT 221 TR/LAS | VCMT 110304 TR/LAS | 1/4 | .016 | | | | | | | | | ®L | | | ®L |
| | VCGT 2201 R/LU | VCGT 110300 R/LU | 1/4 | .001 | | | | | ® | ® | | | | | | |
| | VCGT 2204M R/LU | VCGT 110301M R/LU | 1/4 | .003 | | ® | | | | | | | | | | |
| | VCGT 2204 R/LU | VCGT 110301 R/LU | 1/4 | .004 | | | | | ® | ® | | | | | | |
| | VCGT 2208M R/LU | VCGT 110302M R/LU | 1/4 | .007 | | ® | | | | | | | | | | |
| | VCGT 2208 R/LU | VCGT 110302 R/LU | 1/4 | .008 | | | | | ® | ® | | | | | | |
| | VCET 2203 RUHG | VCET 1103008 R/LUHG | 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 | | | | | | | ● | | | | | |




| | | |
|---|---|---|
| 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) Coated B5K | B52 | Coated B6K | B36 | B40 | B23 | B30 | PCD PD1 | PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | – | | | | | | | | ○ | |

# TB Series

## TBT

Screw accessible from both sides

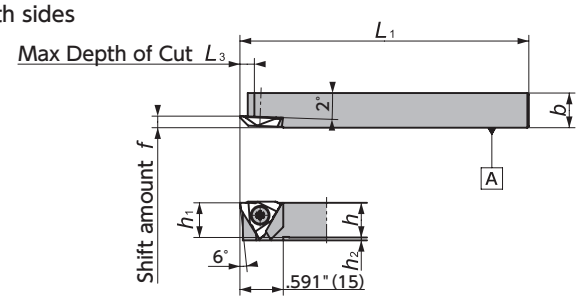
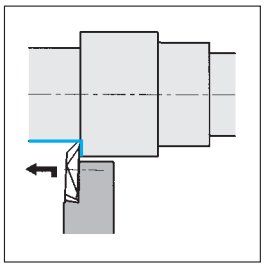



Figure-1



Right-Hand style shown

## TB-N

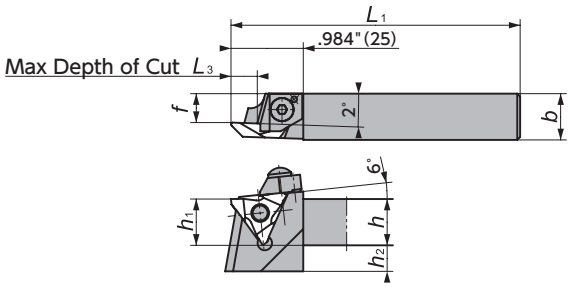
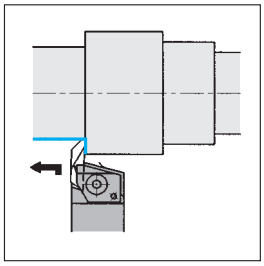



Figure-2



Right-Hand style shown

## TB-F

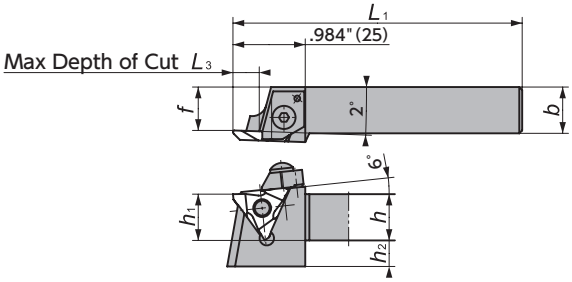
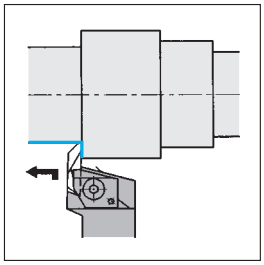



Figure-3



Right-Hand style shown

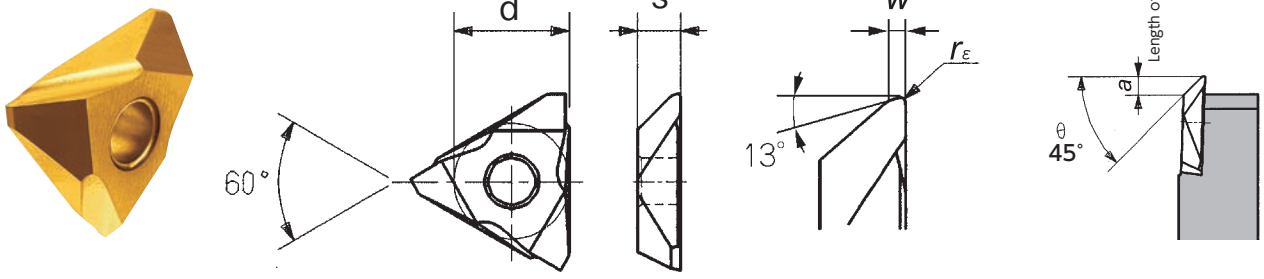
# TB Series - Toolholders

## TB

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | f (Inch) | f (mm) | $L_3$ (Inch) | $L_3$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TB32 | TBT⅛06-IN | 1 | ● | | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .118 | 3 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| | TBT⅛08-IN | 1 | ● | | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .039 | 1 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| | TBT⅛08F | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 3.150 | 80 | .157 | 5 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| | TBT⅛08K | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .157 | 5 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| | TBT⅛10F | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .118 | 3 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| | TBT⅛10K | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .118 | 3 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| | TBT⅛12F | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .039 | 1 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| | TBT⅛12K | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .039 | 1 | .157 | 4 | .197 | 5.0 | LR-S-4 × 10PW | CLR-15S |
| TB42 | TB⅛16N-42 | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.071 | 78 | .354 | 9 | .453 | 11.5 | .354 | 9.0 | — | LW-2.5 |
| TB43 | TB⅛16NS | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.071 | 78 | .354 | 9 | .394 | 10 | .197 | 5.0 | — | LW-2.5 |
| | TB⅛16N | 2 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 3.071 | 78 | .354 | 9 | .394 | 10 | .354 | 9.0 | — | LW-2.5 |
| | TB⅛16N-H | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .354 | 9 | .394 | 10 | .354 | 9.0 | — | LW-2.5 |
| | TB⅛16N-K | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 4.921 | 125 | .354 | 9 | .394 | 10 | .354 | 9.0 | — | LW-2.5 |
| | TB⅛20N | 2 | ○ | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 3.937 | 100 | .157 | 5 | .394 | 10 | .354 | 9.0 | — | LW-2.5 |
| | TB⅛25N | 2 | | ○ | .984 | 25 | .984 | 25 | .984 | 25 | 5.906 | 150 | 0 | 0 | .394 | 10 | .354 | 9.0 | — | LW-2.5 |
| | TB⅛16FS | 3 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .354 | 9 | .591 | 15 | .197 | 5.0 | — | LW-2.5 |
| | TB⅛16F | 3 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .354 | 9 | .591 | 15 | .354 | 9.0 | — | LW-2.5 |
| | TB⅛20FS | 3 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 3.937 | 100 | .157 | 5 | .787 | 20 | .197 | 5.0 | — | LW-2.5 |
| | TB⅛20F | 3 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 3.937 | 100 | .157 | 5 | .787 | 20 | .354 | 9.0 | — | LW-2.5 |
| | TB⅛25F | 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




Right-Hand style shown

| Item Number | Chip-breaker | a (Inch) | a (mm) | θ | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | w (Inch) | w (mm) | d (Inch) | d (mm) | s (Inch) | s (mm) | Coated Carbide ZM3 R | Coated Carbide ZM3 L | Cermet XT3 R | Cermet XT3 L | Coated Cermet Z15 R | Coated Cermet Z15 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TB3200**R/L | Yes | .106 | 2.7 | 45° | 0 | 0.00 | .020 | 0.5 | 3/8 | 9.525 | 1/8 | 3.18 | ● | | | | | |
| **TB3205**R/L | Yes | .106 | 2.7 | 45° | .002 | 0.05 | .020 | 0.5 | 3/8 | 9.525 | 1/8 | 3.18 | ● | ○ | ● | | | |
| **TB3210**R/L | Yes | .106 | 2.7 | 45° | .004 | 0.10 | .020 | 0.5 | 3/8 | 9.525 | 1/8 | 3.18 | | | | ○ | | |
| **TB3215**R/L | Yes | .106 | 2.7 | 45° | .006 | 0.15 | .020 | 0.5 | 3/8 | 9.525 | 1/8 | 3.18 | ● | ○ | ● | ○ | ○ | |
| **TB3220**R/L | Yes | .106 | 2.7 | 45° | .008 | 0.20 | .020 | 0.5 | 3/8 | 9.525 | 1/8 | 3.18 | ○ | | | | | |
| **TB4215**R/L | Yes | .091 | 2.3 | 45° | .006 | 0.15 | .040 | 1.0 | 1/2 | 12.70 | 1/8 | 3.18 | ○ | | | | | |
| **TB4300**R/L | Yes | .157 | 4.0 | 45° | 0 | 0.00 | .040 | 1.0 | 1/2 | 12.70 | 3/16 | 4.76 | | | | | | |
| **TB4305**R/L | Yes | .157 | 4.0 | 45° | .002 | 0.05 | .040 | 1.0 | 1/2 | 12.70 | 3/16 | 4.76 | ● | | ○ | | | |
| **TB4315**R/L | Yes | .157 | 4.0 | 45° | .006 | 0.15 | .040 | 1.0 | 1/2 | 12.70 | 3/16 | 4.76 | ● | | ○ | ○ | ○ | |
| **TB4340**R/L | 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 ➡K67

# GTT Series

## GTT

Screw accessible from both sides

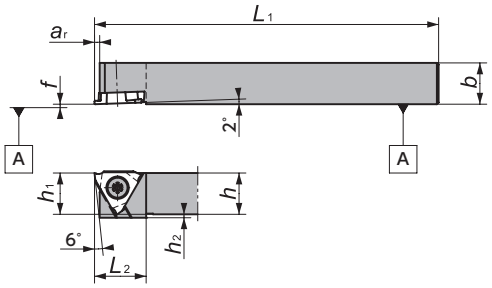
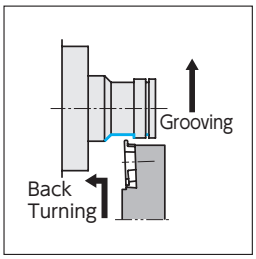



Figure-1

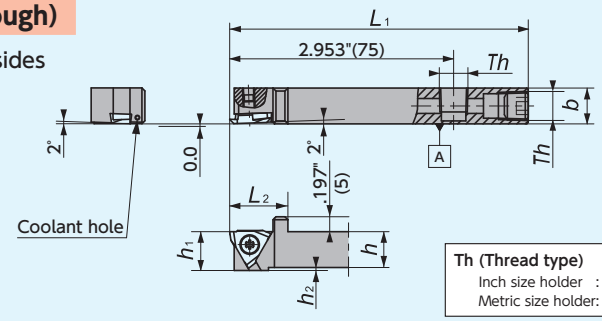



Right-Hand style shown

## GTT-OH (Coolant through)

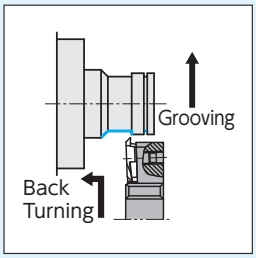
Screw accessible from both sides

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

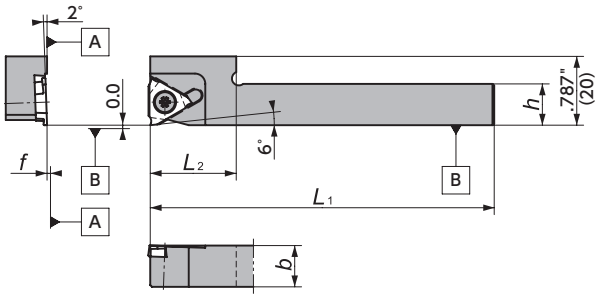
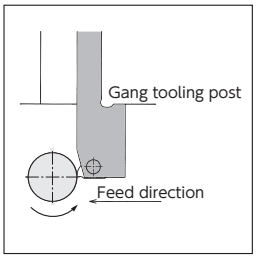



Figure-3

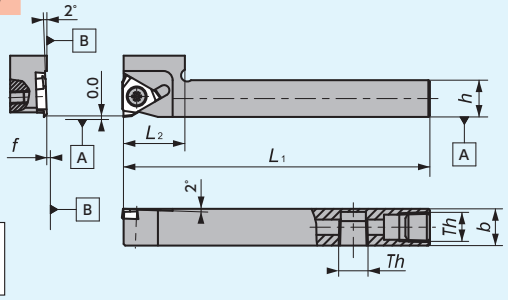



Right-Hand style shown
Takes Right-hand Insert

## Y-GTT-OH (Coolant through)

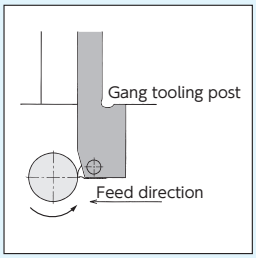
Screw accessible from both sides

NEW



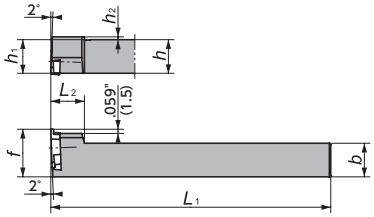

Th (Thread type)
Inch size holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-4




Right-Hand style shown
Takes Right-hand Insert

## CH-GTT



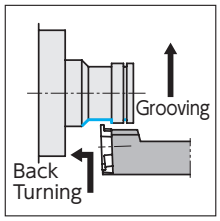
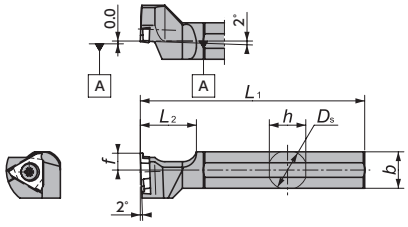




Figure-5

Left-Hand style shown
Takes Right-hand Insert

## DS-GTT



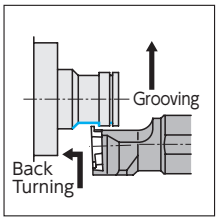




Figure-6

Left-Hand style shown
Takes Right-hand Insert

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

Cutting condition ➡K67

## GTT

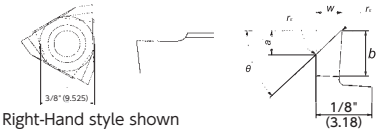
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $a_r$ (Inch) | $a_r$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBMH32.. | GTT□06A-IN | 1 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□06B-IN | 1 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08A-IN | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .039 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08B-IN | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .039 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10A-IN | 1 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10B-IN | 1 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12A-IN | 1 | ● | ● | 3/4 | | 3/4 | | 3/4 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12B-IN | 1 | ● | | 3/4 | | 3/4 | | 3/4 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08F00 | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | R:LR-S-4×10PW L:LR-S-4×5.8 | CLR-15S |
| | GTT□0810F00 | 1 | ○ | ○ | .315 | 8 | .394 | 10 | .315 | 8 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08K00 | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | R:LR-S-4×10PW L:LR-S-4×5.8 | CLR-15S |
| | GTT□0810K00 | 1 | ○ | ○ | .315 | 8 | .394 | 10 | .315 | 8 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10F00 | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10K00 | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12F00 | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12K00 | 1 | ● | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16H00 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16K00 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□20K00 | 1 | ○ | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 4.921 | 125 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□25M00 | 1 | ○ | ○ | .984 | 25 | .984 | 25 | .984 | 25 | 5.906 | 150 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10F15 | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10K15 | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12F15 | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12K15 | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16H15 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16K15 | 1 | ● | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10F25 | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10K25 | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12F25 | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12K25 | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16H25 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16K25 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08HA-IN-OH | 2 | ● | | 1/2 | | 1/2 | | 1/2 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .039 | 1 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□08HB-IN-OH | 2 | ● | | 1/2 | | 1/2 | | 1/2 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .106 | 2.7 | .039 | 1 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□10HA-IN-OH | 2 | ● | | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .000 | 0 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□10HB-IN-OH | 2 | ● | | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .106 | 2.7 | .000 | 0 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□1012H00-OH | 2 | ○ | | .394 | 10 | .472 | 12 | .394 | 10 | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .039 | 1 | M6 × 1 | LR-S-4×10PW | CLR-15S |
| | GTT□12H00-OH | 2 | ● | | .472 | 12 | .472 | 12 | .472 | 12 | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .039 | 1 | Rc1/8 (PT1/8) | LR-S-4×10PW | CLR-15S |
| | GTT□16H00-OH | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | 0 | 0 | Rc1/8 (PT1/8) | LR-S-4×10PW | CLR-15S |
| | Y-GTTR□06-IN | 3 | ● | | 3/8 | | 3/8 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTTR□08-IN | 3 | ● | | 1/2 | | 1/2 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTTR□10-IN | 3 | ● | | 5/8 | | 5/8 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT□10S | 3 | ○ | | .394 | 10 | .394 | 10 | – | – | 4.724 | 120 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT□12S | 3 | ○ | | .472 | 12 | .472 | 12 | – | – | 4.724 | 120 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT□08H-IN-OH | 4 | ● | | 1/2 | | 1/2 | | – | – | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | Y-GTT□12H00S-OH | 4 | ● | | .472 | 12 | .472 | 12 | – | – | 3.937 | 100 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | Rc1/8 (PT1/8) | LR-S-4×10PW | CLR-15S |
| | Y-GTT□16H00-OH | 4 | ○ | | .630 | 16 | .472 | 16 | – | – | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | Rc1/8 (PT1/8) | LR-S-4×10PW | CLR-15S |
| | CH-GTT□10H00 | 5 | | ○ | .394 | 10 | .394 | 10 | .394 | 10.0 | 4.724 | 120 | .591 | 15 | .472 | 12.0 | .059 | 1.5 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | CH-GTT□12H00 | 5 | | ○ | .472 | 12 | .472 | 12 | .472 | 12.0 | 4.724 | 120 | .669 | 17 | .472 | 12.0 | .059 | 1.5 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |

## DS-GTT

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TBMH32.. | DS-GTT□14F | 6 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□15H | 6 | | ○ | .518 | 15.875 | .591 | 15 | .591 | 15 | 3.937 | 100 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□16X | 6 | | ● | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.740 | 95 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□19 | 6 | | ● | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□20 | 6 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□22 | 6 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□25 | 6 | | ● | 1 | 25.400 | .945 | 24 | .945 | 24 | 4.724 | 120 | .394 | 10 | .787 | 20 | LR-S-4 × 9 | RLR-20S |

# GTT Series - Inserts

## TBMH32

| Shape | Item Number | Chip-breaker | Length of Blade a (Inch) | Length of Blade a (mm) | Max Depth of Cut b (Inch) | Max Depth of Cut b (mm) | w (Inch) | w (mm) | θ | $r_ε$ (Inch) | $r_ε$ (mm) | Coated Carbide ZM3 R | Coated Carbide ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | TBMH32100□05-22 | Yes | .012 | 0.3 | .071 | 1.8 | .039 | 1.0 | 22° | .002 | 0.05 | ● | |
| | TBMH32100□05-45 | Yes | .035 | 0.9 | .071 | 1.8 | .039 | 1.0 | 45° | .002 | 0.05 | ● | |
| | TBMH32150□05-22 | Yes | .020 | 0.5 | .106 | 2.7 | .059 | 1.5 | 22° | .002 | 0.05 | ● | |
| | TBMH32150□05-45 | Yes | .051 | 1.3 | .102 | 2.6 | .059 | 1.5 | 45° | .002 | 0.05 | ● | |

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

MEMO

K



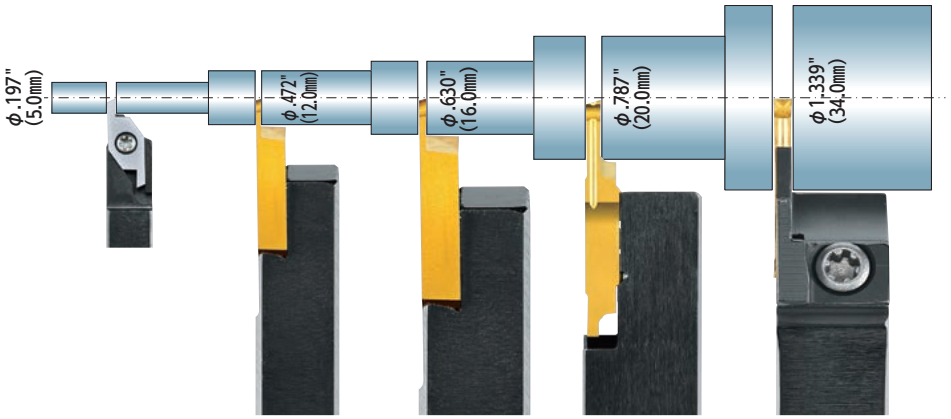
# Cut-off / Parting

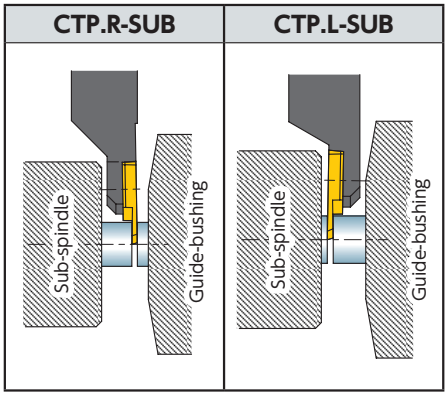

- Cut-off Tooling ····· K86
- Cut-off Tool Selection Guide··· K88
- Recommended Cutting Conditions··· K89
- Tool List ····· K90

CSV Series (Up to dia. .197") ····· K90
CTPS Series (Up to dia. .394") ····· K91
CTP Series (Up to dia. .472") ····· K92
CTPA Series (Up to dia. .630") ····· K92
CTPW Series (Up to dia. .787") ····· K92
CTDP Series (Up to dia. 1.339") ····· K98
CTV-S Series (Up to dia. .787") ····· K99
CTV Series (Up to dia. 1.772") ····· K100

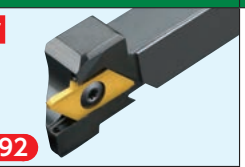
# NTK Cut-off Tools - Product Lines

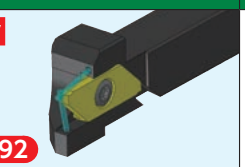
NTK offers a variety of cut-off tools with as narrow a width as .020" (0.5mm)
NTK cut-off tools are specialized for small part applications




| Insert | CSV ➡K90 | CTPS ➡K91 | CTPS-001 ➡K91 |
|---|---|---|---|
| Holder | CSV-NC  ➡K90 | CTPS  ➡K91 | CTPSR-SUB  ➡K91 |
| 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 ➡K94 • K96 | | | |
|---|---|---|---|---|
| Holder | CTP  ➡K92 | CTP-OH NEW  ➡K92 Coolant through | CTPR-SUB  ➡K92 | CTPL-SUB  ➡K92 |
| Max Cut-off Diameter | ~ϕ.472" (~12.0mm) | | | |
| Blade width | .020" - .079" (0.5 - 2.0mm) | | | |

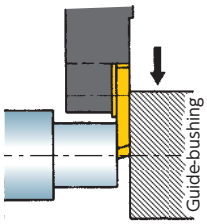
| Insert | CTPA ➡K94 • K96 | | | |
|---|---|---|---|---|
| Holder | CTPA  ➡K92 | CTPA-OH NEW  ➡K92 Coolant through | CTPAR-SUB  ➡K92 | CTPAL-SUB  ➡K92 |
| Max Cut-off Diameter | ~ϕ.630" (~16.0mm) | | | |
| Blade width | .028" - .118" (0.7 - 3.0mm) | | | |

| Insert | CTPW ➡K94・K96 | CTDP ➡K98 |
|---|---|---|
| Holder | CTPW  ➡K92 | CTDP  ➡K98 |
| Max Cut-off Diameter | ~ϕ.787" (~20.0mm) | ~ϕ1.339" (~34.0mm) |
| Blade width | .098" (2.5mm) | .079"•.098" (2.0•2.5mm) |

| Insert | CTV-S ➡K99 | | CTV ➡K101 | | |
|---|---|---|---|---|---|
| Holder | CTV-K2  ➡K99 | CTVN-K2  ➡K99 | CTV-S  ➡K100 | CTV-M (B)  ➡K100 | CTV-X  ➡K100 |
| Max Cut-off Diameter | ~ϕ.787" (~20.0mm) | | ~ϕ1.378" (~35.0mm) | ~ϕ1.772" (~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) |

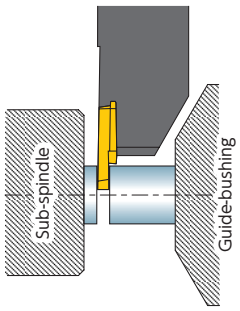
## ■ CTP/CTPA/CTPS/CTPW selection guide : Right hand? Or Left hand?

### Right-hand recommended




R-hand Toolholder using a R-hand insert with lead angle

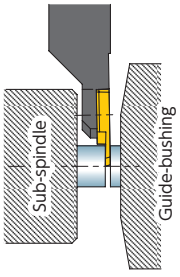
### Left-hand recommended




L-hand Toolholder with a non-lead angle insert when the bar stock is held by sub-spindle

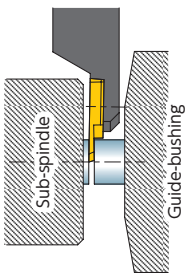
## ■ CTP/CTPA-SUB selection guide Right hand? Or Left hand?

### 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



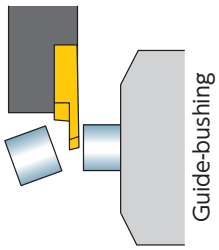

L-hand with L-hand insert with lead angle for short part

More information ➡K88

# Cut-off Tool Selection Guide

## Right-hand combination

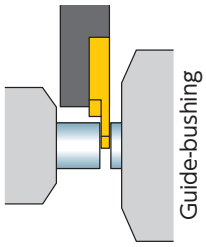
### FR, FRFT, FRV Style




FRFT: Flat top
FRV : Flat top with mirror finish

- Common geometry in cut-off
- Lead angle minimizes center-boss
- End face is likely to get scratched from chip control because of lead angle and chip-breaker configuration
- Good for small diameter machining as it cuts near guide-bushing

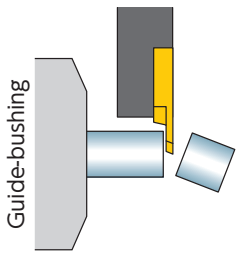
### FRN, FRS,FRNV Style




FRS : Flat top
FRNV: Flat top with mirror finish

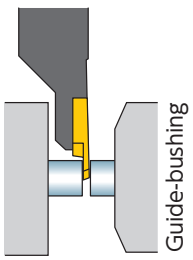
- Good for small diameter machining as it cuts near guide-bushing
- 1st recommendation when sub-spindle holds the part
- No lead angle helps to prevent scratches on both faces

### FRK Style




- Used with inverse spindle rotation
- Short part length and using sub-spindle
- Less burrs with hollow work

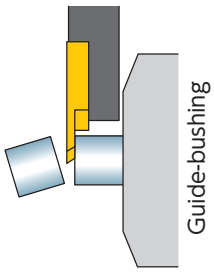
### CTP. R-SUB




- Recommended when cut-off point is close to guide-bushing for small and thin parts
- When the part length is short, extended sub-spindle guide-bushing is generally used

## Left-hand combination

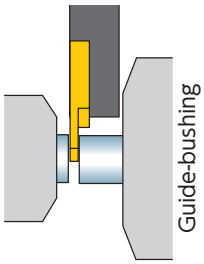
### FLK, FLKFT, FLKV Style




FLKFT: Flat top
FLKV : Flat top with mirror finish

- Can cut-off closer to the sub-spindle
- Less burrs with hollow work
- Sub-spindle should hold the work

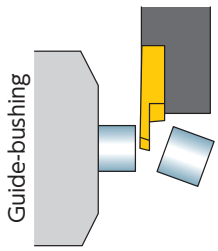
### FLN, FLS Style




FLS: Flat top

- Recommended when required to cut-off close to the sub-spindle due to short part length
- Good for big diameter part
- No lead angle helps to prevent scratches on both faces
- Sub-spindle should hold the work

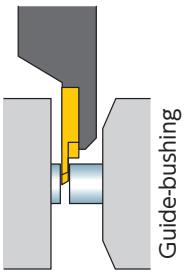
### FL, FLV Style




FLV: Flat top with mirror finish

- Used with inverse spindle rotation
- Without sub-spindle
- Less burrs with hollow work

### CTP. L-SUB




- Recommended when required to cut-off close to the sub-spindle especially with small diameters
- Can cut much closer to the sub-spindle than the other left-handed tool holders
- Sub-spindle should hold the work

# Recommended Cutting Conditions

## Cut-off

**CSVT**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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) | | |
|---|---|---|
| -.197" | CSV style | ➡K90  |
| .197"-.472" | CTP style | ➡K92  |
| .472"-.630" | CTPA style | ➡K92  |
| | CTDP style | ➡K98  |
| .630"- | CTDP style | ➡K98  |

# CSV Series

**Best for up to .200" diameter material**

## CSV-NC For Gang-style machine

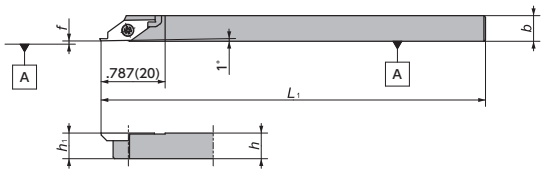



Figure-1

Right-Hand style shown

## CSV For Cam-style machine

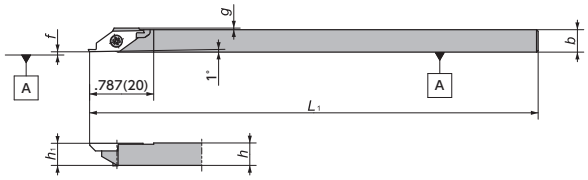



Figure-2

Right-Hand style shown

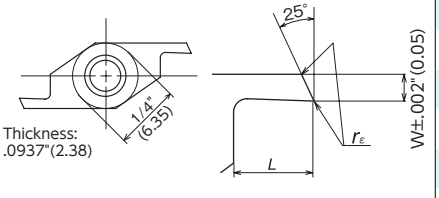
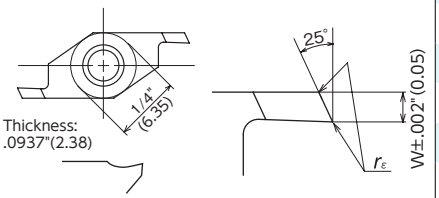
# CSV Series - Toolholders

## ■CSV R/L / CSV R/L-NC

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11.. | CSVR/L06-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 |
| | CSVR/L08-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 |
| | CSVR/L08NC | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08NC-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 |
| | CSVR/L10GXNC | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L10NC | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12NC | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07GX | 2 | ○ | | .275 | 7 | .275 | 7 | .275 | 7 | 3.346 | 85 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07 | 2 | ○ | ● | .275 | 7 | .275 | 7 | .275 | 7 | 5.512 | 140 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08GX | 2 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08 | 2 | ● | ● | .315 | 8 | .315 | 8 | .315 | 8 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L095 | 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 |
| | CSVR/L10 | 2 | ● | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12GX | 2 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12 | 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

## ■CSVC - Cut-off Mirror finish

| Shape | Item Number | Chip-breaker | Max. Cut-off Dia. ϕD (Inch) | ϕD (mm) | w (Inch) | w (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | VM1 R | VM1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Thickness: .0937"(2.38) 1/4" (6.35) 25° W±.002" (0.05) L $r_\varepsilon$ Right-Hand style shown | CSVC11FR/LV06 Ⓜ | No | .118 | 3.0 | .024 | 0.6 | .079 | 2.0 | 0 | 0.0 | ○ | |
| | CSVC11FR/LV07 Ⓜ | No | .157 | 4.0 | .028 | 0.7 | .098 | 2.5 | 0 | 0.0 | ● | ● |
| | CSVC11FR/LV08 Ⓜ | No | .157 | 4.0 | .031 | 0.8 | .098 | 2.5 | 0 | 0.0 | ○ | ○ |
| | CSVC11FR/LV09 Ⓜ | No | .157 | 4.0 | .035 | 0.9 | .098 | 2.5 | 0 | 0.0 | ○ | |
| | CSVC11FR/LV10 Ⓜ | No | .197 | 5.0 | .039 | 1.0 | .118 | 3.0 | 0 | 0.0 | ● | ● |
| | CSVC11FR/LV13 Ⓜ | No | .197 | 5.0 | .051 | 1.3 | .118 | 3.0 | 0 | 0.0 | ● | ○ |
| | CSVC11FR/LV15 Ⓜ | No | .197 | 5.0 | .059 | 1.5 | .118 | 3.0 | 0 | 0.0 | ○ | ○ |
|  Thickness: .0937"(2.38) 1/4" (6.35) 25° W±.002" (0.05) $r_\varepsilon$ Right-Hand style shown | CSVC11FR/LVB06 Ⓜ | Yes | .118 | 3.0 | .024 | 0.6 | .079 | 2.0 | 0 | 0.0 | ○ | |
| | CSVC11FR/LVB07 Ⓜ | Yes | .157 | 4.0 | .028 | 0.7 | .098 | 2.5 | 0 | 0.0 | ● | |
| | CSVC11FR/LVB08 Ⓜ | Yes | .157 | 4.0 | .031 | 0.8 | .098 | 2.5 | 0 | 0.0 | ○ | |
| | CSVC11FR/LVB09 Ⓜ | Yes | .157 | 4.0 | .035 | 0.9 | .098 | 2.5 | 0 | 0.0 | ○ | |
| | CSVC11FR/LVB10 Ⓜ | Yes | .197 | 5.0 | .039 | 1.0 | .118 | 3.0 | 0 | 0.0 | ● | |
| | CSVC11FR/LVB13 Ⓜ | Yes | .197 | 5.0 | .051 | 1.3 | .118 | 3.0 | 0 | 0.0 | ○ | |
| | CSVC11FR/LVB15 Ⓜ | 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

CSV series ➡J36

# CTPS Series

## CTPS Max. Cut-off Dia. .394" (10.0mm)

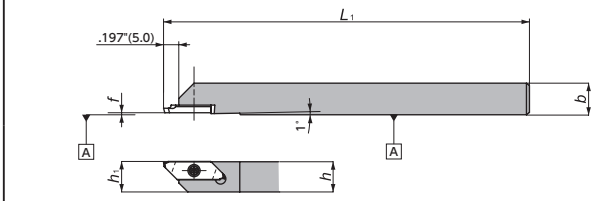



Figure-1 Right-Hand style shown

## CTPSR-SUB Max. Cut-off Dia. .157" (4.0mm)

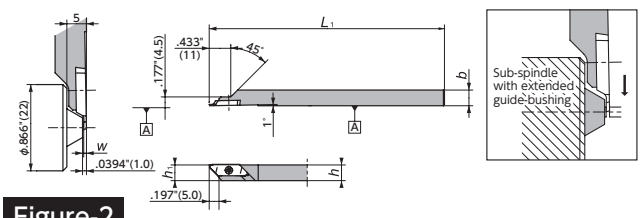



Figure-2 Right-Hand style shown

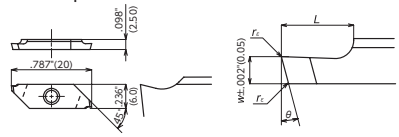
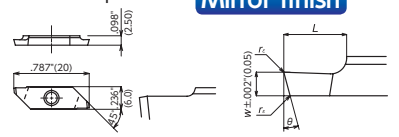
# CTPS Series - Toolholders

## ■CTPS / CTPSR

| Gage Insert | Item Number | Figure | Stock R | Stock L | Max. Cut-off Dia. ϕD (Inch) | Max. Cut-off Dia. ϕD (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTPS.. | **CTPSR06-IN** | 1 | ● | | **.394** | **10.0** | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR08-IN** | 1 | ● | | **.394** | **10.0** | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR10** | 1 | ○ | | **.394** | **10.0** | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| | **CTPSR12** | 1 | ○ | | **.394** | **10.0** | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0.0 | LR1S-2.5 × 7 | CLR-15S |
| CTPS-001 | **CTPSR08-SUB04** | 2 | ○ | | **.157** | **4.0** | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | | — | LR1S-2.5 × 5 | CLR-15S |

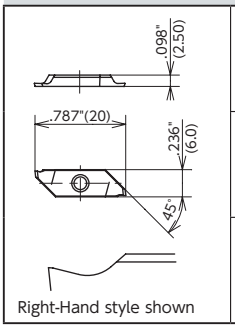
# CTPS Series - Inserts

## ■CTPS - Cut-off

| Shape | Item Number | Chip-breaker | Max. Cut-off Dia. ϕD (Inch) | Max. Cut-off Dia. ϕD (mm) | w (Inch) | w (mm) | L (Inch) | L (mm) | θ | rε (Inch) | rε (mm) | Coated Carbide VM1 R | Coated Carbide VM1 L | Coated Carbide ZM3 R | Coated Carbide ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| with chipbraker  Right-Hand style shown | **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 | ○ | | ○ | |
| without chipbraker Mirror finish  Right-Hand style shown | **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 | ○ | | ○ | |

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 (Inch) | Max. Cut-off Dia. ϕD (mm) | w (Inch) | w (mm) | θ | rε (Inch) | rε (mm) | Coated Carbide ZM3 R | Coated Carbide ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | **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 | ○ | |

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

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

CTPS series ➡J40 Cutting condition ➡K89

# CTP / CTPA / CTPW - Toolholders

## CTP / CTPA

Screw Accessible from both sides

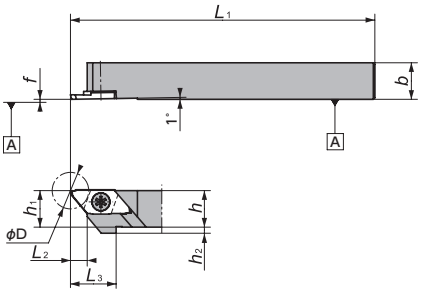
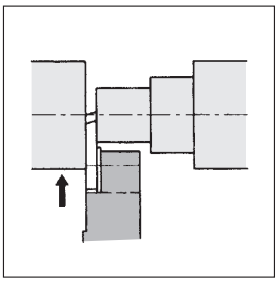



Figure-1

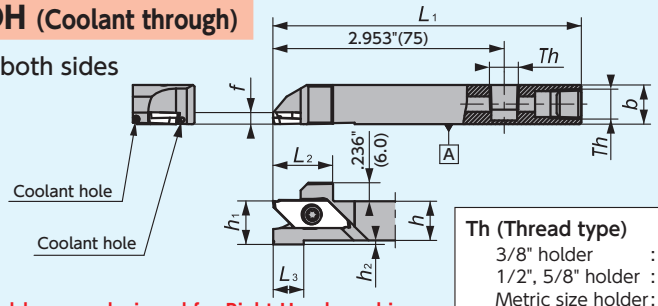


Right-Hand style shown

## CTP-OH / CTPA-OH (Coolant through)

Screw Accessible from both sides

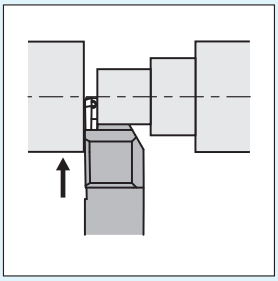
NEW




**Th (Thread type)**
3/8" holder : M6×1
1/2", 5/8" holder : NPT1/8
Metric size holder: Rc1/8 (PT1/8)

Figure-2

● Left-Hand holders are designed for Right-Hand machines



Right-Hand style shown

## CTPW

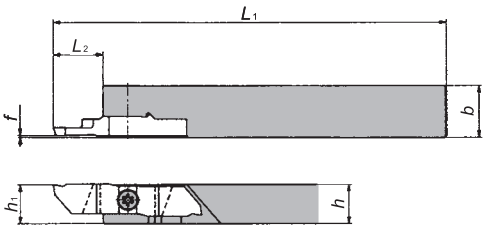
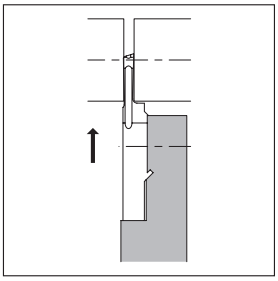
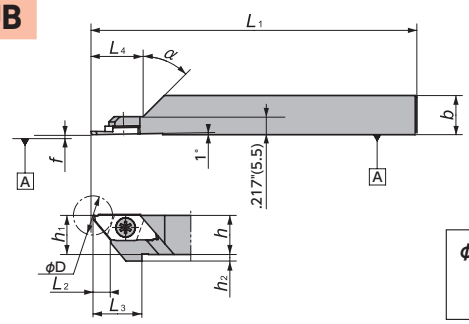



Figure-3



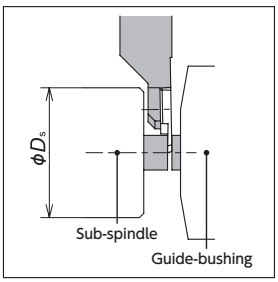
Right-Hand style shown

## CTPR-SUB / CTPAR-SUB

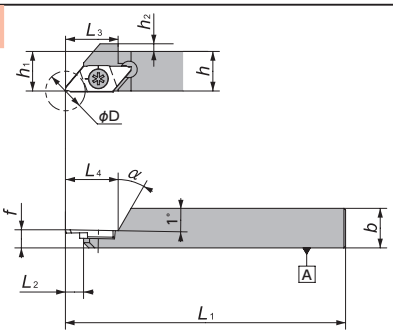



**ϕDs**
CTPR-SUB: ϕ1.18" (ϕ30㎜)
CTPAR-SUB: ϕ1.42" (ϕ36㎜)

Figure-4

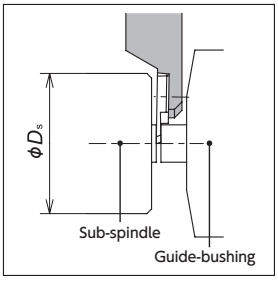



## CTPL-SUB / CTPAL-SUB




**ϕDs**
CTPR-SUB: ϕ1.18" (ϕ30㎜)
CTPAR-SUB: ϕ1.42" (ϕ36㎜)

Figure-5



## ■CTP / CTPA / CTPW

| Gage Insert | Item Number | Figure | Stock R | Stock L | Max. Cut-off Dia. φD* (Inch) | (mm) | h (Inch) | (mm) | h1 (Inch) | (mm) | b (Inch) | (mm) | L1 (Inch) | (mm) | h2 (Inch) | (mm) | L2 (Inch) | (mm) | L3 (Inch) | (mm) | Th | f (Inch) | (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTP FR../FL.. | CTPR□06-IN | 1 | ● | ● | .472 | 12 | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .079 | 2 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×10PW | CLR-15S |
| | CTPR□08-IN | 1 | ● | ● | .472 | 12 | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPR□10-IN | 1 | ● | ● | .472 | 12 | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPR□08 | 1 | ● | ● | .472 | 12 | .315 | 8 | .315 | 8 | .394 | 10 | 4.724 | 120 | .157 | 4 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×10PW | CLR-15S |
| | CTPR□10H | 1 | ○ | ○ | .472 | 12 | .394 | 10 | .394 | 10 | .394 | 10 | 3.937 | 100 | .079 | 2 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×10PW | CLR-15S |
| | CTPR□10 | 1 | ○ | ○ | .472 | 12 | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .079 | 2 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×10PW | CLR-15S |
| | CTPR□12GX | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0 | 0 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPR□12 | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPR□13 | 1 | ○ | ○ | .472 | 12 | .519 | 13 | .519 | 13 | .519 | 13 | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPR□16H | 1 | ○ | | .472 | 12 | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | 0 | 0 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPR□16 | 1 | ○ | ○ | .472 | 12 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPR□06H-IN-OH 💧 | 2 | ● | ● | .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 | LRIS-4×10PW | CLR-15S |
| | CTPR□08H-IN-OH 💧 | 2 | ● | ● | .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 | LRIS-4×12PW | CLR-15S |
| | CTPR□1012H-OH 💧 | 2 | ○ | ○ | .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 | LRIS-4×12PW | CLR-15S |
| | CTPR□12H-OH 💧 | 2 | ● | ● | .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 | LRIS-4×12PW | CLR-15S |
| | CTPR□16H-OH 💧 | 2 | ○ | ○ | .472 | 12 | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | 0 | 0 | .768 | 19.5 | — | — | Rc1/8(PT1/8) | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
|  CTPA FR../FL.. | CTPA□06-IN | 1 | ● | ● | .630 | 16 | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .079 | 2 | .295 | 7.5 | .768 | 19.5 | — | 0.0 | 0.0 | LRIS-4×10PW | CLR-15S |
| | CTPA□08-IN | 1 | ● | ● | .630 | 16 | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPA□10-IN | 1 | ● | ● | .630 | 16 | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPA□10 | 1 | ○ | ○ | .630 | 16 | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .079 | 2 | .295 | 7.5 | .768 | 19.5 | — | 0.0 | 0.0 | LRIS-4×10PW | CLR-15S |
| | CTPA□12 | 1 | ● | ● | .630 | 16 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPA□16 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | — | 0.0 | 0.0 | LRIS-4×12PW | CLR-15S |
| | CTPA□20F | 1 | ○ | ○ | .630 | 16 | .787 | 20 | .787 | 20 | .787 | 20 | 3.150 | 80 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPA□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 | LRIS-4×10PW | CLR-15S |
| | CTPA□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 | LRIS-4×12PW | CLR-15S |
| | CTPA□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 | LRIS-4×12PW | CLR-15S |
|  CTPW FR../FL.. | CTPW□08-IN | 3 | ● | ● | .787 | 20 | 1/2 | | .498 | | .630 | 16 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPW□10-IN | 3 | ● | ● | .787 | 20 | 5/8 | | .623 | | .630 | 16 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPW□10A | 3 | | ○ | .787 | 20 | .394 | 10 | .392 | 9.95 | .630 | 16 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPW□10 | 3 | ○ | | .787 | 20 | .394 | 10 | .392 | 9.95 | .472 | 12 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPW□12A | 3 | | ○ | .787 | 20 | .472 | 12 | .470 | 11.95 | .630 | 16 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPW□12 | 3 | ○ | | .787 | 20 | .472 | 12 | .470 | 11.95 | .472 | 12 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPW□16 | 3 | ○ | ○ | .787 | 20 | .630 | 16 | .628 | 15.95 | .630 | 16 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |
| | CTPW□20 | 3 | ○ | ○ | .787 | 20 | .787 | 20 | .785 | 19.95 | .787 | 20 | 4.724 | 120 | — | — | .591 | 15 | — | — | — | 0.0 | 0.0 | LRIS-4×10 | LLR-25S |

●Left-Hand coolant through holders are designed for Right-Hand machines

＊Would be changed by insert

## ■CTPR-SUB / CTPAR-SUB

| Gage Insert | Item Number | Figure | Stock R | Max. Cut-off Dia. φD* (Inch) | (mm) | h (Inch) | (mm) | h1 (Inch) | (mm) | b (Inch) | (mm) | L1 (Inch) | (mm) | h2 (Inch) | (mm) | L2 (Inch) | (mm) | L3 (Inch) | (mm) | L4 (Inch) | (mm) | α | f (Inch) | (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTP..FR.. | CTPR06-IN-SUB | 4 | ● | .472 | 12 | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .079 | 2 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR08-IN-SUB | 4 | ● | .472 | 12 | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR10-IN-SUB | 4 | ● | .472 | 12 | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR08-SUB | 4 | ○ | .472 | 12 | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .157 | 4 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR08J-SUB | 4 | ○ | .472 | 12 | .315 | 8 | .315 | 8 | .315 | 8 | 4.331 | 110 | .157 | 4 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR10F-SUB | 4 | ○ | .472 | 12 | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .079 | 2 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR10KX-SUB | 4 | ○ | .472 | 12 | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .079 | 2 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR12GX-SUB | 4 | ○ | .472 | 12 | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0 | 0 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPR12-SUB | 4 | ○ | .472 | 12 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | .217 | 5.5 | .591 | 15 | .630 | 16 | 45° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
|  CTPA..FR.. | CTPAR06-IN-SUB | 4 | ● | .630 | 16 | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .079 | 2 | .295 | 7.5 | .768 | 19.5 | .787 | 20 | 25° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPAR08-IN-SUB | 4 | ● | .630 | 16 | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | .787 | 20 | 25° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPAR10-IN-SUB | 4 | ● | .630 | 16 | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | .787 | 20 | 25° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPAR10GX-SUB | 4 | ○ | .630 | 16 | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .079 | 2 | .787 | 20 | .768 | 19.5 | .787 | 20 | 25° | 0 | 0.0 | LRIS-4×5 | LLR-25S |
| | CTPAR12GX-SUB | 4 | ○ | .630 | 16 | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0 | 0 | .787 | 20 | .768 | 19.5 | .787 | 20 | 25° | 0 | 0.0 | LRIS-4×5 | LLR-25S |
| | CTPAR12KX-SUB | 4 | ○ | .630 | 16 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | .787 | 20 | .768 | 19.5 | .787 | 20 | 25° | 0 | 0.0 | LRIS-4×5 | LLR-25S |

＊Would be changed by insert

## ■CTPL-SUB / CTPAL-SUB

| Gage Insert | Item number | Figure | Stock L | Max. Cut-off Dia. φD* (Inch) | (mm) | h (Inch) | (mm) | h1 (Inch) | (mm) | b (Inch) | (mm) | L1 (Inch) | (mm) | h2 (Inch) | (mm) | L2 (Inch) | (mm) | L3 (Inch) | (mm) | L4 (Inch) | (mm) | α | f (Inch) | (mm) | Clamp screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTP..FL.. | CTPL08-SUB | 5 | ○ | .472 | 12 | .315 | 8 | .315 | 8 | .394 | 10 | 4.724 | 120 | .157 | 4 | .217 | 5.5 | .591 | 15 | .630 | 16 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPL08J-SUB | 5 | ○ | .472 | 12 | .315 | 8 | .315 | 8 | .315 | 8 | 4.331 | 110 | .157 | 4 | .217 | 5.5 | .591 | 15 | .630 | 16 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPL10GX-SUB | 5 | ○ | .472 | 12 | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .079 | 2 | .217 | 5.5 | .591 | 15 | .630 | 16 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPL12GX-SUB | 5 | ○ | .472 | 12 | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0 | 0 | .217 | 5.5 | .591 | 15 | .630 | 16 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
|  CTPA..FL.. | CTPAL06-IN-SUB | 5 | ● | .630 | 16 | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .079 | 2 | .295 | 7.5 | .768 | 19.5 | .787 | 20 | 30° | .295 | 7.5 | LRIS-4×5 | LLR-25S |
| | CTPAL08-IN-SUB | 5 | ● | .630 | 16 | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | .787 | 20 | 30° | .295 | 7.5 | LRIS-4×5 | LLR-25S |
| | CTPAL10-IN-SUB | 5 | ● | .630 | 16 | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | 0 | 0 | .295 | 7.5 | .768 | 19.5 | .787 | 20 | 30° | .295 | 7.5 | LRIS-4×5 | LLR-25S |
| | CTPAL10GX-SUB | 5 | ○ | .630 | 16 | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .079 | 2 | .787 | 20 | .768 | 19.5 | .787 | 20 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPAL12GX-SUB | 5 | ○ | .630 | 16 | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | 0 | 0 | .787 | 20 | .768 | 19.5 | .787 | 20 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPAL12KX-SUB | 5 | ○ | .630 | 16 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | .787 | 20 | .768 | 19.5 | .787 | 20 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |
| | CTPAL16GX-SUB | 5 | ○ | .630 | 16 | .630 | 16 | .630 | 16 | .630 | 16 | 3.346 | 85 | 0 | 0 | 1.102 | 28 | .768 | 19.5 | 1.102 | 28 | 30° | .217 | 5.5 | LRIS-4×5 | LLR-25S |

＊Would be changed by insert

Cutting condition ➡K89

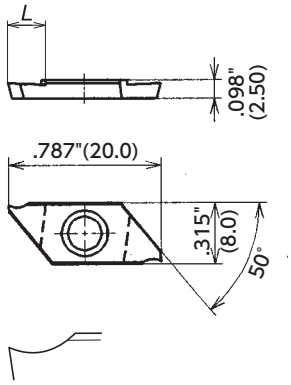
Inserts (Right-hand) ➡K94 Inserts (Left-hand) ➡K96

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

# CTP / CTPA / CTPW Inserts (Right-Hand)

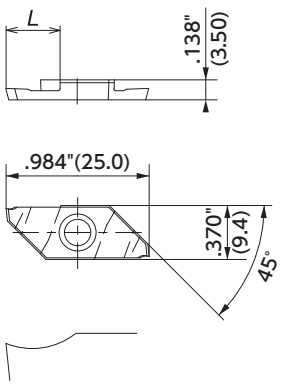
Two-sided insert

## ■CTP / CTPX / CTP-X



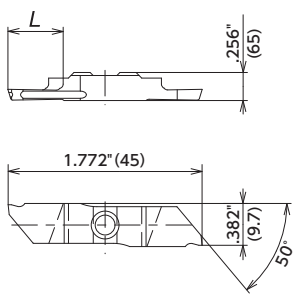

Right-Hand style shown

## ■CTPA / CTPAX




Right-Hand style shown

## ■CTPW

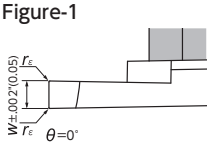
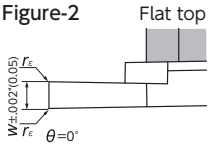
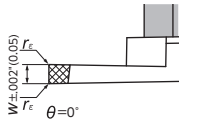
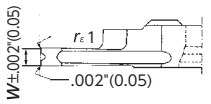
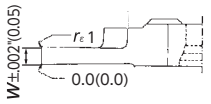



Right-Hand style shown

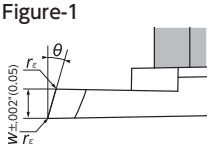
## ■FR

| Shape | Item Number | Figure | Chip-breaker | Max. Cut-off Dia. φD (Inch) | (mm) | w (Inch) | (mm) | L (Inch) | (mm) | θ | rε1 (Inch) | (mm) | Coated Carbide QM3 | DT4 | VM1 | ZM3 | Carbide KM1 | PCD 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 | ● | | | | | |
| | CTP10FRV Ⓜ | 2 | No | .472 | 12.0 | .039 | 1.0 | .264 | 6.7 | 20° | 0.0 | 0.0 | | ○ | ● | ● | ○ | |
| Figure-2 Flat top | 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 | | | | ○ | | |
| | CTP15FRV Ⓜ | 2 | No | .472 | 12.0 | .059 | 1.5 | .264 | 6.7 | 20° | 0.0 | 0.0 | | | ● | ● | ○ | |
| Figure-3 Flat top | 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 | | | | ○ | | |
| | CTP20FRV Ⓜ | 2 | No | .472 | 12.0 | .079 | 2.0 | .264 | 6.7 | 20° | 0.0 | 0.0 | | | ● | ● | ○ | |
| Figure-4 | 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 Flat top | 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 Ⓜ | 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 Ⓜ | 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. $\phi D$ (Inch) | (mm) | $w$ (Inch) | (mm) | $L$ (Inch) | (mm) | $\theta$ | $r_{\varepsilon 1}$ (Inch) | (mm) | Coated Carbide QM3 | DT4 | VM1 | ZM3 | Carbide KM1 | PCD 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 Flat top  | CTP15FRNX | 1 | Yes | .472 | 12.0 | .059 | 1.5 | .264 | 6.7 | 0° | .002 | 0.05 | | | | ○ | | |
| | CTP15FRNV Ⓜ | 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 | ● | ● | | | | |
| | CTP20FRNX | 1 | Yes | .472 | 12.0 | .079 | 2.0 | .264 | 6.7 | 0° | .002 | 0.05 | | | | ○ | | |
| Figure-3 PCD tipped  | CTP20FRNV Ⓜ | 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 | ● | | | ● | | |
| | CTPA10FRS Ⓜ | 2 | No | .472 | 16.0 | .039 | 1.0 | .362 | 9.2 | 0° | .002 | 0.05 | ● | | | | | |
| Figure-4  | 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 | ● | ● | ● | ● | | |
| | CTPA20FRS Ⓜ | 2 | No | .630 | 16.0 | .079 | 2.0 | .362 | 9.2 | 0° | .002 | 0.05 | ● | | | ○ | | |
| | CTPA20FRNV Ⓜ | 2 | No | .630 | 16.0 | .079 | 2.0 | .362 | 9.2 | 0° | 0.0 | 0.0 | | | | | ○ | |
| Figure-5 Flat top  | 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 Ⓜ | 5 | No | .787 | 20.0 | .098 | 2.5 | .472 | 12 | 0° | 0.0 | 0.0 | | | | ● | | |

## ■FRK

| Shape | Item Number | Figure | Chip-breaker | Max. Cut-off Dia. $\phi D$ (Inch) | (mm) | $w$ (Inch) | (mm) | $L$ (Inch) | (mm) | $\theta$ | $r_{\varepsilon 1}$ (Inch) | (mm) | Coated Carbide QM3 | DT4 | VM1 | ZM3 | Carbide KM1 | PCD 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.

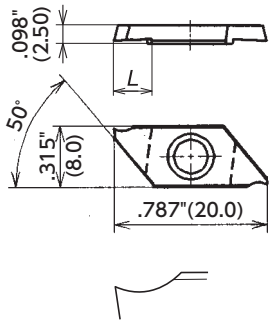
Holders ➡K92
Tool selection guide ➡K88
Cutting condition ➡K89

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

# CTP / CTPA / CTPW Inserts (Left-Hand)

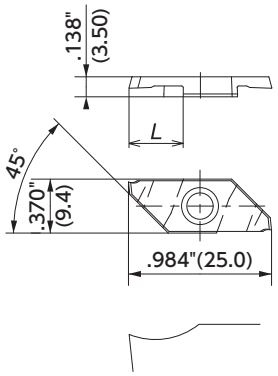
Two-sided insert

## ■CTP / CTPX / CTP-X



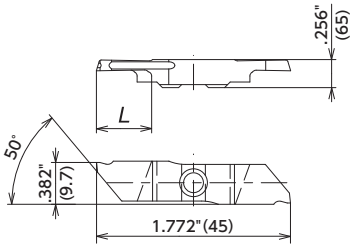

Left-Hand style shown

## ■CTPA / CTPAX



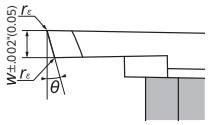
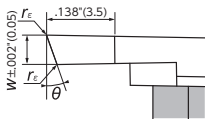
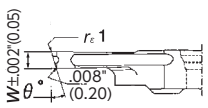

Left-Hand style shown

## ■CTPW




Left-Hand style shown

## ■FLK

| Shape | Item Number | Figure | Chip-breaker | Max. Cut-off Dia. $\phi D$ (Inch) | (mm) | $w$ (Inch) | (mm) | $L$ (Inch) | (mm) | $\theta$ | $r_{\varepsilon 1}$ (Inch) | (mm) | Coated Carbide QM3 | DT4 | VM1 | ZM3 | Carbide KM1 | PCD 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** Ⓜ | 2 | No | **.433** | **11.0** | .059 | 1.5 | .264 | 6.7 | 20° | 0.0 | 0.0 | | | ● | | ○ | |
| | **CTP20FLK** | 1 | Yes | **.433** | **11.0** | .079 | 2.0 | .264 | 6.7 | 16° | .002 | 0.05 | | | ○ | ● | | |
| Figure-2 Flat top  | **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 | ● | | ● | ● | | |
| | **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 | 0.0 | ● | | | | | |
| Figure-3  | **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** Ⓜ | 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** Ⓜ | 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 (Inch) | Max. Cut-off Dia. φD (mm) | w (Inch) | w (mm) | L (Inch) | L (mm) | θ | $r_{\varepsilon 1}$ (Inch) | $r_{\varepsilon 1}$ (mm) | Coated Carbide QM3 | Coated Carbide DT4 | Coated Carbide VM1 | Coated Carbide ZM3 | Carbide KM1 | PCD 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 (M) | 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 | ● | ● | ○ | ● | | |
| Figure-4 | CTPA15FLS (M) | 2 | No | .630 | 16.0 | .059 | 1.5 | .362 | 9.2 | 0° | .002 | 0.05 | ● | | | | | |
| | CTPA20FLN | 1 | Yes | .630 | 16.0 | .079 | 2.0 | .362 | 9.2 | 0° | .002 | 0.05 | ● | ● | ○ | ● | | |
| | CTPA20FLS (M) | 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 | | | | | ○ | |
| Figure-5 Flat top | CTPA20FLN-P | 3 | Yes | .630 | 16.0 | .079 | 2.0 | .362 | 9.2 | 0° | .004 | 0.1 | | | | | | ○ |
| | CTPA30FLN | 1 | Yes | .630 | 16.0 | .118 | 3.0 | .362 | 9.2 | 0° | .002 | 0.05 | ○ | | | | | |
| | 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 | | | | ● | | |

## ■FL

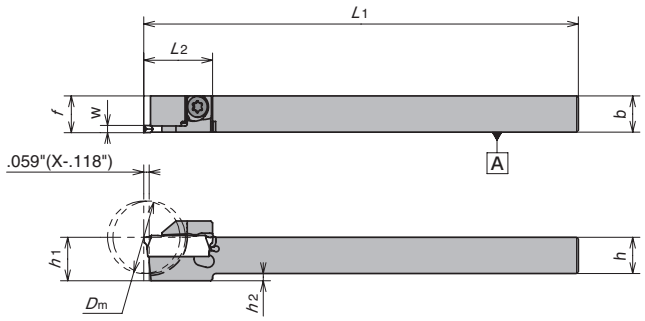
| Shape | Item Number | Figure | Chip-breaker | Max. Cut-off Dia. φD (Inch) | Max. Cut-off Dia. φD (mm) | w (Inch) | w (mm) | L (Inch) | L (mm) | θ | $r_{\varepsilon 1}$ (Inch) | $r_{\varepsilon 1}$ (mm) | Coated Carbide QM3 | Coated Carbide DT4 | Coated Carbide VM1 | Coated Carbide ZM3 | Carbide KM1 | PCD 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 | | | | ○ | | |
| | CTPX15FL | 1 | Yes | .472 | 12.0 | .059 | 1.5 | .264 | 6.7 | 16° | .002 | 0.05 | | ● | | | | |
| Figure-2 Flat top | CTP15FLV (M) | 2 | No | .472 | 12.0 | .059 | 1.5 | .264 | 6.7 | 20° | 0.0 | 0.0 | | | ○ | ○ | | |
| | CTP20FL | 1 | Yes | .472 | 12.0 | .079 | 2.0 | .264 | 6.7 | 16° | .002 | 0.05 | | | | ● | | |
| | CTPX20FL | 1 | Yes | .472 | 12.0 | .079 | 2.0 | .264 | 6.7 | 16° | .002 | 0.05 | | ● | | | | |
| | CTP20FLV (M) | 2 | No | .472 | 12.0 | .079 | 2.0 | .264 | 6.7 | 20° | 0.0 | 0.0 | | | ○ | ○ | | |
| Figure-3 | 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 ➡K92 Tool selection guide ➡K88 Cutting Condition ➡K89

# CTDP (Cut Duo) Series

Max. Cut-off Dia. -ϕ.787"(20.0㎜), -ϕ1"(25.4㎜), ϕ1.260"(32.0㎜), -ϕ1.339"(34.0㎜)

## CTDP




Right-Hand style shown

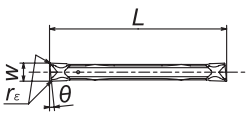
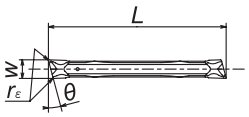
## CTDP Series - Toolholders

### ■CTDP

| Gage Insert | Item Number | Stock R | Stock L | Max. Cut-off Dia. $D_m$ (Inch) | Max. Cut-off Dia. $D_m$ (㎜) | w (Inch) | w (㎜) | h (Inch) | h (㎜) | b (Inch) | b (㎜) | $h_1$ (Inch) | $h_1$ (㎜) | $L_1$ (Inch) | $L_1$ (㎜) | $h_2$ (Inch) | $h_2$ (㎜) | $L_2$ (Inch) | $L_2$ (㎜) | f (Inch) | f (㎜) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | .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 | .472 | 12 | 4.724 | 120 | 0 | 0 | .748 | 19.0 | .478 | 12.15 | LRIS-4 × 12 | LLR-25S |
| CTDP20 | CTDP※12-20D25 | ● | ○ | 1.000 | 25.4 | .079 | 2.0 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | 0 | 0 | .866 | 22.0 | .478 | 12.15 | LRIS-4 × 12 | LLR-25S |
| | CTDP※16-20D25 | ● | ○ | 1.000 | 25.4 | .079 | 2.0 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | .866 | 22.0 | .636 | 16.15 | LRIS-4 × 12 | LLR-25S |
| | CTDP※16-20D32A | ○ | ○ | 1.260 | 32.0 | .079 | 2.0 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | 1.083 | 27.5 | .636 | 16.15 | LRIS5 × 10 | LLR-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 |
| | CTDP※16-25D34A | ● | ○ | 1.339 | 34.0 | .098 | 2.5 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | 1.122 | 28.5 | .636 | 16.15 | CS0516LSH | LW-3 |
| CTDP25 | 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 (Inch) | w (㎜) | L (Inch) | L (㎜) | θ | $r_ε$ (Inch) | $r_ε$ (㎜) | Coated Carbide QM3 | Coated Carbide DM4 | Coated Carbide TM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Two-sided |  Neutral style shown | 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 | ● | ● | ○ |
| |  Right-Hand style shown | 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. -$\phi$.787"(20.0㎜)

## CTV-K2

Screw Accessible from both sides

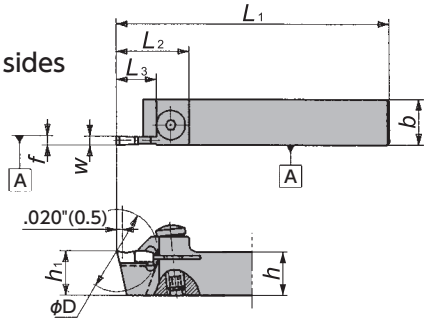
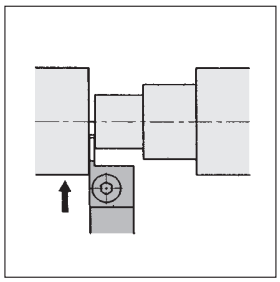



Figure-1



Right-Hand style shown

## CTVN-K2

Screw Accessible from both sides

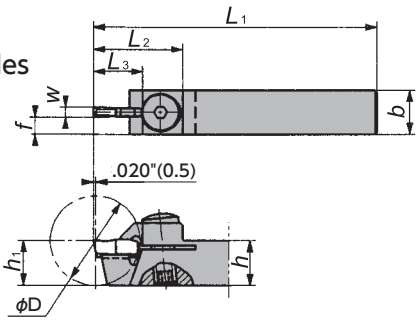
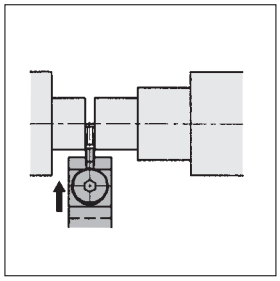



Figure-2



# CTV Series - Toolholders

## ■CTV

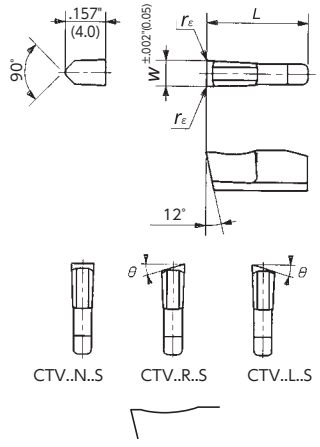
| Gage Insert | Item Number | Figure | Stock R | Stock L | Max. Cut-off Dia. $\phi D$ (Inch) | Max. Cut-off Dia. $\phi D$ (㎜) | $w$ (Inch) | $w$ (㎜) | $h$ (Inch) | $h$ (㎜) | $b$ (Inch) | $b$ (㎜) | $h_1$ (Inch) | $h_1$ (㎜) | $L_1$ (Inch) | $L_1$ (㎜) | $L_2$ (Inch) | $L_2$ (㎜) | $L_3$ (Inch) | $L_3$ (㎜) | $f$ (Inch) | $f$ (㎜) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CTV-S | CTV**R/L**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 | A0S-5 × 16 | LW-2.5S |
| | CTV**R/L**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 | A0S-5 × 16 | LW-2.5S |
| | CTV**R/L**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 | A0S-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 | A0S-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 | A0S-5 × 16 | LW-2.5S |

Note: $f$ shows when takes CTV22.. insert

# CTV Series - Inserts

## ■CTV-S

| Shape | Item Number | $w$ (Inch) | $w$ (㎜) | $L$ (Inch) | $L$ (㎜) | $\theta$ | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (㎜) | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|
|  | 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 | ○ |




Single-sided

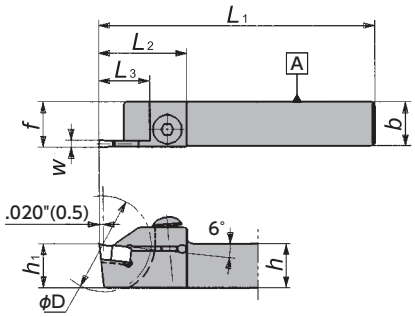
● : Stock ○ : 1-2 week delivery

Cutting condition ➡K89

# CTV Series

Max. Cut-off Dia. -ϕ1.772"(45.0㎜)

## CTV (-S)



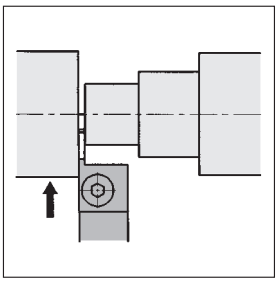
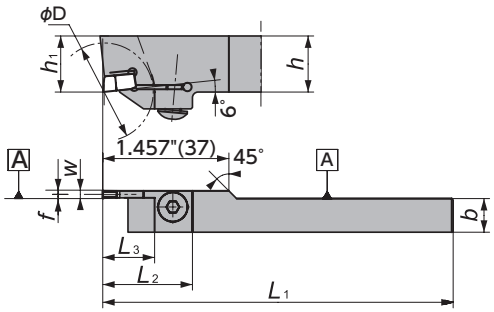



Figure-1

Right-Hand style shown

## CTV-X



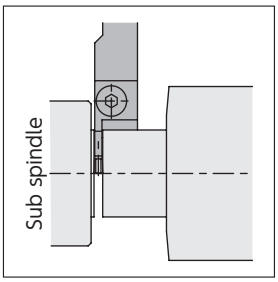
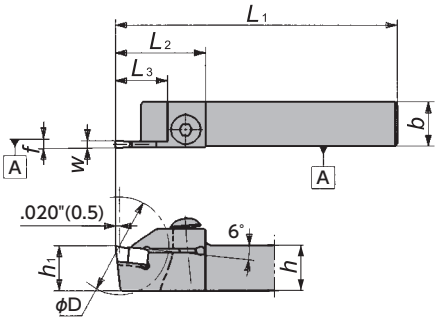




Figure-2

Left-Hand style shown

## CTV-M (B)



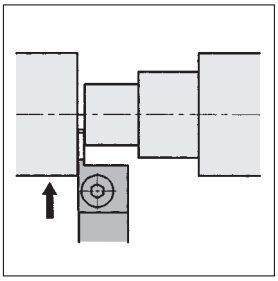



Figure-3

Right-Hand style shown

# CTV Series - Toolholders

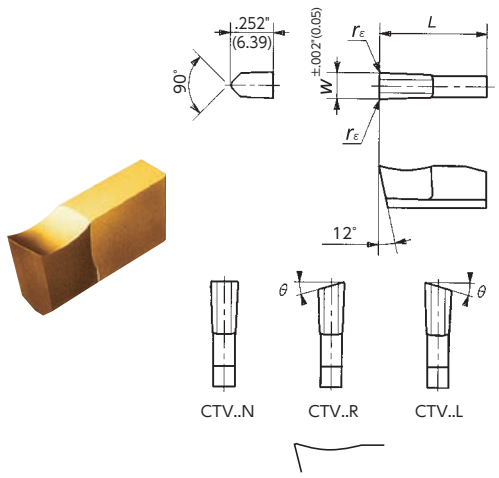
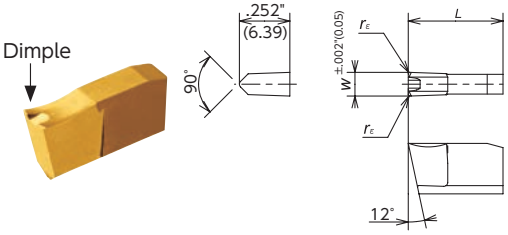
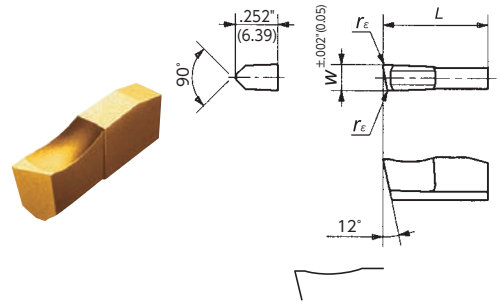


## ■CTV

| Gage Insert | Item Number | Figure | Stock R | Stock L | Max. Cut-off Dia. $D_m$ (Inch) | (㎜) | w (Inch) | (㎜) | h (Inch) | (㎜) | b (Inch) | (㎜) | $h_1$ (Inch) | (㎜) | $L_1$ (Inch) | (㎜) | $L_2$ (Inch) | (㎜) | $L_3$ (Inch) | (㎜) | f (Inch) | (㎜) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 (Inch) | w (mm) | L (Inch) | L (mm) | θ | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide QM3 | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|
|  Single-sided | **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 | | ○ |
|  Single-sided | **CTV30N038** | .118 | 3.0 | .472 | 12 | 0° | .008 | 0.20 | | ○ |
|  Single-sided | **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. | | ○ |

● : Stock　　○ : 1-2 week delivery

Cutting condition ➡K89

MEMO

K

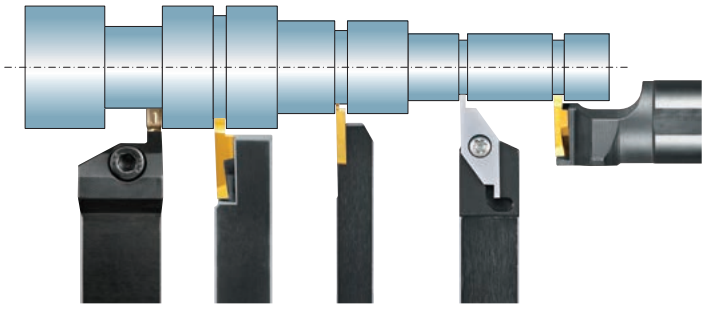


# Grooving / Side Turning


- Grooving Tools ····· K104
- Recommended Cutting Condition K106
- General Information ····· K107
- Tool List ····· K108

CSV Series ····· K108
CTPS Series ····· K110
GTW Series (GROOVE DUO) ····· K111
GTM.32 Series····· K112
TWG Series ····· K119
GTM.43 Series····· K120
SATURN DUO Series (Face grooving) ····· K122
GTPA Series ····· K126

# NTK Grooving / Side Turning Tools - Product Lines

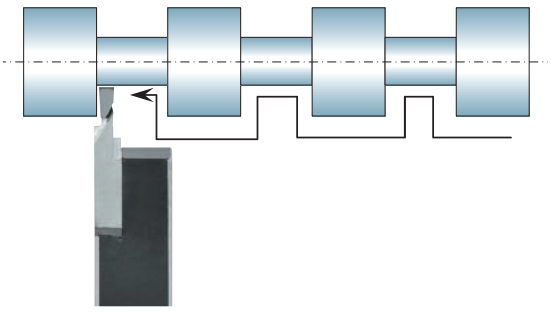


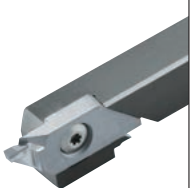
| Insert | CSVG ➡K109 | | GTPS ➡K110 |
|---|---|---|---|
| Holder | CSV | DS-CSV | CTPS |
| |  ➡K108 |  ➡K108 |  ➡K110 |
| Blade width | .010" - .059" (0.25 - 1.50mm) | | .030" - .079" (0.75 - 2.0mm) |
| Depth of cut | ~.102" (~2.59mm) | | ~.098" (~2.50mm) |

| Insert | GTMH32 / GTMX32 / GTM32 / TMG32 ➡K114 | | | | | |
|---|---|---|---|---|---|---|
| Holder | GTT | GTT-OH | Y-GTT | Y-GTT-OH | DS-GTT | CH-GTT |
| |  ➡K112 | NEW  ➡K112 Coolant through |  ➡K112 Y-axis | NEW  ➡K112 Y-axis w/ Coolant through |  ➡K112 |  ➡K112 |
| Blade width | .012" - .118" (0.3 - 3.0mm) | | | | | |
| Depth of cut | ~.106" (~2.69mm) | | | | | |

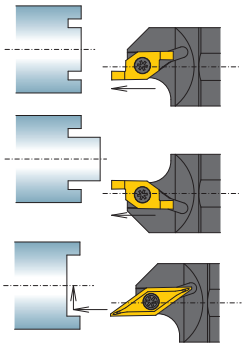
| Insert | GWP ➡K111 | GTM43 / GTMA43 / GTMT43 ➡K121 | | TWG ➡K119 |
|---|---|---|---|---|
| Holder | GTWP | NGTN | NGTB | TWG |
| | NEW  ➡K111 |  ➡K120 |  ➡K120 |  ➡K119 |
| Blade width | .118" - .236" (3.0 - 5.9mm) | .039" - .216" (1.0 - 5.49mm) | | .079" - .118" (2.0 - 3.0mm) |
| Depth of cut | ~.354" (~9.0mm) | .177" (4.50mm) | | ~.118" (~3.0mm) |

## Multifunctional Grooving for non-ferrous material



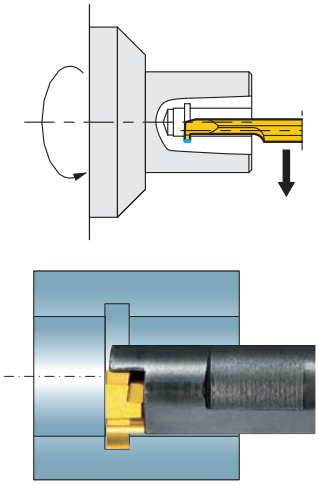
| Insert | GTPA ➡K126 | | |
|---|---|---|---|
| Holder | GTPA | Y-GTPA | Y-GTPA-OH |
| |  ➡K126 |  ➡K126 Y-axis | NEW  ➡K126 Y-axis w/ Coolant through |
| Blade width | .079" - .098" (2.0 - 2.50mm) | | |
| Depth of cut | ~.236" (~6.0mm) | | |

## Face Grooving



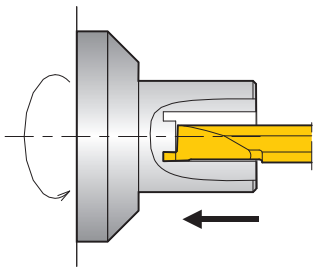
| Insert | FGV ➡K125 | FBV ➡K125 | |
|---|---|---|---|
| Holder | FGV | DS-FGV | CH-FGV |
| |  ➡K124 |  ➡K124 |  ➡K124 |
| Blade width | .039" - .079" (1.0㎜ - 2.0㎜) | | |
| Depth of cut | ~.118" (~3.0㎜) | FGV : ~.118" (~3.0㎜) | |
| | | FBV : ~.157" (~4.0㎜) | |

## ID Grooving



| Insert | SBG ➡K166 | GTG ➡K167 |
|---|---|---|
| Holder | NBH | S-BG / BG |
| |  ➡K162 |  ➡K167 |
| Blade width | .020" - .079" (0.5 - 2.0㎜) | .020" - .079" (0.5 - 2.0㎜) |
| Depth of cut | ~.079" (~2.0㎜) | ~.118" (~3.0㎜) |

## ID Face Grooving



| Insert | SFG ➡K166 |
|---|---|
| Holder | NBH |
| |  ➡K162 |
| Blade width | .039" - .118" (1.0 - 3.0㎜) |
| Depth of cut | ~.110" (~2.79㎜) |

# Recommended Cutting Condition

## 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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 150 300 500<br>C7Z(X) 400 500 800 | |
| Feed Rate (IPR)<br>A. Grooving<br>B. Side turning* | Width .010-.020 | A. .0002 - .0012<br>B. .0001 - .0002 | | | | | | |
| | .020-.040 | A. .0008 - .0024<br>B. .0002 - .0004 | | | | | | A. .0008 - .0028<br>B. .0002 - .0004 |
| | .040-.080 | A. .0012 - .0028<br>B. .0008 - .0020 | | | | | | A. .0012 - .0031<br>B. .0012 - .0024 |
| | > .080 | A. .0012 - .0079<br>B. .0012 - .0024 | | | | | | |

*When side turining, 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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>1046 |
| Grade | 1st choice | QM3 | | | | | | |
| | 2nd choice | | | | | | | |
| Cutting Speed (SFM) | | 75 125 225 | 100 200 275 | | 130 230 330 | 150 300 600 | 150 300 500 | |
| Feed Rate (IPR)<br>A. Grooving<br>B. Side turning* | Width .118-.157 | A. .0020 - .0059 | | | | | | |
| | .157-.197 | A. .0039 - .0079 | | | | | A. .0039 - .0098<br>B. .0059 - .0118 | |
| | > .197 | A. .0059 - .0138 | | | | | | |

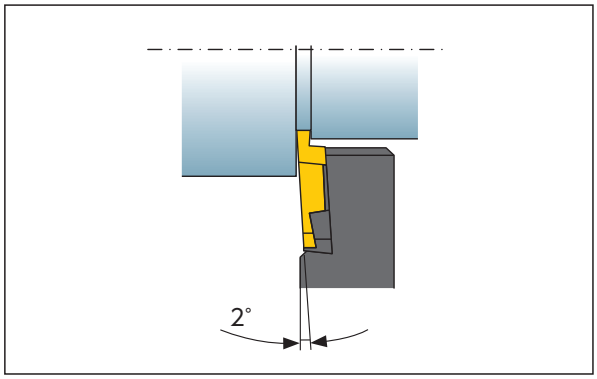
*Max DOC is 80% of width

**GTPA**

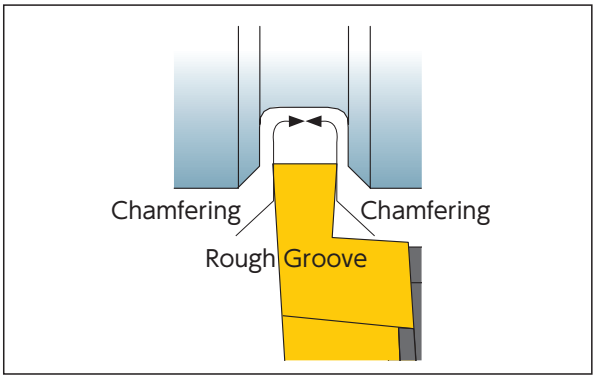
| Work Material | | Aluminum Alloy |
|---|---|---|
| Common Name | | ASTM 5056<br>ASTM 6061 |
| Grade | 1st choice | PD1 |
| | 2nd choice | KM1 |
| Cutting Speed (SFM) | | PD1 330 650 1000<br>KM1 160 330 650 |
| Feed Rate (IPR)<br>A. Grooving<br>B. Side turning | | A. .0020 - .0079<br>B. .0039 - .0079 |

## OD Grooving

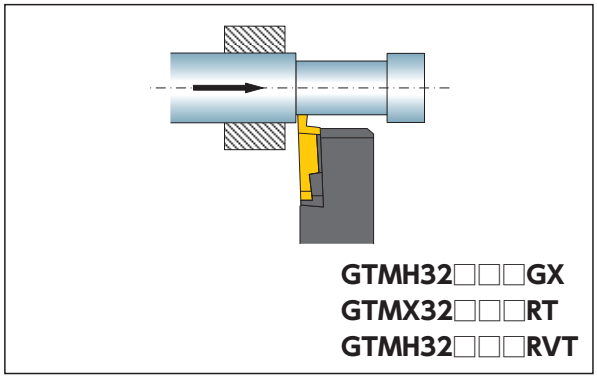
NTK GTMT / GTMH series can be used for uneven diameter grooving thanks to the 2 degree slanted insert mounting on the toolholder




Chamfering and radius machining can be done after the rough grooving process at the center of the groove

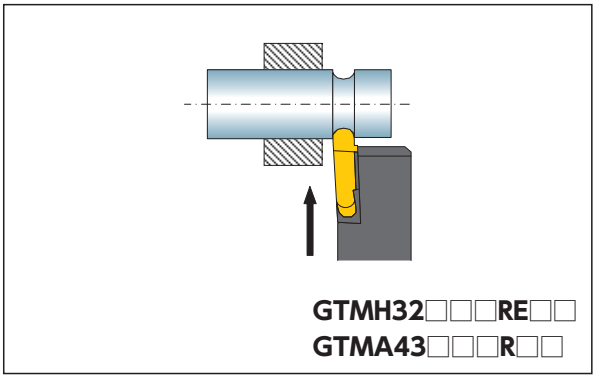



## Side Turning



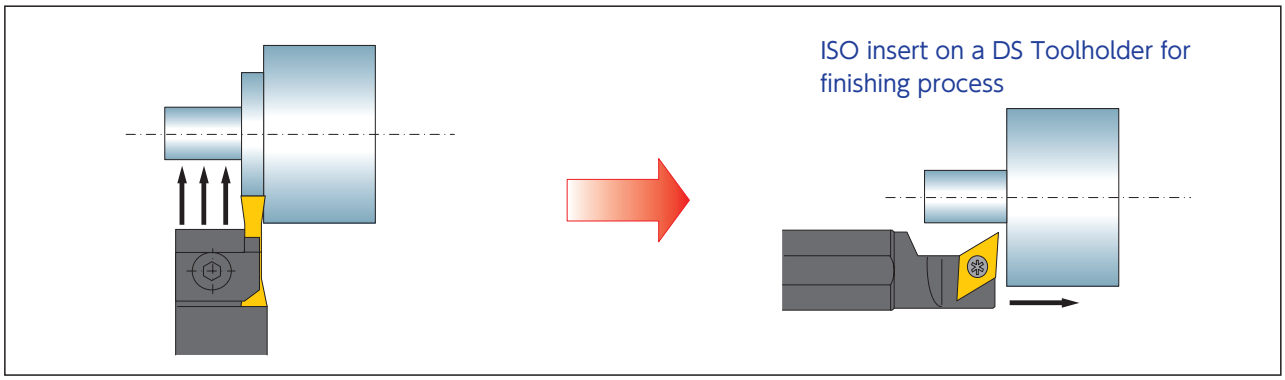
**GTMH32□□□GX**
**GTMX32□□□RT**
**GTMH32□□□RVT**

## Full Radius

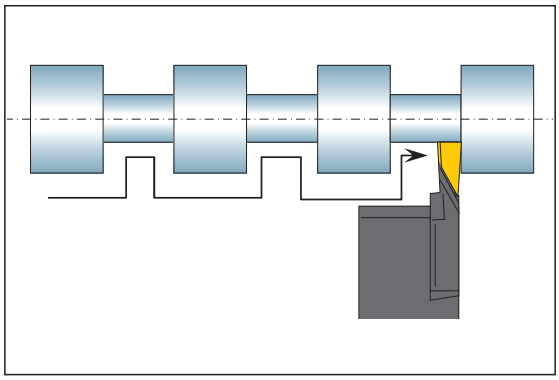


**GTMH32□□□RE□□**
**GTMA43□□□R□□**

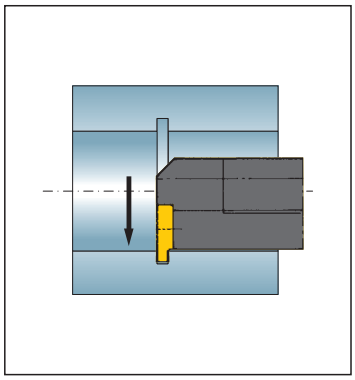
## Rough Plunging for OD Turning



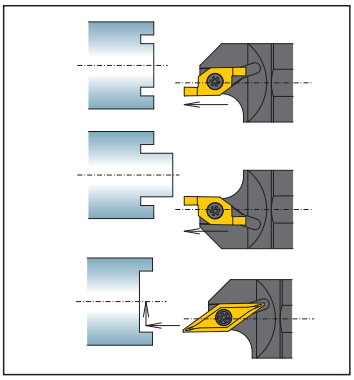

## Spool Grooving



## ID Grooving



## Face Grooving



# CSV Series

**Best for up to .200" diameter material**

## CSV-NC

For Gang-style machine

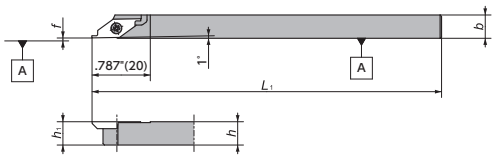



Figure-1

Right-Hand style shown

## CSV

For Cam-style machine

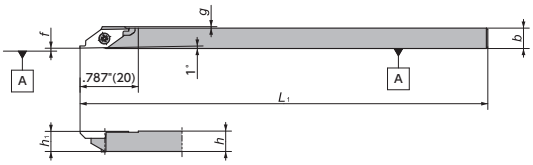



Figure-2

Right-Hand style shown

## DS-CSVL

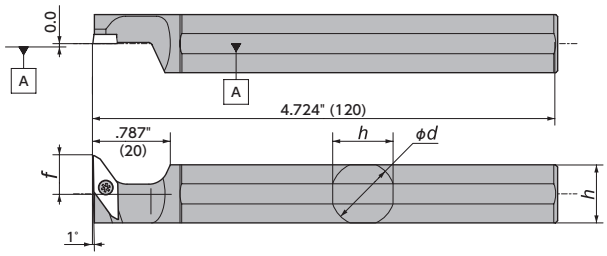



Figure-3

Left-Hand style shown
Takes Right-hand insert

# CSV Series - Toolholders

## ■CSV R/L / CSV R/L-NC

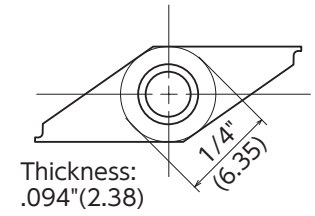
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11.. | CSVR/L06-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 |
| | CSVR/L08-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 |
| | CSVR/L08NC | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08NC-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 |
| | CSVR/L10GXNC | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L10NC | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12NC | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07GX | 2 | ○ | | .275 | 7 | .275 | 7 | .275 | 7 | 3.346 | 85 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07 | 2 | ○ | ● | .275 | 7 | .275 | 7 | .275 | 7 | 5.512 | 140 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08GX | 2 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08 | 2 | ● | ● | .315 | 8 | .315 | 8 | .315 | 8 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L095 | 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 |
| | CSVR/L10 | 2 | ● | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12GX | 2 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12 | 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 R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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 W (Inch) | Groove Width W (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide VM1 R | Coated Carbide VM1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | CSVG11F⅛V025 Ⓜ | No | .010 | 0.25 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V030 Ⓜ | No | .012 | 0.30 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V035 Ⓜ | No | .014 | 0.35 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V040 Ⓜ | No | .016 | 0.40 | .006 | 0.15 | .020 | 0.50 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V045 Ⓜ | No | .018 | 0.45 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V050 Ⓜ | No | .020 | 0.50 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V055 Ⓜ | No | .022 | 0.55 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V060 Ⓜ | No | .024 | 0.60 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V065 Ⓜ | No | .026 | 0.65 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V070 Ⓜ | No | .028 | 0.70 | .018 | 0.45 | .039 | 1.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V075 Ⓜ | No | .030 | 0.75 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | ○ |
| | CSVG11F⅛V080 Ⓜ | No | .031 | 0.80 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V085 Ⓜ | No | .033 | 0.85 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V090 Ⓜ | No | .035 | 0.90 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V095 Ⓜ | No | .037 | 0.95 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | ○ |
| | CSVG11F⅛V100 Ⓜ | No | .039 | 1.00 | .050 | 1.40 | .079 | 2.00 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V110 Ⓜ | No | .043 | 1.10 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V120 Ⓜ | No | .047 | 1.20 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | ○ |
| | CSVG11F⅛V130 Ⓜ | No | .051 | 1.30 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |
| | CSVG11F⅛V140 Ⓜ | No | .055 | 1.40 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |
| Right-Hand style shown | CSVG11F⅛V150 Ⓜ | No | .059 | 1.50 | .102 | 2.60 | .102 | 2.60 | 0.0 | 0.0 | ● | |



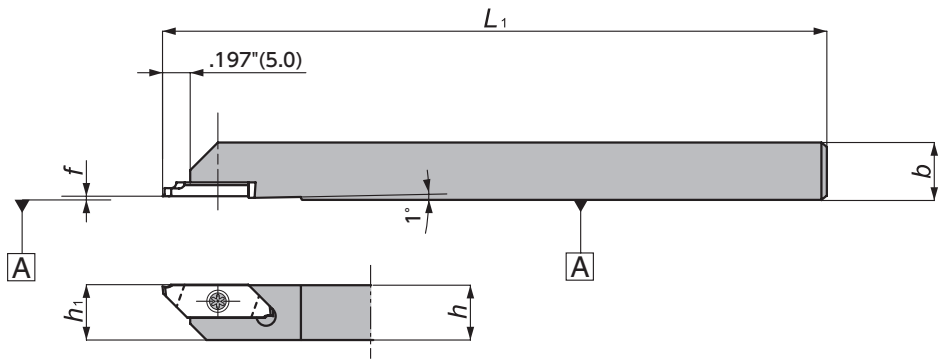
● : Stock ○ : 1-2 week delivery Ⓜ : Mirror finish

CSV series ➡J36 Cutting condition ➡K106

# CTPS Series

## CTPS

For Cam-style machine




Right-Hand style shown

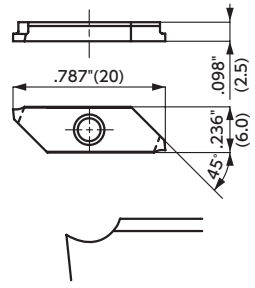
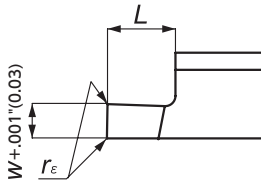
## CTPS - Toolholders

### ■CTPS

| Gage Insert | Item Number | Figure | Stock | Groove Width Range w (Inch) | (mm) | h (Inch) | (mm) | b (Inch) | (mm) | h1 (Inch) | (mm) | L1 (Inch) | (mm) | f (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 w (Inch) | (mm) | Max Depth of Cut (Inch) | (mm) | rε (Inch) | (mm) | L (Inch) | (mm) | Coated Carbide VM1 | ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|   Right-Hand style shown ☆θ shows the angle when the holder is set. |   | 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 ➡J40 Cutting condition ➡K106

# GTW (GROOVE DUO) Series

## GTWP

Side Turning Capable
For Swiss Machine

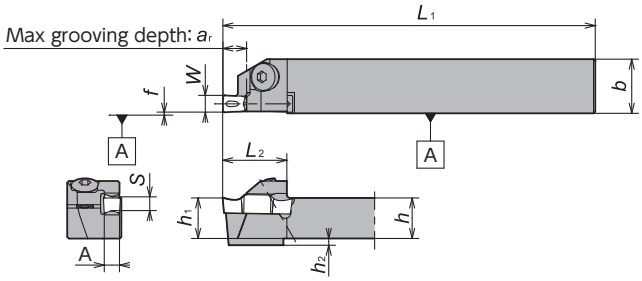
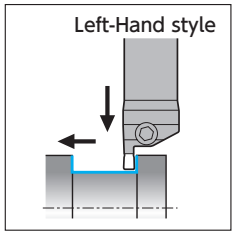



Figure-1




Right-Hand style shown

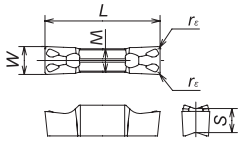
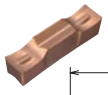
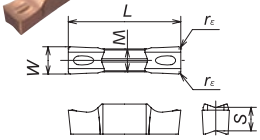
# GTW Series - Toolholders



## ■GWP

| Gage Insert | Item Number | Figure | Stock R | Stock L | Groove Width $w$ (Inch) | (mm) | $a_r$ (Inch) | (mm) | $h$ (Inch) | (mm) | $b$ (Inch) | (mm) | $h_1$ (Inch) | (mm) | $L_1$ (Inch) | (mm) | $h_2$ (Inch) | (mm) | $f$ (Inch) | (mm) | $L_2$ (Inch) | (mm) | A (Inch) | (mm) | Seat Size $s$ | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP ○ 300 | GTWP□08-IN3D07 | 1 | ● | | .118 | 3 | .275 | 7 | 1/2 | | .630 | 16 | 1/2 | | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .748 | 19 | .102 | 2.6 | D | A0B-5×14 | LW-3S |
| | GTWP□08-IN3D09 | 1 | ● | | .118 | 3 | .354 | 9 | 5/8 | | .630 | 16 | 5/8 | | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .866 | 22 | .102 | 2.6 | D | A0B-5×16 | LW-3S |
| | GTWP□1016-3D07 | 1 | ○ | | .118 | 3 | .275 | 7 | .394 | 10 | .630 | 16 | .472 | 12 | 4.724 | 120 | .079 | 2 | .012 | 0.3 | .748 | 19 | .102 | 2.6 | D | A0B-5×14 | LW-3S |
| | GTWP□1216-3D07 | 1 | ● | ○ | .118 | 3 | .275 | 7 | .472 | 12 | .630 | 16 | .472 | 12 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .768 | 19.5 | .102 | 2.6 | D | A0B-5×16 | LW-3S |
| | GTWP□1616-3D09 | 1 | ○ | ○ | .118 | 3 | .354 | 9 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .866 | 22 | .102 | 2.6 | D | A0B-5×16 | LW-3S |
| 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 | A0B-5×14 | LW-3S |
| | GTWP□08-IN4E09 | 1 | ● | | .157 | 4 | .354 | 9 | 5/8 | | .630 | 16 | 5/8 | | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .866 | 22 | .138 | 3.5 | E | A0B-5×16 | LW-3S |
| | GTWP□1016-4E07 | 1 | ○ | | .157 | 4 | .275 | 7 | .394 | 10 | .630 | 16 | .472 | 12 | 4.724 | 120 | .079 | 2 | .012 | 0.3 | .748 | 19 | .138 | 3.5 | E | A0B-5×14 | LW-3S |
| | GTWP□1216-4E07 | 1 | ● | ○ | .157 | 4 | .275 | 7 | .472 | 12 | .630 | 16 | .472 | 12 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .768 | 19.5 | .138 | 3.5 | E | A0B-5×16 | LW-3S |
| | GTWP□1616-4E09 | 1 | ○ | ○ | .157 | 4 | .354 | 9 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .866 | 22 | .138 | 3.5 | E | A0B-5×16 | LW-3S |
| 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 | A0B-5×14 | LW-3S |
| | GTWP□1216-5F07 | 1 | ○ | ○ | .197 | 5 | .275 | 7 | .472 | 12 | .630 | 16 | .472 | 12 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .768 | 19.5 | .177 | 4.5 | F | A0B-5×16 | LW-3S |
| | GTWP□1616-5F09 | 1 | ○ | ○ | .197 | 5 | .354 | 9 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .866 | 22 | .177 | 4.5 | F | A0B-5×16 | LW-3S |
| 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 | A0B-5×14 | LW-3S |
| | GTWP□1220-6G07 | 1 | ○ | | .236 | 6 | .275 | 7 | .472 | 12 | .787 | 20 | .472 | 12 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .886 | 22.5 | .209 | 5.3 | G | A0B-5×16 | LW-3S |
| | GTWP□1620-6G09 | 1 | ○ | ○ | .236 | 6 | .354 | 9 | .630 | 16 | .787 | 20 | .630 | 16 | 4.724 | 120 | 0 | 0 | .012 | 0.3 | .984 | 25 | .209 | 5.3 | G | A0B-5×16 | LW-3S |

# GTW Series - Inserts

| Shape | Item Number | $w$ Groove Width (Inch) | (mm) | $w$ Width Tolerance (Inch) | (mm) | $r_\varepsilon$ (Inch) | (mm) | M (Inch) | (mm) | $L$ (Inch) | (mm) | Seat Size $s$ | Coated Carbide DM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|    GWPG: Outside ground GWPM: Full-molded ●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 | ○ |
|    ●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

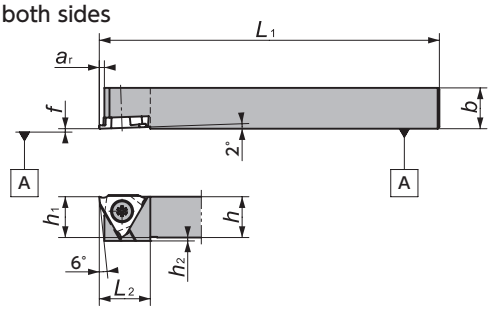
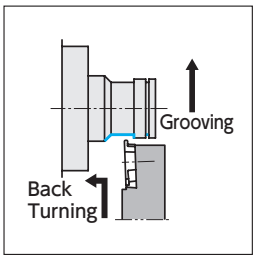



Figure-1




Right-Hand style shown

## GTT-OH (Coolant through)

Screw accessible from both sides

NEW

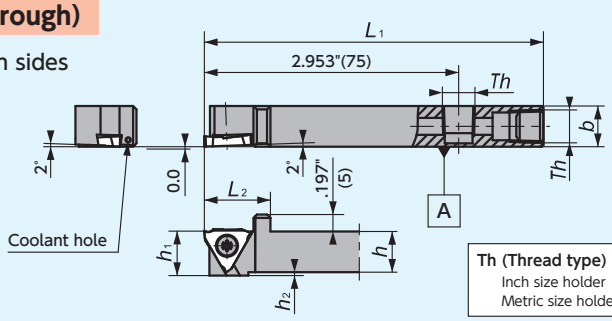
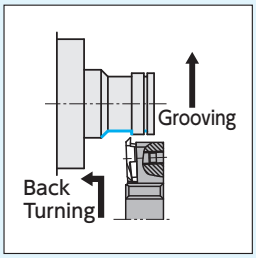



Figure-2

**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)




Right-Hand style shown

## Y-GTT

Screw accessible from both sides

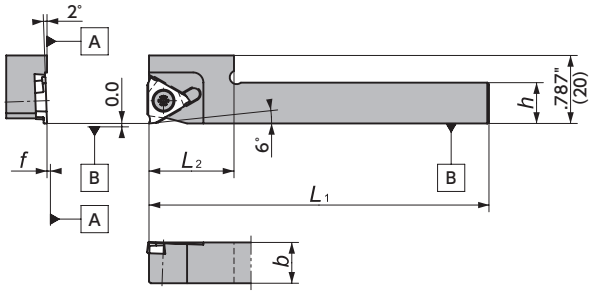
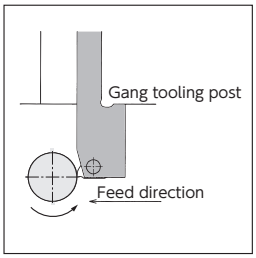



Figure-3




Right-Hand style shown
Takes Right-hand Insert

## Y-GTT-OH (Coolant through)

Screw accessible from both sides

NEW

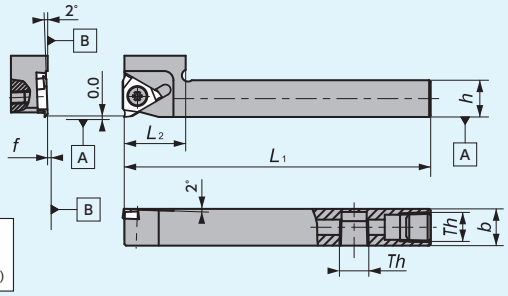
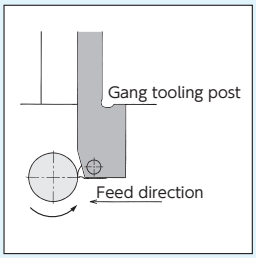



Figure-4

**Th (Thread type)**
Inch size holder : NPT1/8
Metric size holder: M6, Rc1/8 (PT1/8)




Right-Hand style shown
Takes Right-hand Insert

## CH-GTT

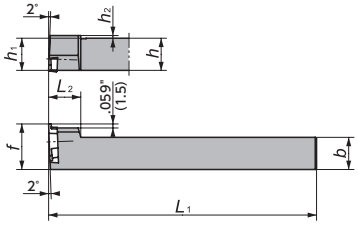
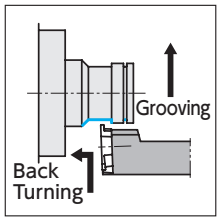



Figure-5




Left-Hand style shown
Takes Right-hand Insert

## DS-GTT

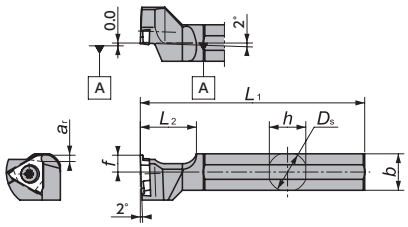
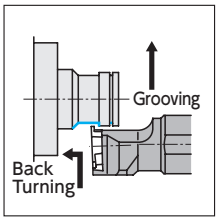



Figure-6




Left-Hand style shown
Takes Right-hand Insert

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

Inserts ➡K114 Cutting condition ➡K106

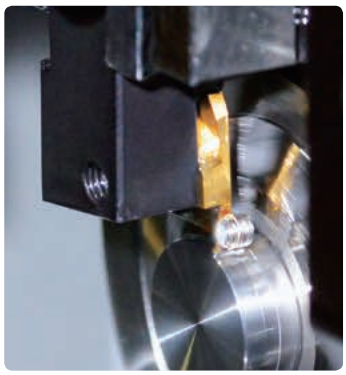
## GTT

| Gage Insert | Item Number | Figure | Stock R | Stock L | Groove Width W (Inch) | Groove Width W (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $a_r$ (Inch) | $a_r$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GTT□06A-IN | 1 | ● | ● | .012-.125 | 0.30-3.17 | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□06B-IN | 1 | ● | ● | .057-.125 | 1.45-3.17 | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08A-IN | 1 | ● | ● | .012-.125 | 0.30-3.17 | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .039 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08B-IN | 1 | ● | ● | .057-.125 | 1.45-3.17 | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .039 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10A-IN | 1 | ● | ● | .012-.125 | 0.30-3.17 | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10B-IN | 1 | ● | ● | .057-.125 | 1.45-3.17 | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12A-IN | 1 | ● | ● | .012-.125 | 0.30-3.17 | 3/4 | | 3/4 | | 3/4 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12B-IN | 1 | ● | | .057-.125 | 1.45-3.17 | 3/4 | | 3/4 | | 3/4 | | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08F00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .315 | 8 | .315 | 8 | .315 | 8 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | R:LR-S-4×10PW L:LR-S-4×5.8 | CLR-15S |
| | GTT□0810F00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .315 | 8 | .394 | 10 | .315 | 8 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08K00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | R:LR-S-4×10PW L:LR-S-4×5.8 | CLR-15S |
| | GTT□0810K00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .315 | 8 | .394 | 10 | .315 | 8 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .157 | 5 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10F00 | 1 | ○ | | .012-.125 | 0.30-3.17 | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10K00 | 1 | ○ | | .012-.125 | 0.30-3.17 | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12F00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12K00 | 1 | ● | ○ | .012-.125 | 0.30-3.17 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16H00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16K00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .071 | 1.8 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□20K00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .787 | 20 | .787 | 20 | .787 | 20 | 4.921 | 125 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□25M00 | 1 | ○ | ○ | .012-.125 | 0.30-3.17 | .984 | 25 | .984 | 25 | .984 | 25 | 5.906 | 150 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10F15 | 1 | ○ | ○ | .057-.125 | 1.45-3.17 | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10K15 | 1 | ○ | ○ | .057-.125 | 1.45-3.17 | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12F15 | 1 | ○ | ○ | .057-.125 | 1.45-3.17 | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12K15 | 1 | ○ | ○ | .057-.125 | 1.45-3.17 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16H15 | 1 | ○ | ○ | .057-.125 | 1.45-3.17 | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| GTM..32 TMG32 | GTT□16K15 | 1 | ● | ○ | .057-.125 | 1.45-3.17 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10F25 | 1 | ○ | ○ | .098-.125 | 2.50-3.17 | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□10K25 | 1 | ○ | ○ | .098-.125 | 2.50-3.17 | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12F25 | 1 | ○ | ○ | .098-.125 | 2.50-3.17 | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□12K25 | 1 | ○ | ○ | .098-.125 | 2.50-3.17 | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16H25 | 1 | ○ | ○ | .098-.125 | 2.50-3.17 | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□16K25 | 1 | ○ | ○ | .098-.125 | 2.50-3.17 | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .000 | 0 | .591 | 15.0 | .106 | 2.7 | .000 | 0 | – | LR-S-4×10PW | CLR-15S |
| | GTT□08HA-IN-OH | 2 | ● | | .012-.125 | 0.30-3.17 | 1/2 | | 1/2 | | 1/2 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .039 | 1 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□08HB-IN-OH | 2 | ● | | .057-.125 | 1.45-3.17 | 1/2 | | 1/2 | | 1/2 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .106 | 2.7 | .039 | 1 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□10HA-IN-OH | 2 | ● | | .012-.125 | 0.30-3.17 | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .000 | 0 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□10HB-IN-OH | 2 | ● | | .057-.125 | 1.45-3.17 | 5/8 | | 5/8 | | 5/8 | | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .106 | 2.7 | .000 | 0 | NPT1/8 | LR-S-4×10PW | CLR-15S |
| | GTT□1012H00-OH | 2 | ○ | | .012-.125 | 0.30-3.17 | .394 | 10 | .472 | 12 | .394 | 10 | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .039 | 1 | M6 × 1 | LR-S-4×10PW | CLR-15S |
| | GTT□12H00-OH | 2 | ● | | .012-.125 | 0.30-3.17 | .472 | 12 | .472 | 12 | .472 | 12 | 3.937 | 100 | .000 | 0 | .768 | 19.5 | .071 | 1.8 | .039 | 1 | Rc1/8(PT1/8) | LR-S-4×10PW | CLR-15S |
| | GTT□16H00-OH | 2 | ○ | | .012-.125 | 0.30-3.17 | .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-4×10PW | CLR-15S |
| | Y-GTTR□06-IN | 3 | ● | | .012-.125 | 0.30-3.17 | 3/8 | | 3/8 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTTR□08-IN | 3 | ● | | .012-.125 | 0.30-3.17 | 1/2 | | 1/2 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTTR□10-IN | 3 | ● | | .012-.125 | 0.30-3.17 | 5/8 | | 5/8 | | – | – | 4.724 | 120 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT□10S | 3 | ○ | | .012-.125 | 0.30-3.17 | .394 | 10 | .394 | 10 | – | – | 4.724 | 120 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT□12S | 3 | ○ | | .012-.125 | 0.30-3.17 | .472 | 12 | .472 | 12 | – | – | 4.724 | 120 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | – | LR-S-4×10PW | CLR-15S |
| | Y-GTT□08H-IN-OH | 4 | ● | | .012-.125 | 0.30-3.17 | 1/2 | | 1/2 | | – | – | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | NTP1/8 | LR-S-4×10PW | CLR-15S |
| | Y-GTT□12H00S-OH | 4 | ● | | .012-.125 | 0.30-3.17 | .472 | 12 | .472 | 12 | – | – | 3.937 | 100 | .000 | 0 | .787 | 20.0 | .063 | 1.6 | – | – | Rc1/8(PT1/8) | LR-S-4×10PW | CLR-15S |
| | Y-GTT□16H00-OH | 4 | ○ | | .012-.125 | 0.30-3.17 | .630 | 16 | .472 | 16 | – | – | 3.937 | 100 | .000 | 0 | .984 | 25.0 | .063 | 1.6 | – | – | Rc1/8(PT1/8) | LR-S-4×10PW | CLR-15S |
| | CH-GTT□10H00 | 5 | | ○ | .012-.125 | 0.30-3.17 | .394 | 10 | .394 | 10 | .394 | 10.0 | 4.724 | 120 | .591 | 15 | .472 | 12.0 | .059 | 1.5 | .118 | 3 | – | LR-S-4×10PW | CLR-15S |
| | CH-GTT□12H00 | 5 | | ○ | .012-.125 | 0.30-3.17 | .472 | 12 | .472 | 12 | .472 | 12.0 | 4.724 | 120 | .669 | 17 | .472 | 12.0 | .059 | 1.5 | .040 | 1 | – | LR-S-4×10PW | CLR-15S |

## DS-GTT

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DS-GTT□14F | 6 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□15H | 6 | | ○ | .518 | 15.875 | .591 | 15 | .591 | 15 | 3.937 | 100 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□16X | 6 | | ● | .630 | 16.000 | .591 | 15 | .591 | 15 | 3.740 | 95 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□19 | 6 | | ● | 3/4 | 19.050 | .709 | 18 | .709 | 18 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| GTM..32 TMG32 | DS-GTT□20 | 6 | | ● | .787 | 20.000 | .748 | 19 | .748 | 19 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□22 | 6 | | ● | .866 | 22.000 | .827 | 21 | .827 | 21 | 4.724 | 120 | .236 | 6 | .787 | 20 | LR-S-4 × 9 | RLR-20S |
| | DS-GTT□25 | 6 | | ● | 1 | 25.400 | .945 | 24 | .945 | 24 | 4.724 | 120 | .394 | 10 | .787 | 20 | LR-S-4 × 9 | RLR-20S |

# NEW GTMH-GX Chipbreaker for Grooving / Side Turning





Groove width .059"～



Groove width ～.039"

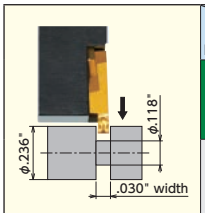
WATCH ON YouTube

## 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

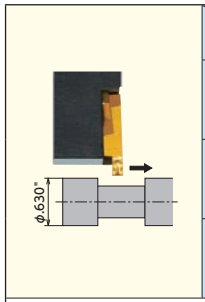
### ● Grooving




| DOC \ Feed rate (IPR) | .0004" | .0011" | .0020" |
|---|---|---|---|
| GX chipbreaker |  |  |  |
| Competiton's chipbreaker |  |  |  |

Material : 304 SS(ϕ.630"), 260 SFM, .059", DOC

### ● Side Turning




| DOC \ Feed rate (IPR) | .0004" | .0011" | .0020" | .0031" |
|---|---|---|---|---|
| .010" |  |  |  |  |
| .020" |  |  |  |  |
| .030" |  |  |  |  |

Material : 304 SS(ϕ.630"), 260 SFM, .030" width insert

## Best Solution for Chip Control

Now available in Coolant through toolholders

**GTT-OH**



➡K112

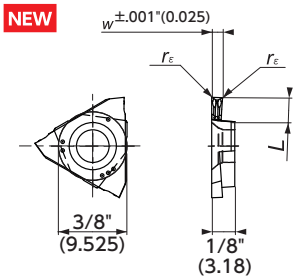
**Y-GTT-OH**



➡K112

## GTMH32.. Inserts - Carbide

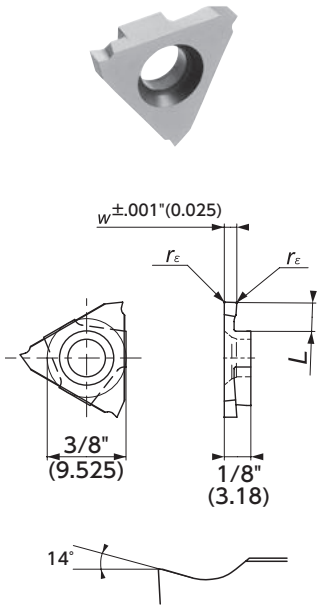
### ■GTMH32-GX

| Shape | Item Number | Groove Width W (Inch) | Groove Width W (mm) | Max Depth of Cut Grooving (Inch) | Max Depth of Cut Grooving (mm) | Max Depth of Cut Side turning (Inch) | Max Depth of Cut Side turning (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide DM4 R | Coated Carbide DM4 L | Coated Carbide TM4 R | Coated Carbide TM4 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Side Turning Capable NEW   Right-Hand style shown | GTMH32075RGX* | .030 | 0.75 | .106 | 2.7 | .030 | 0.75 | .079 | 2.0 | .002 | 0.05 | ● | | ○ | |
| | GTMH32095RGX* | .037 | 0.95 | .106 | 2.7 | .059 | 1.50 | .079 | 2.0 | .002 | 0.05 | ● | | ○ | |
| | GTMH32100RGX* | .039 | 1.00 | .106 | 2.7 | .059 | 1.50 | .079 | 2.0 | .002 | 0.05 | ● | | ○ | |
| | GTMH32100RGX01* | .039 | 1.00 | .106 | 2.7 | .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 | ● | | ○ | |

* To be released in January 2015

## ■GTMX32

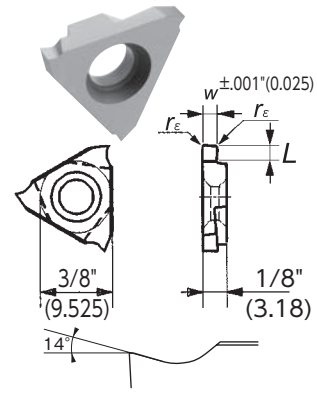
| Shape | Item Number | Groove Width W (Inch) | Groove Width W (㎜) | Max Depth of Cut Grooving (Inch) | Max Depth of Cut Grooving (㎜) | L (Inch) | L (㎜) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (㎜) | Coated Carbide QM3 R | QM3 L | DT4 R | DT4 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Side Turning Capable | GTMX32030⅝T | .012 | 0.30 | .010 | 0.25 | .024 | 0.6 | .002 | 0.05 | ● | □ | ○ | |
| | GTMX32033⅝T | .013 | 0.33 | .010 | 0.25 | .024 | 0.6 | .002 | 0.05 | ● | ■ | | |
| | GTMX32043⅝T | .017 | 0.43 | .035 | 0.9 | .047 | 1.2 | .002 | 0.05 | ● | □ | ○ | |
| | GTMX32050⅝T | .020 | 0.50 | .035 | 0.9 | .047 | 1.2 | .002 | 0.05 | ● | ■ | ○ | |
| | GTMX32053⅝T | .021 | 0.53 | .035 | 0.9 | .047 | 1.2 | .002 | 0.05 | ● | □ | | |
| | GTMX32065⅝T | .026 | 0.65 | .035 | 0.9 | .047 | 1.2 | .002 | 0.05 | ● | □ | ○ | |
| | GTMX32075⅝T | .030 | 0.75 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ● | ● | ○ | ○ |
| | GTMX32080⅝T | .031 | 0.80 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ● | ■ | ○ | |
| | GTMX32095⅝T | .037 | 0.95 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ | ○ | ○ |
| | GTMX32100⅝T | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ● | □ | ○ | |
| | GTMX32100⅝T01 | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ● | □ | ○ | |
| | GTMX32110⅝T | .043 | 1.10 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | □ | | |
| | GTMX32120⅝T | .047 | 1.20 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ● | □ | ○ | |
| | GTMX32120⅝T01 | .047 | 1.20 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ● | □ | ○ | |
| | GTMX32125⅝T | .049 | 1.25 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ● | ■ | ○ | |
| | GTMX32130⅝T | .051 | 1.30 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | □ | ○ | |
| | GTMX32140⅝T | .055 | 1.40 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | □ | ○ | |
| | GTMX32145⅝T | .057 | 1.45 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | □ | | |
| | GTMX32150⅝T | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ● | ● | ○ | ○ |
| | GTMX32150⅝T01 | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ● | □ | ○ | |
| | GTMX32150⅝T02 | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ● | | ○ | |
| | GTMX32160⅝T | .063 | 1.60 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ● | □ | ○ | |
| | GTMX32175⅝T | .069 | 1.75 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ● | ○ | |
| | GTMX32180⅝T | .071 | 1.80 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | □ | ○ | |
| | GTMX32200⅝T | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ● | ● | ○ | ○ |
| | GTMX32200⅝T01 | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | ○ | ○ | ○ |
| | GTMX32200⅝T02 | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ● | | ○ | |
| | GTMX32250⅝T | .098 | 2.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ● | ○ | ○ | ○ |
| | GTMX32250⅝T01 | .098 | 2.50 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | | ○ | |
| | GTMX32250⅝T02 | .098 | 2.50 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | | ○ | |
| | GTMX32300⅝T | .118 | 3.00 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ● | ■ | ○ | |
| | GTMX32300⅝T02 | .118 | 3.00 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ● | | ○ | |




Right-Hand style shown

## ■GTMH32 - VT Mirror finish

| Shape | Item Number | Groove Width W (Inch) | Groove Width W (㎜) | Max Depth of Cut Grooving (Inch) | Max Depth of Cut Grooving (㎜) | L (Inch) | L (㎜) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (㎜) | Coated Carbide VM1 R | VM1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Side Turning Capable | GTMH32033⅝VT Ⓜ | .013 | 0.33 | .010 | 0.25 | .024 | 0.6 | 0.0 | 0.0 | ● | |
| | GTMH32043⅝VT Ⓜ | .017 | 0.43 | .035 | 0.9 | .047 | 1.2 | 0.0 | 0.0 | ● | |
| | GTMH32053⅝VT Ⓜ | .021 | 0.53 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ● | |
| | GTMH32065⅝VT Ⓜ | .026 | 0.65 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ● | |
| | GTMH32075⅝VT Ⓜ | .030 | 0.75 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ● | |
| | GTMH32080⅝VT Ⓜ | .031 | 0.80 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ○ | |
| | GTMH32085⅝VT Ⓜ | .033 | 0.85 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ○ | |
| | GTMH32095⅝VT Ⓜ | .037 | 0.95 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ○ | |
| | GTMH32100⅝VT Ⓜ | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ● | |
| | GTMH32110⅝VT Ⓜ | .043 | 1.10 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ○ | |
| | GTMH32120⅝VT Ⓜ | .047 | 1.20 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ○ | |
| | GTMH32130⅝VT Ⓜ | .051 | 1.30 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ○ | |
| | GTMH32140⅝VT Ⓜ | .055 | 1.40 | .063 | 1.6 | .079 | 2.0 | 0.0 | 0.0 | ○ | |
| | GTMH32150⅝VT Ⓜ | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | 0.0 | 0.0 | ● | |
| | GTMH32200⅝VT Ⓜ | .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

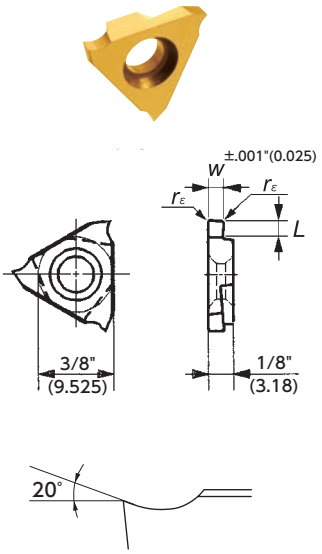
①To perform side turning with an insert whose groove width is greater than .017" set side turning feed rate to .001 IPR or smaller.

②When 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 Ⓜ : Mirror finish Holders ➡K112 Cutting condition ➡K106

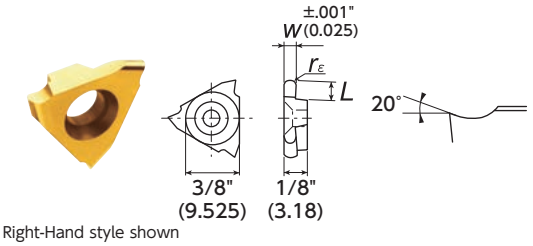
# Grooving / Side Turning

## GTMH32 – E

| Shape | Item Number | Groove width W (Inch) | Groove width W (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide ZM3 R | Coated Carbide ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | GTMH32033R/LE | .013 | 0.33 | .012 | 0.3 | .024 | 0.6 | .001 | 0.03 | ○ | ○ |
| | GTMH32043R/LE | .017 | 0.43 | .035 | 0.9 | .047 | 1.2 | .001 | 0.03 | ● | ○ |
| | GTMH32053R/LE | .021 | 0.53 | .035 | 0.9 | .047 | 1.2 | .002 | 0.05 | ○ | ○ |
| | GTMH32075R/LE | .030 | 0.75 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32077R/LE | .030 | 0.77 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMH32095R/LE | .037 | 0.95 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32097R/LE | .038 | 0.97 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMH32100R/LE | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32100R/LE01 | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32120R/LE | .047 | 1.20 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ● | ○ |
| | GTMH32120R/LE01 | .047 | 1.20 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32125R/LE | .049 | 1.25 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMH32140R/LE | .055 | 1.40 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32145R/LE | .057 | 1.45 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMH32150R/LE | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32150R/LE01 | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32175R/LE | .069 | 1.75 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | |
| | GTMH32180R/LE | .071 | 1.80 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32200R/LE | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32200R/LE01 | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32225R/LE | .089 | 2.25 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32250R/LE | .098 | 2.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32275R/LE | .108 | 2.75 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ○ |
| Right-Hand style shown | GTMH32300R/LE | .118 | 3.00 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | ○ |



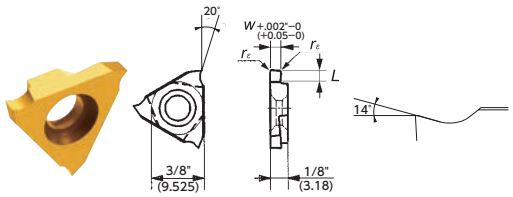
## GTMH32 (Full radius style)

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide QM3 R | Coated Carbide QM3 L | Coated Carbide ZM3 R | Coated Carbide ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | GTMH32050R/LE025 | .020 | 0.50 | .035 | 0.9 | .047 | 1.2 | .010 | 0.25 | ● | | ● | |
| | GTMH32070R/LE035 | .028 | 0.70 | .063 | 1.6 | .079 | 2.0 | .014 | 0.35 | ● | | ● | |
| | GTMH32100R/LE05 | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .020 | 0.50 | ● | | ● | |
| | GTMH32150R/LE075 | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ● | | | |
| | GTMH32200R/LE10 | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .039 | 1.00 | ● | | ○ | |
| Right-Hand style shown | GTMH32300R/LE15 | .118 | 3.00 | .106 | 2.7 | .118 | 3.0 | .059 | 1.50 | ● | | ○ | |

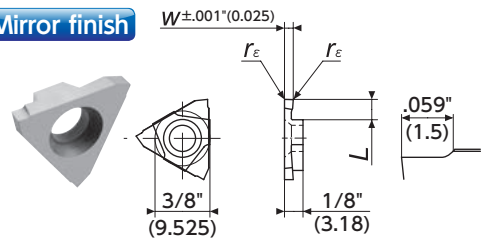


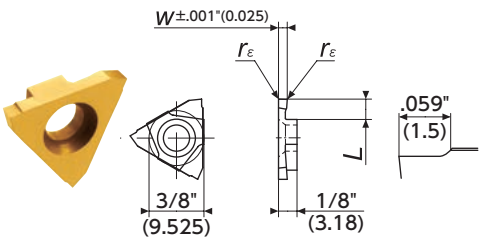
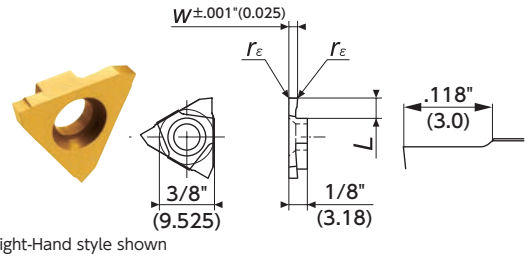
● : Stock ○ : 1-2 week delivery ■,□ : While stock lasts Ⓜ : Mirror finish Holders ➡K112 Cutting condition ➡K106

## ■TMG32-E

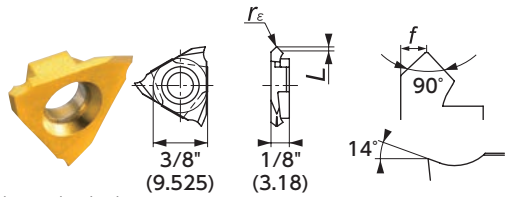
| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide ZM3 R | Coated Carbide ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | TMG32031R/LE01 | .031 | 0.79 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ● | ■ |
| | TMG32039R/LE01 | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ● | ● |
| | TMG32049R/LE01 | .049 | 1.25 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ● | ■ |
| | TMG32062R/LE02 | .062 | 1.57 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ● | □ |
| | TMG32079R/LE02 | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ● | □ |
| | TMG32094R/LE02 | .094 | 2.39 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ● | |
| | TMG32125R/LE02 | .125 | 3.18 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ● | □ |

## ■GTMH • X32 (Flat top chipbreaker)

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Carbide KM1 R | Carbide KM1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mirror finish  Right-Hand style shown | GTMH32100R/LSSH (M) | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMH32150R/LSSH (M) | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | |
| | GTMH32200R/LSSH (M) | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | |

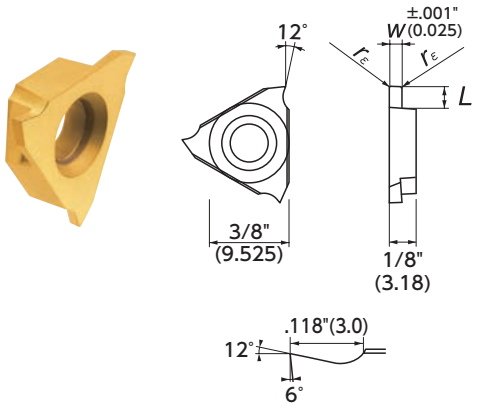
| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide ZM3 R | Coated Carbide ZM3 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | GTMX32100R/LSS | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMX32150R/LSS | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | |
| | GTMX32200R/LSS | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | |
|  Right-Hand style shown | GTMX32100R/LLS | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMX32150R/LLS | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | |
| | GTMX32200R/LLS | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .002 | 0.05 | ○ | |

## ■GTMX32 (90 Degree V-style)

| Shape | Item Number | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | Edge Geometry | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | L (Inch) | L (mm) | Coated Carbide TM4 R | Coated Carbide TM4 L |
|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | GTMX32V90R/L005 | .020 | 0.5 | 90° | .002 | 0.05 | .020 | 0.5 | ○ | |
| | GTMX32V90R/L010 | .028 | 0.7 | 90° | .004 | 0.1 | .040 | 1.0 | ○ | |

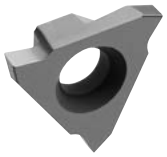
# GTMH32.. Inserts - Cermet

## ■GTMH32-J

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Cermet C7Z R | Coated Cermet C7Z L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | GTMH32075R/LJ005 | .030 | 0.75 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32080R/LJ005 | .031 | 0.80 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMH32095R/LJ005 | .037 | 0.95 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | |
| | GTMH32100R/LJ005 | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32115R/LJ005 | .045 | 1.15 | .063 | 1.6 | .079 | 2.0 | .002 | 0.05 | ○ | ○ |
| | GTMH32120R/LJ01 | .047 | 1.20 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32125R/LJ01 | .049 | 1.25 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ○ | |
| | GTMH32145R/LJ01 | .057 | 1.45 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | |
| | GTMH32150R/LJ01 | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | |
| | GTMH32150R/LJ | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | ○ |
| | GTMH32160R/LJ01 | .063 | 1.60 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | |
| | GTMH32175R/LJ01 | .069 | 1.75 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | |
| | GTMH32180R/LJ01 | .071 | 1.80 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32200R/LJ01 | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32200R/LJ | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | ○ |
| | GTMH32250R/LJ01 | .098 | 2.50 | .106 | 2.7 | .118 | 3.0 | .004 | 0.1 | ○ | ○ |
| | GTMH32250R/LJ | .098 | 2.50 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | |
| Right-Hand style shown | GTMH32300R/LJ | .118 | 3.00 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | ○ |



## ■GTM32 (Molded Chipbreaker)

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Cermet XN4 R | Cermet XN4 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | GTM32100R/L01 | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ○ | |
| | GTM32100R/L | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .008 | 0.2 | ○ | |
| | GTM32145R/L | .057 | 1.45 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | |
| | GTM32150R/L | .059 | 1.50 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | ○ |
| | GTM32200R/L | .079 | 2.00 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | ○ |
| | GTM32230R/L | .091 | 2.30 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | |
| | GTM32250R/L | .098 | 2.50 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | |
| Right-Hand style shown | GTM32300R/L | .118 | 3.00 | .106 | 2.7 | .118 | 3.0 | .008 | 0.2 | ○ | |

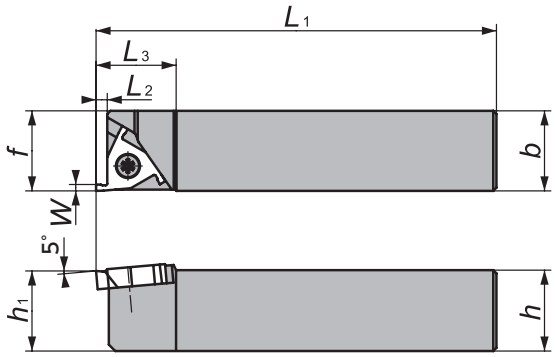


Holders ➡K112 Cutting condition ➡K106

# TWG Series

## TWG

Side Turning Capable
Up to .059"(1.5㎜) doc.



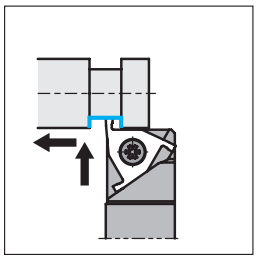



Figure-1

Right-Hand style shown

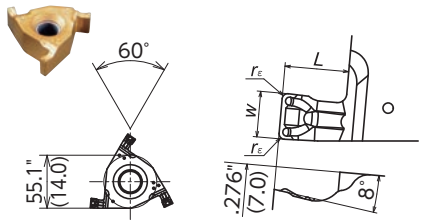
# TWG Series - Toolholders

## ■TWG

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (㎜) | b (Inch) | b (㎜) | $h_1$ (Inch) | $h_1$ (㎜) | $L_1$ (Inch) | $L_1$ (㎜) | f (Inch) | f (㎜) | $L_2$ (Inch) | $L_2$ (㎜) | $L_3$ (Inch) | $L_3$ (㎜) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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□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□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 (Inch) | Groove Width w (㎜) | Max Depth of Cut (Inch) | Max Depth of Cut (㎜) | L (Inch) | L (㎜) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (㎜) | Coated Carbide TM1 R | Coated Carbide TM1 L |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | **TWG20□005** | .079 | 2.0 | .118 | 3.0 | .138 | 3.5 | .002 | 0.05 | ○ | ○ |
| | **TWG20□020** | .079 | 2.0 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | ○ | ○ |
| | **TWG25□010** | .098 | 2.5 | .118 | 3.0 | .138 | 3.5 | .004 | 0.1 | ○ | ○ |
| | **TWG25□030** | .098 | 2.5 | .118 | 3.0 | .138 | 3.5 | .012 | 0.3 | ○ | ○ |
| | **TWG30□010** | .118 | 3.0 | .118 | 3.0 | .138 | 3.5 | .004 | 0.1 | ○ | ○ |
| | **TWG30□030** | .118 | 3.0 | .118 | 3.0 | .138 | 3.5 | .012 | 0.3 | ○ | ○ |



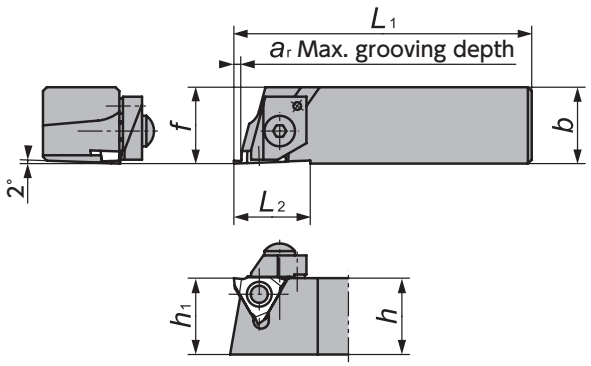
○ : 1-2 week delivery

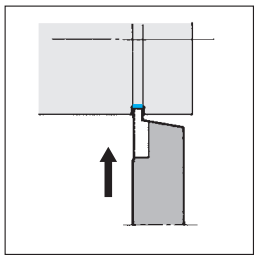
Cutting condition ➡K106

## GTM.43 Series - Toolholders

### NGTN

No-Offset



〈Parts〉

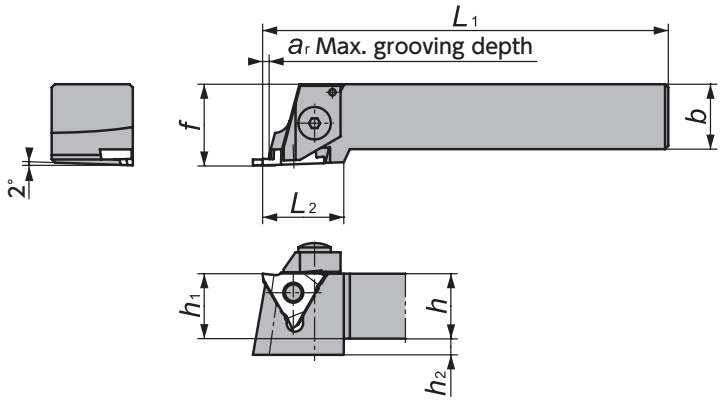
| Clamp | Spring |
|---|---|
| CPR/L5S | ASG-5 |

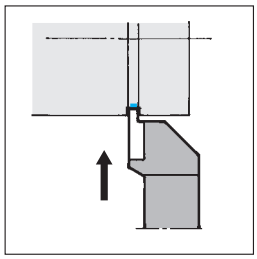
Figure-1

Right-Hand style shown

### NGTB

With Offset



〈Parts〉

| Clamp | Spring |
|---|---|
| CPR/L5 | ASG-5 |
| CPR/L6 | ASG-6 |

Figure-2

Right-Hand style shown

[ Grooving / Side Turning ]

For Swiss-type Lathes

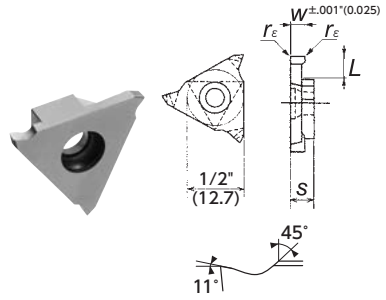
## GTM.43 Series - Toolholders

### ■NGTN / NGTB

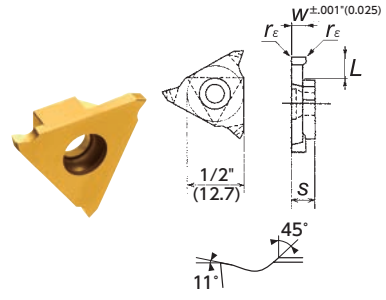
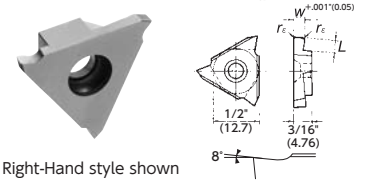
| Gage Insert | Item Number | Figure | Stock R | Stock L | Groove Width Range w (Inch) | Groove Width Range w (mm) | $a_r$ (Inch) | $a_r$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | $h_2$ (Inch) | $h_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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 | A0S-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 | A0S-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 | A0S-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 | A0S-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 | A0S-5×25 | LW-2.5 |

# GTMA43.. Inserts - Carbide / Cermet

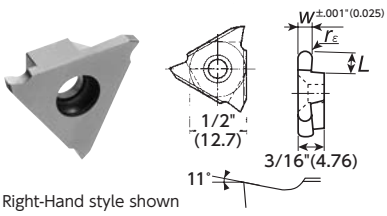
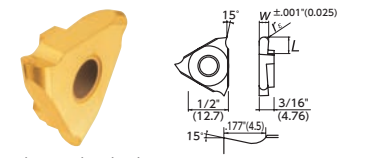
## ■GTMT43 / GTMA43

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | s (Inch) | s (mm) | Coated Carbide QM3 R | Coated Carbide QM3 L | Coated Carbide DM4 R | Coated Carbide DM4 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | GTMT43145R/L | .057 | 1.45 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43150R/L | .059 | 1.50 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43175R/L | .069 | 1.75 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43185R/L | .073 | 1.85 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43200R/L | .079 | 2.00 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43230R/L | .091 | 2.30 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43250R/L | .098 | 2.50 | .169 | 4.3 | .217 | 5.5 | .012 | 0.3 | .187 | 4.76 | ○ | | ○ | |
| | GTMT43265R/L | .104 | 2.65 | .169 | 4.3 | .217 | 5.5 | .012 | 0.3 | .187 | 4.76 | ○ | | ○ | |
| | GTMT43280R/L | .110 | 2.80 | .169 | 4.3 | .217 | 5.5 | .012 | 0.3 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43300R/L | .118 | 3.00 | .169 | 4.3 | .217 | 5.5 | .012 | 0.3 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43330R/L | .130 | 3.30 | .169 | 4.3 | .217 | 5.5 | .012 | 0.3 | .187 | 4.76 | ○ | ○ | | |
| | GTMT43350R/L | .138 | 3.50 | .169 | 4.3 | .217 | 5.5 | .012 | 0.3 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43400R/L | .157 | 4.00 | .169 | 4.3 | .217 | 5.5 | .016 | 0.4 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43450R/L | .177 | 4.50 | .169 | 4.3 | .217 | 5.5 | .016 | 0.4 | .187 | 4.76 | ○ | ○ | ○ | ○ |
| | GTMT43500R/L | .197 | 5.00 | .169 | 4.3 | .217 | 5.5 | .016 | 0.4 | .227 | 5.76 | ○ | ○ | ○ | ○ |
| | GTMT43550R/L | .217 | 5.50 | .169 | 4.3 | .217 | 5.5 | .016 | 0.4 | .227 | 5.76 | ○ | ○ | ○ | ○ |

## ■GTMA43 / GTMA43 / GTM43

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Cermet C7Z R | Coated Cermet C7Z L | Cermet XN4 R | Cermet XN4 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | GTMA43100R/L J01 | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ○ | ○ | | |
| | GTMA43125R/L J01 | .049 | 1.25 | .063 | 1.6 | .079 | 2.0 | .004 | 0.1 | ○ | | | |
| | GTMA43145R/L J01 | .057 | 1.45 | .118 | 3.0 | .138 | 3.5 | .004 | 0.1 | ○ | ○ | | |
| | GTMA43150R/L J | .059 | 1.50 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | ○ | ○ | | |
| | GTMA43175R/L J | .069 | 1.75 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | ○ | ○ | | |
| | GTMA43185R/L J | .073 | 1.85 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | ○ | | | |
| | GTMA43200R/L J | .079 | 2.00 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | ○ | | | |
| | GTMA43230R/L J | .091 | 2.30 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | ○ | | | |
| | GTMA43250R/L J03 | .098 | 2.50 | .177 | 4.5 | .217 | 5.5 | .012 | 0.3 | ○ | | | |
| | GTMA43265R/L J03 | .104 | 2.65 | .177 | 4.5 | .217 | 5.5 | .012 | 0.3 | ○ | | | |
| | GTMA43280R/L J03 | .110 | 2.80 | .177 | 4.5 | .217 | 5.5 | .012 | 0.3 | ○ | | | |
| | GTMA43300R/L J03 | .118 | 3.00 | .177 | 4.5 | .217 | 5.5 | .012 | 0.3 | ○ | ○ | | |
| | GTMA43330R/L J03 | .130 | 3.30 | .177 | 4.5 | .217 | 5.5 | .012 | 0.3 | ○ | | | |
| | GTMA43350R/L J03 | .138 | 3.50 | .177 | 4.5 | .217 | 5.5 | .012 | 0.3 | ○ | | | |
| | GTMA43400R/L J04 | .157 | 4.00 | .177 | 4.5 | .217 | 5.5 | .016 | 0.4 | ○ | ○ | | |
| | GTMA43450R/L J04 | .177 | 4.50 | .177 | 4.5 | .217 | 5.5 | .016 | 0.4 | ○ | ○ | | |
|  Right-Hand style shown | GTM43200R/L | .079 | 2.00 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | | | ○ | ○ |
| | GTM43230R/L | .091 | 2.30 | .118 | 3.0 | .138 | 3.5 | .008 | 0.2 | | | ○ | |
| | GTM43250R/L | .098 | 2.50 | .165 | 4.2 | .217 | 5.5 | .008 | 0.2 | | | ○ | ○ |
| | GTM43265R/L | .104 | 2.65 | .165 | 4.2 | .217 | 5.5 | .008 | 0.2 | | | ○ | |
| | GTM43300R/L | .118 | 3.00 | .165 | 4.2 | .217 | 5.5 | .008 | 0.2 | | | ○ | ○ |
| | GTM43330R/L | .130 | 3.30 | .165 | 4.2 | .217 | 5.5 | .008 | 0.2 | | | ○ | |
| | GTM43350R/L | .138 | 3.50 | .165 | 4.2 | .217 | 5.5 | .008 | 0.2 | | | ○ | ○ |
| | GTM43400R/L | .157 | 4.00 | .165 | 4.2 | .217 | 5.5 | .008 | 0.2 | | | ○ | ○ |
| | GTM43450R/L | .177 | 4.50 | .165 | 4.2 | .217 | 5.5 | .008 | 0.2 | | | ○ | |

## ■GTMA43 (Full Radius style)

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | L (Inch) | L (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide QM3 R | Coated Carbide QM3 L | Coated Cermet C7Z R | Coated Cermet C7Z L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | GTMA43200R/L 10R | .079 | 2.00 | .118 | 3.0 | .138 | 3.5 | .039 | 1.0 | ○ | | | |
| | GTMA43300R/L 15R | .118 | 3.00 | .177 | 4.5 | .217 | 5.5 | .059 | 1.5 | ○ | | | |
| | GTMA43400 R/L 20R | .157 | 4.00 | .177 | 4.5 | .217 | 5.5 | .787 | 2.0 | ○ | | | |
|  Right-Hand style shown | GTMA43100R/L J05R | .039 | 1.00 | .063 | 1.6 | .079 | 2.0 | .020 | 0.50 | | | ○ | |
| | GTMA43150R/L J075R | .059 | 1.50 | .118 | 3.0 | .138 | 3.5 | .030 | 0.75 | | | ○ | |
| | GTMA43200R/L J10R | .079 | 2.00 | .118 | 3.0 | .138 | 3.5 | .039 | 1.00 | | | ○ | |
| | GTMA43250R/L J125R | .098 | 2.50 | .157 | 4.0 | .217 | 5.5 | .049 | 1.25 | | | ○ | |
| | GTMA43300R/L J15R | .118 | 3.00 | .157 | 4.0 | .217 | 5.5 | .059 | 1.50 | | | ○ | |

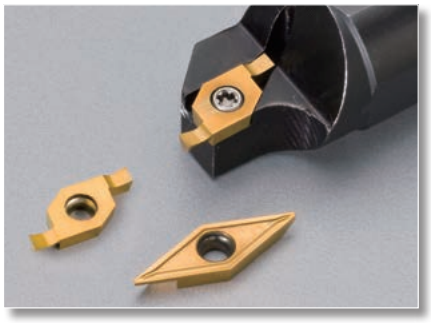
○ : 1-2 week delivery

Cutting condition ➡K106

# SATURN DUO

Face grooving tool

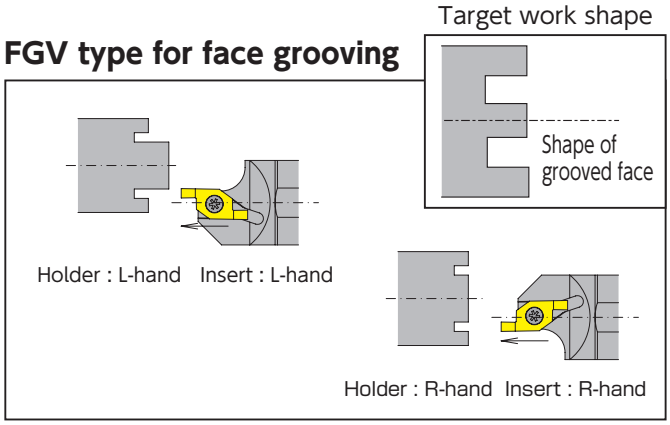
WATCH ON YouTube



## Features

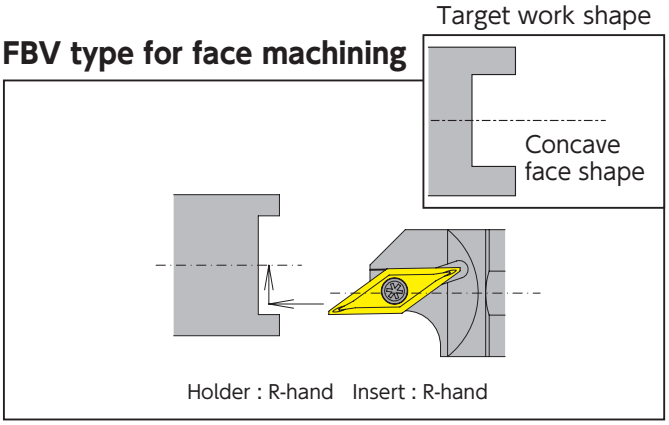
- FGV type for face grooving and FBV type for face machining
- Economical double-corner specification
- Improved tool rigidity by optimizing the overhang and holder shape
- Gang-type, front-gang-type and sleeve holder types available

### FGV type for face grooving




- Grooving is possible under a wide range of cutting conditions due to strengthened rigidity of both insert and holder
- Minimum machining diameter of $\phi$.236", and groove width of .039"
- Left-hand types available for machining work with a boss

### FBV type for face machining




- Further improved face machining efficiency
- Minimum machining diameter of $\phi$.315"

### Recommended Cutting Condition for FGV Style Tooling (for Face Grooving)

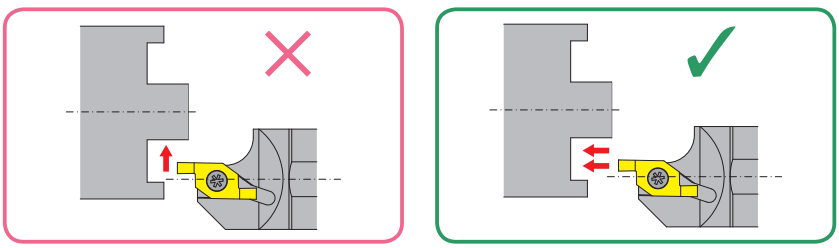
| | | | Steel (Carbon Steel, Alloy Steel) | Stainless Steel (Excluding 303 SS) | Free Cutting Steel (Including 303 SS) | Non-ferrous Metals (Brass, Aluminum, Copper) |
|---|---|---|---|---|---|---|
| Speed (SFM) | | | 160 (100 - 330) | 130 (100 - 330) | 200 (100 - 330) | 260 (160 - 390) |
| Feed Rate (IPR) | Groove Depth (Inch) | .039 | .001 (.0004-.002) | .0008 (.0004-.002) | .002 (.0004-.0025) | .002 (.0004-.0025) |
| | | .059 | .0008 (.0004-.002) | .0004 (.0002-.001) | .001 (.0004-.002) | .001 (.0004-.002) |
| | | .079 | .0004 (.0002-.001) | .0004 (.0002-.001) | .0008 (.0004-.002) | .0008 (.0004-.002) |

☆Tips for Successful Face Grooving

①Run multiple passes if turning wider grooves.
Make sure to groove from outer diameter to inner diameter to avoid any interference.
②If lines appear on the boss section, slow down feed rate when retracting the tool.
③If scratch appears at the end of the boss, slow down the feed rate.
④If groove surface looks torn, either slow down feed rate or increase speed.
⑤If groove bottom looks torn with a speed and feed condition, increase the speed.

☆Note

Side turning cannot be performed with FGV style tooling



## ■Recommended Cutting Conditions for FBV Style Tooling (for Face Grooving)

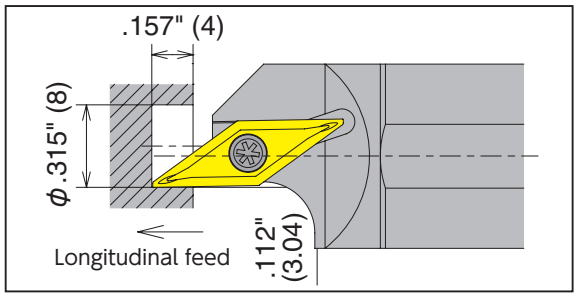
Minimum machining diameter: ϕ .315" (8㎜) WET

| | | | Steel (Carbon Steel, Alloy Steel) | Stainless Steel (Excluding 303 SS) | Free Cutting Steel (Including 303 SS) | Non-ferrous Metals (Brass, Aluminum, Copper) |
|---|---|---|---|---|---|---|
| Speed (SFM) | | | 160 (100 - 330) | 130 (100 - 330) | 200 (100 - 330) | 260 (160 - 390) |
| Feed Rate (IPR) | Groove Depth (Inch) | .039 | .001 (.0004-.002) | .0008 (.0004-.002) | .002 (.0004-.0025) | .002 (.0004-.0025) |
| | | .059 | .0008 (.0004-.002) | .0004 (.0002-.001) | .001 (.0004-.002) | .001 (.0004-.002) |
| | | .079 | .0004 (.0002-.001) | .0004 (.0002-.001) | .0008 (.0004-.002) | .0008 (.0004-.002) |

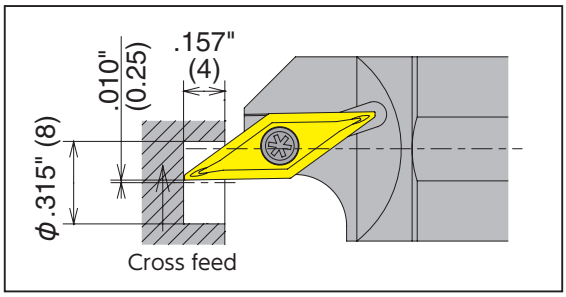
* When machining difficult materials where chip control is problematic (such as 304SS), it is recommended that the machining be carried out in several stages.

### ☆Machining process

- For materials with good machinability, it is possible to machine up to .157" (4㎜) deep at a low feed rate in a single pass for both longitudinal feed and cross feed.




Cutting in Z direction : Longitudinal feed



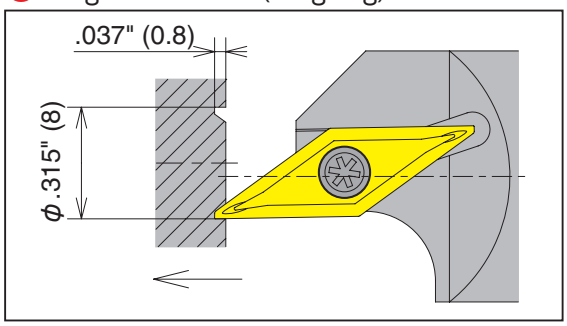

Cutting in X direction : Cross feed

### ☆Useful tips for machining

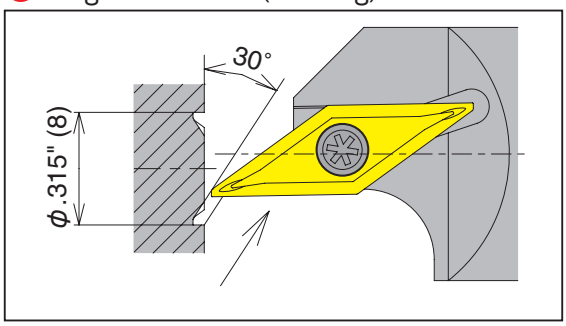
When burrs occur on ID surface, it is recommended to perform the cut in 2 passes, one for roughing and one for finishing as shown in the following procedure:

☆Example of 2-pass machining: Leave .008" (0.2㎜) on roughing then run a finish cut

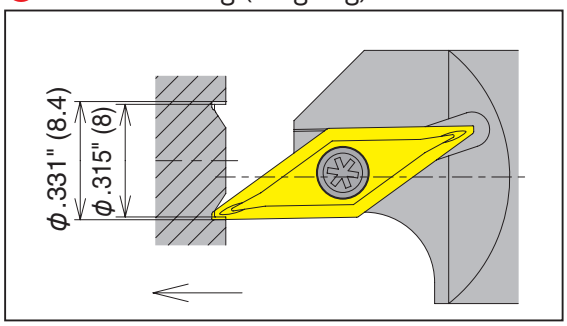
❶ Longitudinal feed (roughing)



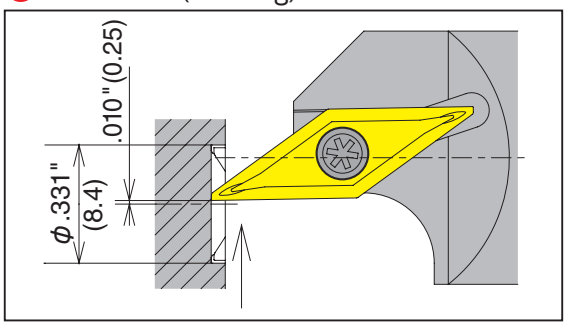

❷ Longitudinal feed (finishing)




❸ Slant machining (roughing)




❹ Cross feed (finishing)






Inserts ➡K125 Holders ➡K124

# FGV Series

## FGV

For Gang-style machine

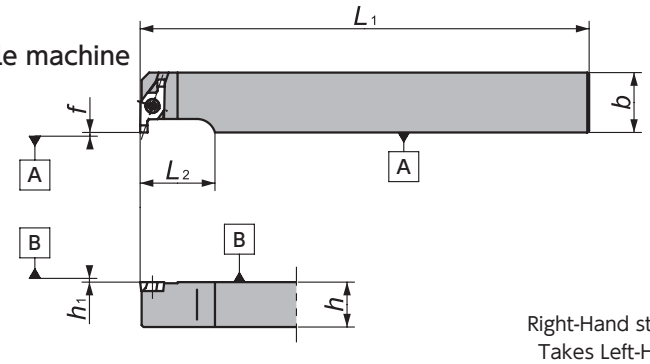
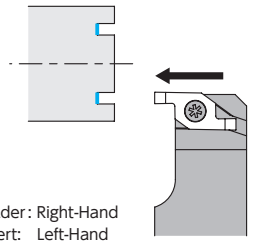



Figure-1

Right-Hand style shown
Takes Left-Hand insert




## CH-FGV

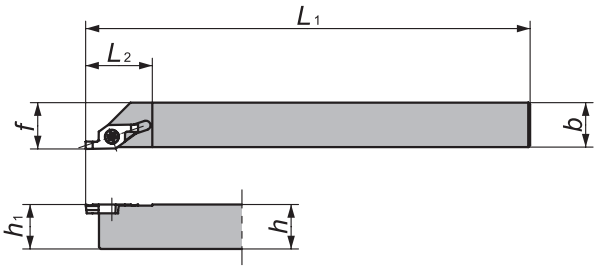
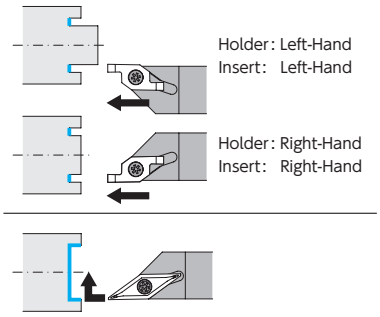



Figure-2

Right-Hand style shown




Only right hand holder is available when using FBV insert

## DS-FGV

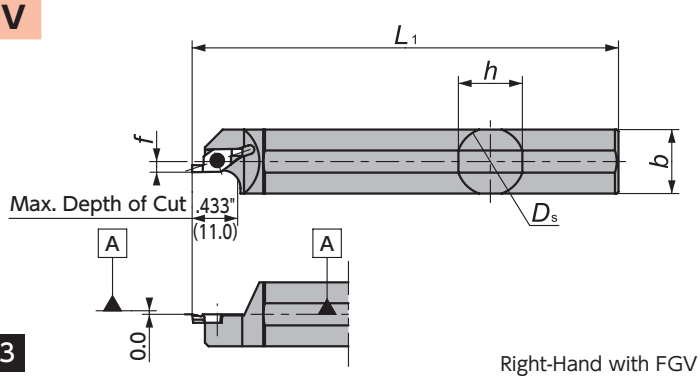
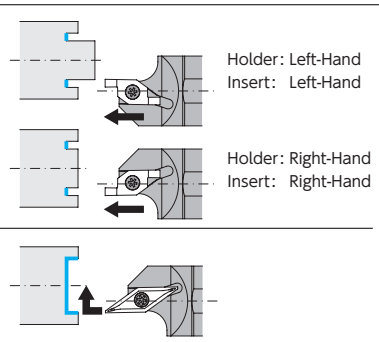



Figure-3

Right-Hand with FGV style shown




Only right hand holder is available when using FBV insert

# FGV - Toolholders

## FGV

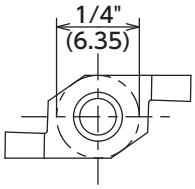
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FGV...L | FGV□1016 | 2 | ○ | | .413 | 10 | .630 | 16 | 0 | 0.0 | 4.724 | 120 | 0 | 0.0 | .787 | 20 | LRIS-2.5 × 7 | CLR-15S |
| | FGV□1216 | 2 | ○ | | .472 | 12 | .630 | 16 | 0 | 0.0 | 4.724 | 120 | 0 | 0.0 | .787 | 20 | LRIS-2.5 × 7 | CLR-15S |
| | FGV□1616 | 2 | ○ | | .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 | 1 | ○ | ○ | .413 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .413 | 10.5 | .709 | 18 | LRIS-2.5 × 7 | CLR-15S |
| | CH-FGV□1212 | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .492 | 12.5 | .709 | 18 | LRIS-2.5 × 7 | CLR-15S |
| | CH-FGV□1616 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .650 | 16.5 | .709 | 18 | LRIS-2.5 × 7 | CLR-15S |

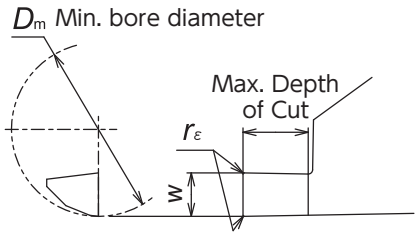
## DS-FGV

| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  FGV FBV | DS-FGV□16-012 | 3 | ○ | ○ | .630 | 16 | .591 | 15 | .591 | 15 | 3.150 | 80 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV□19 | 3 | ○ | ○ | 3/4 | 19.05 | .709 | 18 | .709 | 18 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV□20 | 3 | ○ | ○ | .787 | 20 | .748 | 19 | .748 | 19 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV□22 | 3 | ○ | ○ | .866 | 22 | .827 | 21 | .827 | 21 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |
| | DS-FGV□25 | 3 | ○ | ○ | 1 | 25.4 | .965 | 24.5 | .965 | 24.5 | 4.724 | 120 | .118 | 3.0 | LRIS-2.5 × 7 | CLR-15S |

# FGV - Inserts

## FGV



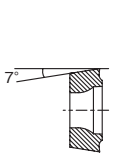



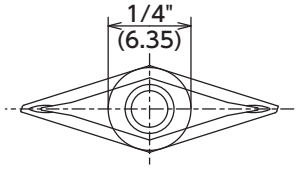

Right-Hand style shown

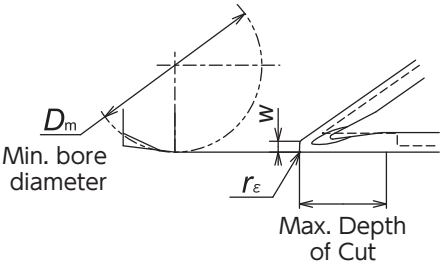
| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Min. Bore Diameter (Inch) | Min. Bore Diameter (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | Thickness (Inch) | Thickness (mm) | rε (Inch) | rε (mm) | Coated Carbide TM4 R | Coated Carbide TM4 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  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




Right-Hand style shown

| Shape | Item Number | Groove Width w (Inch) | Groove Width w (mm) | Min. Bore Diameter (Inch) | Min. Bore Diameter (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | Thickness (Inch) | Thickness (mm) | rε (Inch) | rε (mm) | Coated Carbide TM4 R | Coated Carbide TM4 L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | FBV40R05D8AM3 | .020 | 0.5 | .315 | 8.0 | .157 | 4.0 | .102 | 2.58 | .002 | 0.05 | ○ | |
| | FBV40R15D8AM3 | .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

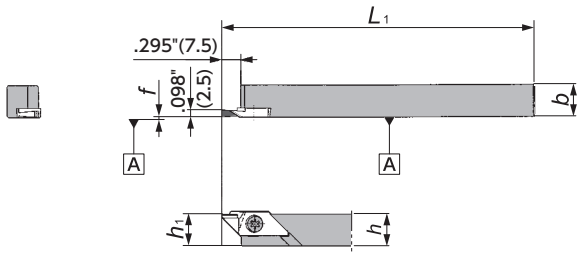
Cutting condition ➡K123

# GTPA Series

Best tool for Aluminum Spool Machining

## GTPA

Screw Accessible from both sides



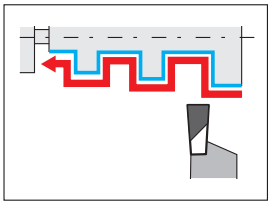



Figure-1

Right-Hand style shown

## Y-GTPA

Screw Accessible from both sides

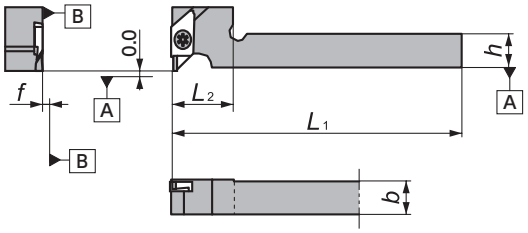


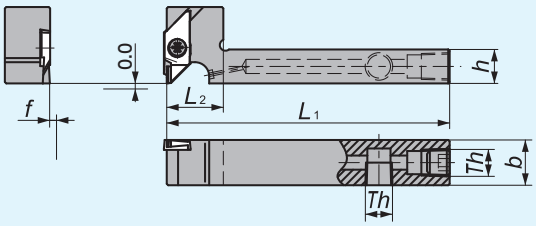

Figure-2

Right-Hand style shown

## Y-GTPA-OH (Coolant through)

Screw Accessible from both sides

NEW




**Th (Thread type)**
Metric size holder: Rc1/8 (PT1/8)

Figure-3

Right-Hand style shown

# GTPA - Toolholders

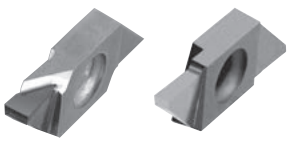
## ■GTPA

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $L_2$ (Inch) | $L_2$ (mm) | Th | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  GTPA | GTPA⅛1010 | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .004 | 0.1 | – | – | – | LR1S-4 × 10PW | CLR-15S |
| | GTPA⅛1212 | 1 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .004 | 0.1 | – | – | – | LR1S-4 × 10PW | CLR-15S |
| | GTPA⅛1616 | 1 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .004 | 0.1 | – | – | – | LR1S-4 × 12PW | CLR-15S |
| | Y-GTPA⅛1216 | 2 | ○ | | .472 | 12 | .630 | 16 | – | – | 4.724 | 120 | .004 | 0.1 | .787 | 20 | – | LR1S-4 × 12PW | CLR-15S |
| | Y-GTPA⅛1216HS-OH 💧 | 3 | ○ | | .472 | 12 | .630 | 16 | – | – | 2.756 | 70 | .004 | 0.1 | .787 | 20 | Rc1/8(PT1/8) | LR1S-4 × 12PW | CLR-15S |
| | Y-GTPA⅛1216H-OH 💧 | 3 | ○ | | .630 | 16 | .630 | 16 | – | – | 2.756 | 70 | .004 | 0.1 | .984 | 25 | Rc1/8(PT1/8) | LR1S-4 × 12PW | CLR-15S |

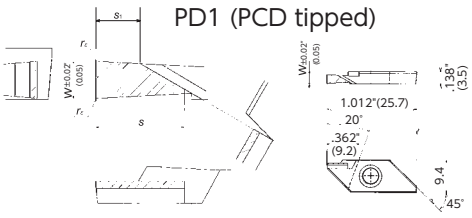
# GTPA Series - Inserts

## ■GTPA

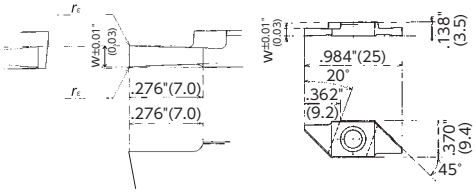
Shape



PD1 (PCD tipped)




KM1 (Carbide)




| Item Number | Groove Width w (Inch) | Groove Width w (mm) | Max Depth of Cut (Inch) | Max Depth of Cut (mm) | s (Inch) | s (mm) | $s_1$ (Inch) | $s_1$ (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Coated Carbide KM1 | PCD PD1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 ➡K106

K

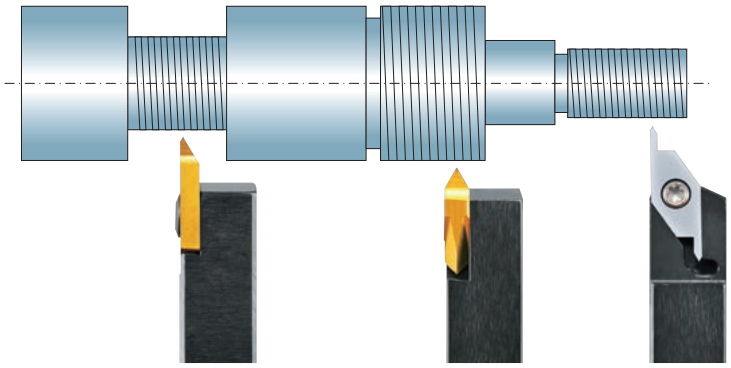


# Threading


- Threading Tools ····· K128
- Recommended Cutting Conditions··· K130
- General Information ····· K131
- Tool List ····· K132

CSV series ····· K132
TTPS series ····· K134
TTP series ····· K136
TTMH series ····· K140
Thread Whirling ····· K142

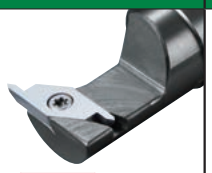
# NTK Threading Tools - Product Lines

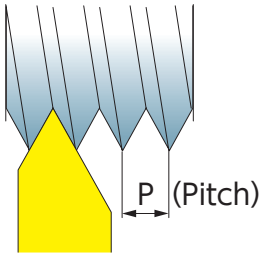


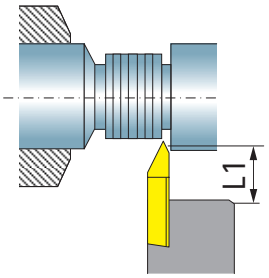
**Thread Whirling System**



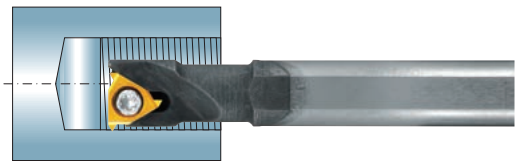
➡K142

| Insert | CSVT ➡K132 | | TTPS ➡K134 |
|---|---|---|---|
| Holder | CSV | DS-CSV | CTPS |
| |  ➡K132 |  ➡K132 |  ➡K134 |
| 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) |



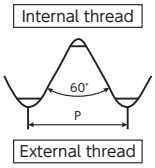
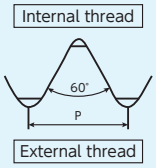
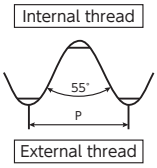
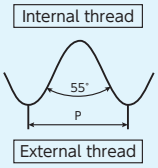
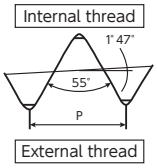
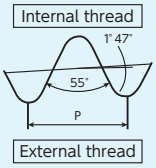
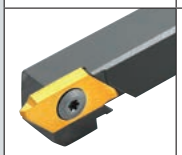




| Insert | TTP ➡K137 | | | TTMH32 ➡K140 | | |
|---|---|---|---|---|---|---|
| Holder | TTP | DS-TTP | CH-TTP | STTN | DS-STT | NTTB |
| |  ➡K136 |  ➡K136 |  ➡K136 |  ➡K140 |  ➡K140 |  ➡K140 |
| Profile | 60° / 55° | | | 60° | | |
| Pitch | 127 – 13 TPI (0.2 – 2.0mm) | | | 31 – 9 TPI (0.8 – 3.0mm) | | |
| L1 | .217" (5.5mm) | | | .157" (4.0mm) | .118" (3.0mm) | .157" (4.0mm) |



| Insert | SBT ➡K168 | TMN ➡K170 |
|---|---|---|
| Holder | NBH | TGC / HN |
| |  ➡K157 |  ➡K170 |
| Profile | 60° | 60° |
| Pitch | 51 - 15 TPI (0.5 - 1.75mm) | 63 - 34 TPI (0.4 - 0.75mm) |
| L1 | .024" - .071" (0.6 - 1.8mm) | .028" - .039" (0.7 - 1.0mm) |

# Tools and Thread Standards

| Thread Type | | ISO Metric | American Unified | Whitworth | Parallel Pipe | American Tapered Pipe | Tapered Pipe |
|---|---|---|---|---|---|---|---|
| | | M | UNC UNE | W | G(PF) | NPT | R(PT) |
| | |  |  |  |  |  |  |
| Profile | | 60° | 60° | 55° | 55° | 60° | 55° |
| Tool \ Pitch | | mm | TPI | TPI | TPI | TPI | TPI |
| External Thread |  **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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 |

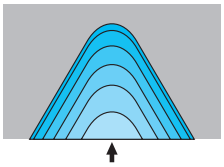
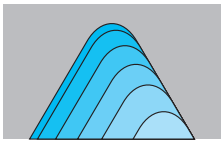
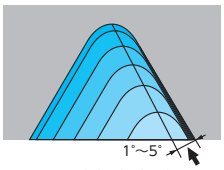
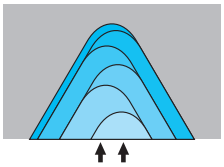
## Cutting Conditions for STICK DUO

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 | 0.03 | 0.02 | 0.01 | — | — | — | — | — | — |
| 1.5 | 0.92 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 | 0.01 | — | — | — |
| 1.75 | 1.09 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 | 0.01 |

| UNF Thread | | Number of Pass | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pitch (TPI) | Total DOC (inch) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 36 | .017 | .002 | .002 | .002 | .002 | .002 | .002 | .001 | .001 | .0008 | .0004 | — | — | — | — | — | — | — | — | — |
| 32 | .019 | .002 | .002 | .002 | .002 | .002 | .001 | .001 | .001 | .001 | .0008 | .0004 | — | — | — | — | — | — | — | — |
| 28 | .022 | .003 | .002 | .002 | .002 | .002 | .002 | .001 | .001 | .001 | .001 | .001 | .0008 | .0004 | — | — | — | — | — | — |
| 24 | .026 | .003 | .002 | .002 | .002 | .002 | .002 | .002 | .002 | .001 | .001 | .001 | .001 | .0008 | .0004 | — | — | — | — | — |
| 20 | .031 | .003 | .003 | .003 | .003 | .002 | .002 | .002 | .002 | .002 | .002 | .001 | .001 | .001 | .001 | .0008 | .0004 | — | — | — |
| 18 | .034 | .003 | .003 | .003 | .003 | .003 | .002 | .002 | .002 | .002 | .002 | .002 | .002 | .001 | .001 | .001 | .0008 | .0004 | — | — |
| 16 | .039 | .003 | .003 | .003 | .003 | .003 | .003 | .003 | .002 | .002 | .002 | .002 | .002 | .002 | .001 | .001 | .001 | .001 | .0008 | .0004 |

## Infeed Threading Method

| | Features | |
|---|---|---|
| | Advantage | Disadvantage |
|  Radial Infeed | ●Most popular and easiest method<br>●Easy to change parameter<br>●Uniform wear on both sides of insert | ●Chip evacuation<br>●Vibration due to higher cutting force<br>●Ineffective for large pitch threading |
|  Flank Infeed | ●2nd most popular and easy method<br>●Effective for larger pitch and gummy material thanks to lower cutting force<br>●Excellent chip evacuation | ●Larger flank wear on right side of the insert<br>●Difficult to change cutting depth per cut |
|   Modified Flank Infeed | ●Reduce flank wear on right side<br>●Effective for larger pitch and gummy material thanks to lower cutting force<br>●Excellent chip evacuation | ●Difficult to program<br>●Difficult to change cutting depth per cut |
|  Incremental Infeed | ●Uniform flank wear<br>●Effective for larger pitch and gummy material thanks to lower cutting force | ●Difficult to program<br>●Difficult to change cutting depth per cut<br>●Chip evacuation |

# CSV Series

**Best for up to .200" diameter material**

## CSV-NC For Gang-style machine

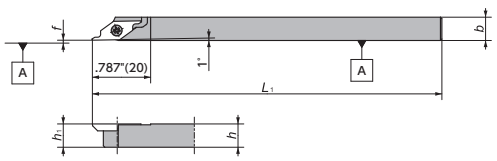



Figure-1

Right-Hand style shown

## CSV For Cam-style machine

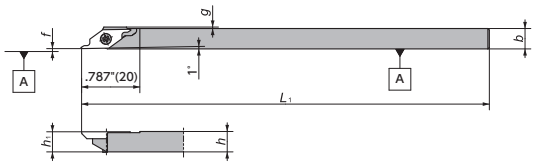



Figure-2

Right-Hand style shown

## DS-CSVL

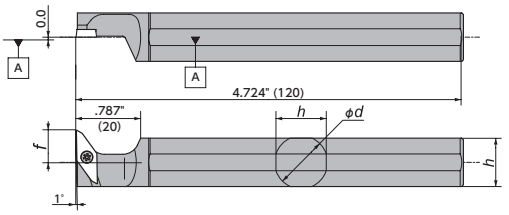



Figure-3

Left-Hand style shown
Takes Right-hand insert

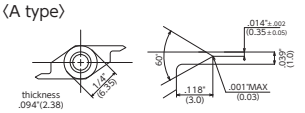
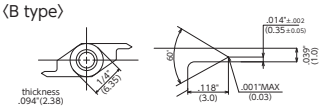
## ■CSVR/L / CSVR/L-NC

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | g (Inch) | g (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11.. | CSVR/L06-IN-NC | 1 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | .004 | 0.1 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08-IN-NC | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | .004 | 0.1 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08NC | 1 | ○ | ○ | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | .004 | 0.1 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08NC-F | 1 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 4.724 | 120 | 0-.004 | 0.0-0.1 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L10GXNC | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.346 | 85 | .004 | 0.1 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L10NC | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | .004 | 0.1 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12NC | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | .004 | 0.1 | – | – | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07GX | 2 | ○ | | .275 | 7 | .275 | 7 | .275 | 7 | 3.346 | 85 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L07 | 2 | ○ | ● | .275 | 7 | .275 | 7 | .275 | 7 | 5.512 | 140 | .004 | 0.1 | .020 | 0.5 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08GX | 2 | ○ | | .315 | 8 | .315 | 8 | .315 | 8 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L08 | 2 | ● | ● | .315 | 8 | .315 | 8 | .315 | 8 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L095 | 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 |
| | CSVR/L10 | 2 | ● | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 5.512 | 140 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12GX | 2 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | .004 | 0.1 | 0.0 | 0.0 | LRIS-2.5 × 7 | CLR-15S |
| | CSVR/L12 | 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 R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  CSV..11FR.. | DS-CSVL15 | 3 | | ● | 5/8 | 15.875 | .591 | 15 | .591 | 15 | 4.724 | 120 | .394 | 10 | LRIS-2.5 × 7 | CLR-15S |

## ■CSVT - Threading Mirror finish

| Shape | Item Number | Chip-breaker | $r_\varepsilon$ (TPI) | $r_\varepsilon$ (mm) | Pitch (TPI) | Pitch (mm) | Coated Carbide VM1 R | Coated Carbide VM1 L |
|---|---|---|---|---|---|---|---|---|
| 〈A type〉  Right-Hand style shown | CSVT11FR/LP60-035A (M) | No | -R.001 | R0.03 MAX | 127 - 51 | 0.2 - 0.5 | ● | ● |
| 〈B type〉  Right-Hand style shown | CSVT11FR/LP60-035B (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

# 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 | CSVT11F1/4P60-035A<br>CSVT11F1/4P60-035B |
| | 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 ➡J36 Cutting condition ➡K130

# CTPS Series

## CTPS

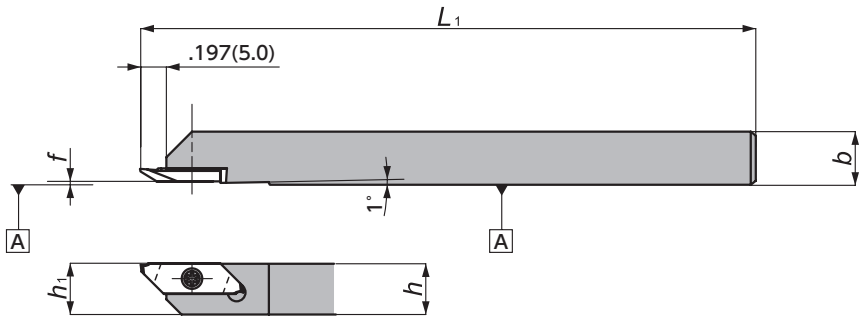



Figure-1

Right-Hand style shown

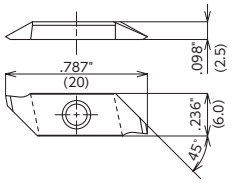
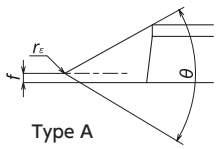
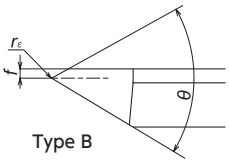
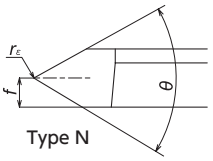
# CTPS Series - Toolholders

## ■CTPS (Takes right-hand inserts)

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TTPS | **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 |

# CTPS Series - Inserts

## ■TTPS - Threading

| Shape | Item Number | Type | θ | f (Inch) | f (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Pitch (TPI) | Pitch (mm) | Coated Carbide VM1 | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | **TTPS60FR4A** | A | 60° | .016 | 0.4 | .002 MAX Flat | (0.05) MAX Flat | **127 - 34** | **0.2 - 0.75** | ○ | ○ |
|  Type A | **TTPS60FR4B** | B | 60° | .016 | 0.4 | .002 MAX Flat | (0.05) MAX Flat | **127 - 34** | **0.2 - 0.75** | ○ | ○ |
|  Type B | **TTPS60FR8A** | A | 60° | .031 | 0.8 | R.002 | (0.05) | **63 - 21** | **0.4 - 1.25** | ○ | ○ |
|  Type N | **TTPS60FR8B** | B | 60° | .031 | 0.8 | R.002 | (0.05) | **63 - 21** | **0.4 - 1.25** | ○ | ○ |
|  Right-Hand style shown | **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

# TTPS Style

## Unified Standard (UN, UNF, UNC) Threads

| | Thread Type | | Pitch | | Applicable Inserts |
|---|---|---|---|---|---|
| | #1 | #2 | (TPI) | (mm) | |
| Coarse | | No.1-64 UNC | 64 | 0.397 | **TTPS60FR4A (B)** |
| | No.2-56 UNC | | 56 | 0.454 | **TTPS60FR4A (B)** **TTPS60FR8A (B)** |
| | | No.3-48 UNC | 48 | 0.529 | |
| | No.4-40 UNC | | 40 | 0.635 | |
| | No.5-40 UNC | | 40 | 0.635 | |
| | No.6-32 UNC | | 32 | 0.794 | |
| | No.8-32 UNC | | 32 | 0.794 | |
| | No.10-24 UNC | | 24 | 1.058 | **TTPS60FR4A (B)** **TTPS60FR8A (B)** **TTPS60FR-N** |
| | | No.12-24 UNC | 24 | 1.058 | |
| | 1/4-20 UNC | | 20 | 1.270 | |
| | 5/16-18 UNC | | 18 | 1.411 | **TTPS60FR-N** |
| Fine | No.0-80 UNF | | 80 | 0.318 | **TTPS60FR4A (B)** |
| | | No.1-72 UNF | 72 | 0.353 | |
| | No.2-64 UNF | | 64 | 0.397 | |
| | | No.3-56 UNF | 56 | 0.454 | **TTPS60FR4A (B)** **TTPS60FR8A (B)** |
| | No.4-48 UNF | | 48 | 0.529 | |
| | No.5-44 UNF | | 44 | 0.577 | |
| | No.6-40 UNF | | 40 | 0.635 | |
| | No.8-36 UNF | | 36 | 0.706 | |
| | No.10-32 UNF | | 32 | 0.794 | |
| | | No.12-28 UNF | 28 | 0.907 | **TTPS60FR8A (B)** |
| | 1/4-28 UNF | | 28 | 0.907 | |
| | 5/16-24 UNF | | 24 | 1.058 | **TTPS60FR8A (B)** **TTPS60FR-N** |
| | 3/8-24 UNF | | 24 | 1.058 | |
| | 7/16-20 UNF | | 20 | 1.270 | |
| | 1/2-20 UNF | | 20 | 1.270 | |
| | 9/16-18 UNF | | 18 | 1.411 | **TTPS60FR-N** |
| | 5/8-18 UNF | | 18 | 1.411 | |

## Metric (M) Threads / Fine and Coarse

| Thread Type | | | Pitch (mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 | #2 | #3 | 1.50 | 1.25 | 1.00 | 0.80 | 0.75 | 0.70 | 0.50 | 0.40 | 0.35 | 0.25 | 0.20 |
| M1 | | | | | | | | | | | | Coarse | Fine |
| M2 | | | | | | | | | | Coarse | | Fine | |
| M3 | | | | | | | | | Coarse | | Fine | | |
| M4 | | | | | | | | Coarse | Fine | | | | |
| M5 | | | | | | Coarse | | | | | | | |
| M6 | | | | | Coarse | | Fine | | | | | | |
| | M7 | | | | | | | | | | | | |
| M8 | | | | Coarse | Fine | | | | | | | | |
| | | M9 | | | | | | | | | | | |
| M10 | | | Coarse | Fine | | | | | | | | | |
| | | M11 | | | | | | | | | | | |
| M12 | | | Fine | Fine | | | | | | | | | |
| | M14 | | | | | | | | | | | | |
| | | M15 | | | Fine | | | | | | | | |
| M16 | | | | | | | | | | | | | |
| | | M17 | | | | | | | | | | | |
| | M18 | | | | | | | | | | | | |
| M20 | | | Fine | | | | | | | | | | |
| | M22 | | | | | | | | | | | | |
| M24 | | | | | | | | | | | | | |
| | | M25 | | | Fine | | | | | | | | |
| | | 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 ➡J40 Cutting condition ➡K130

# TTP Series

## TTP

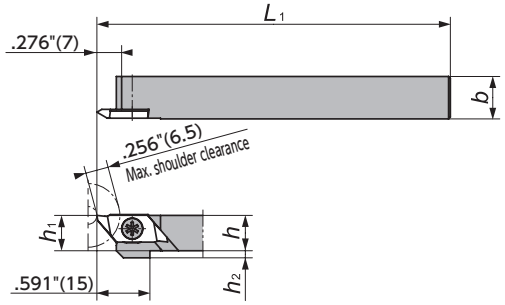
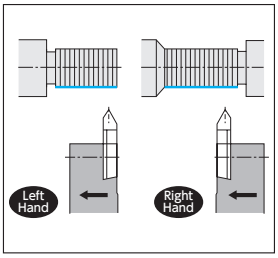



Figure-1




Right-Hand style shown

## CH-TTP

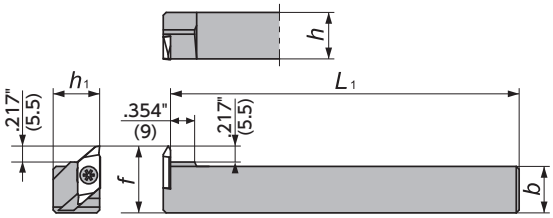
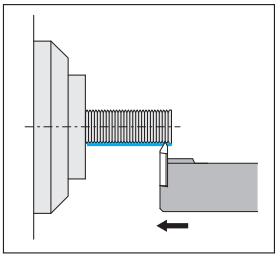



Figure-2



Left-Hand style shown
Takes Right-hand insert

## DS-TTP

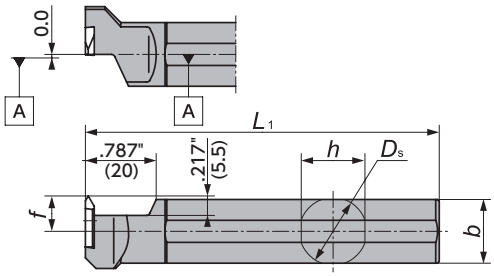
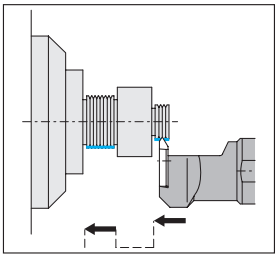



Figure-3



Left-Hand style shown
Takes Right-hand insert

## ■TTP$^{R}_{L}$ / CH-TTPL

| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | $h_1$ (Inch) | $h_1$ (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | $h_2$ (Inch) | $h_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TTP.. TTP..FR | TTP$^{R}_{L}$06-IN | 1 | ● | ● | 3/8 | | 3/8 | | 3/8 | | 4.724 | 120 | – | – | .079 | 2 | LRIS-4 × 10PW | CLR-15S |
| | TTP$^{R}_{L}$08-IN | 1 | ● | ● | 1/2 | | 1/2 | | 1/2 | | 4.724 | 120 | – | – | 0 | 0 | LRIS-4 × 10PW | CLR-15S |
| | TTP$^{R}_{L}$10-IN | 1 | ● | ● | 5/8 | | 5/8 | | 5/8 | | 4.724 | 120 | – | – | 0 | 0 | LRIS-4 × 12PW | CLR-15S |
| | TTP$^{R}_{L}$08 | 1 | ○ | ○ | .315 | 8 | .394 | 10 | .315 | 8 | 4.724 | 120 | – | – | .157 | 4 | LRIS-4 × 12PW | CLR-15S |
| | TTP$^{R}_{L}$10 | 1 | ○ | ○ | .394 | 10 | .394 | 10 | .394 | 10 | 4.724 | 120 | – | – | .079 | 2 | LRIS-4 × 12PW | CLR-15S |
| | TTP$^{R}_{L}$12GX | 1 | ○ | ○ | .472 | 12 | .472 | 12 | .472 | 12 | 3.346 | 85 | – | – | 0 | 0 | LRIS-4 × 12PW | CLR-15S |
| | TTP$^{R}_{L}$12 | 1 | ● | ● | .472 | 12 | .472 | 12 | .472 | 12 | 4.724 | 120 | – | – | 0 | 0 | LRIS-2.5 × 7 | CLR-15S |
| | TTP$^{R}_{L}$16H | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 3.937 | 100 | – | – | 0 | 0 | LRIS-2.5 × 7 | CLR-15S |
| | TTP$^{R}_{L}$16 | 1 | ○ | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | – | – | 0 | 0 | LRIS-2.5 × 7 | CLR-15S |
| | TTP$^{R}_{L}$20F | 1 | ○ | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 3.150 | 80 | – | – | 0 | 0 | LRIS-2.5 × 7 | CLR-15S |
| | CH-TTPL16 | 2 | | ○ | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .906 | 23 | – | – | LRIS-4 × 10 | LLR-25S |
| | CH-TTPL20 | 2 | | ○ | .787 | 20 | .787 | 20 | .787 | 20 | 4.724 | 120 | 1.063 | 27 | – | – | LRIS-4 × 10 | LLR-25S |

## ■DS-TTP

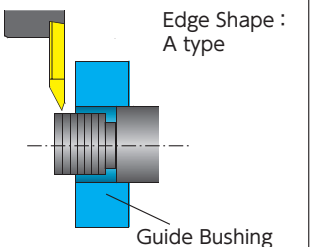
| Gage Insert | Item Number | Figure | Stock R | Stock L | $D_s$ (Inch) | $D_s$ (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | $L_1$ (Inch) | $L_1$ (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TTP.. | DS-TTP$^{R}_{L}$16F | 3 | | ○ | .630 | 16.00 | .591 | 15 | .591 | 15 | 3.150 | 80 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP$^{R}_{L}$19 | 3 | | ● | 3/4 | 19.05 | .709 | 18 | .709 | 18 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP$^{R}_{L}$20 | 3 | | ● | .787 | 20.00 | .748 | 19 | .748 | 19 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP$^{R}_{L}$22 | 3 | | ● | .866 | 22.00 | .827 | 21 | .827 | 21 | 4.724 | 120 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |
| | DS-TTP$^{R}_{L}$25 | 3 | | ● | 1 | 25.40 | .945 | 24 | .945 | 24 | 5.906 | 150 | .394 | 10.0 | LRIS-4 × 10 | LLR-25S-20 × 65 |

# TTP Series - Inserts

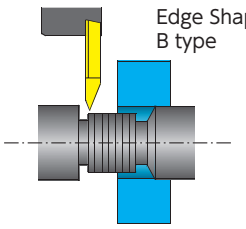
## TTP - Threading

| | Shape | Item Number | θ | f (Inch) | f (mm) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (mm) | Pitch (TPI) | Pitch (mm) | Coated Carbide QM3 R | Coated Carbide QM3 L | Coated Carbide ZM3 R | Coated Carbide ZM3 L | Carbide KM1 R | Carbide KM1 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 Ⓜ | 60° | .016 | 0.4 | (.002) MAX Flat | (0.05) MAX Flat | 127 - 34 | 0.2 - 0.75 | | | | | ○ | |
| | | TTP60FR8A | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | ● | | ● | | | |
| | | TTP60FR8AS Ⓜ | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | | | | | ○ | |
| | | TTP55FR8A | 55° | .031 | 0.8 | (R.002) | (R0.05) | 48 - 16 | – | | | ● | | | |
| | 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 Ⓜ | 60° | .016 | 0.4 | (.002) MAX Flat | (0.05) MAX Flat | 127 - 34 | 0.2 - 0.75 | | | | | ○ | |
| | | TTP60FR8B | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | ● | | ● | | | |
| | | TTP60FR8BS Ⓜ | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | | | | | ○ | |
| | | TTP55FR8B | 55° | .031 | 0.8 | (R.002) | (R0.05) | 48 - 16 | – | | | ● | | | |
| | N type | TTP60FR-N | 60° | .049 | 1.25 | (R.004) | (R0.1) | 25 - 17 | 1.0 - 1.5 | ● | | ● | | | |
| | | TTP60FR-NS Ⓜ | 60° | .049 | 1.25 | (R.004) | (R0.1) | 25 - 17 | 1.0 - 1.5 | | | | | ○ | |
| | | TTP60FR-N02 | 60° | .049 | 1.25 | (R.008) | (R0.2) | 16 - 13 | 1.5 - 2.0 | ● | | ○ | | | |
| Left-Hand | 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 Ⓜ | 60° | .016 | 0.4 | (.002) MAX Flat | (0.05) MAX Flat | 127 - 34 | 0.2 - 0.75 | | | | | | ○ |
| | | TTP60FL8A | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | | ● | | ● | | |
| | | TTP60FL8AS Ⓜ | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | | | | | | ○ |
| | | TTP55FL8A | 55° | .031 | 0.8 | (R.002) | (R0.05) | 48 - 16 | – | | | | ● | | |
| | 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 Ⓜ | 60° | .016 | 0.4 | (.002) MAX Flat | (0.05) MAX Flat | 127 - 34 | 0.2 - 0.75 | | | | | | ○ |
| | | TTP60FL8B | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | | ○ | | ● | | |
| | | TTP60FL8BS Ⓜ | 60° | .031 | 0.8 | (R.002) | (R0.05) | 63 - 21 | 0.4 - 1.25 | | | | | | ○ |
| | | TTP55FL8B | 55° | .031 | 0.8 | (R.002) | (R0.05) | 48 - 16 | – | | | | ● | | |
| | N type | TTP60FL-N | 60° | .049 | 1.25 | (R.004) | (R0.1) | 25 - 17 | 1.0 - 1.5 | | ● | | ● | | |
| | | TTP60FL-NS Ⓜ | 60° | .049 | 1.25 | (R.004) | (R0.1) | 25 - 17 | 1.0 - 1.5 | | | | | | ○ |
| | | TTP60FL-N02 | 60° | .049 | 1.25 | (R.008) | (R0.2) | 16 - 13 | 1.5 - 2.0 | | ● | | ○ | | |

### Right Hand Toolholders

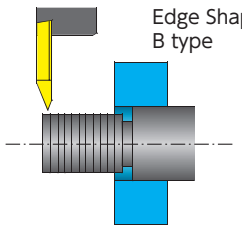



| Toolholder | TTPR |
|---|---|
| Insert | TTP..FR..A |

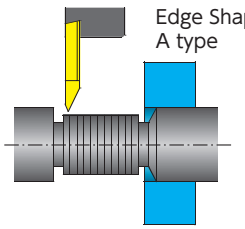



| Toolholder | TTPR |
|---|---|
| Insert | TTP..FR..B |

### Left Hand Toolholders




| Toolholder | TTPL |
|---|---|
| Insert | TTP..FL..B |




| Toolholder | TTPL |
|---|---|
| Insert | TTP..FL..A |

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

Cutting condition ➡K130

## TTP Style



### Unified Standard (UN, UNF, UNC) Threads

| | Thread Type | | Pitch | | Applicable Inserts |
|---|---|---|---|---|---|
| | | | (TPI) | (mm) | |
| Coarse (UNC) | | No.1-64 UNC | 64 | 0.3969 | **TTP60FR½2A(B)<br>TTP60FR½4A, AS(B, BS)** |
| | No.2-56 UNC | | 56 | 0.4536 | **TTP60FR½4A, AS(B, BS)<br>TTP60FR½8A, AS(B, BS)** |
| | | No.3-48 UNC | 48 | 0.5292 | |
| | No.4-40 UNC | | 40 | 0.6350 | |
| | No.5-40 UNC | | 40 | 0.6350 | |
| | No.6-32 UNC | | 32 | 0.7938 | **TTP60FR½8A, AS(B, BS)** |
| | No.8-32 UNC | | 32 | 0.7938 | |
| | No.10-24 UNC | | 24 | 1.0583 | **TTP60FR½8A, AS(B, BS)<br>TTP60FR½-N(S)** |
| | | No.12-24 UNC | 24 | 1.0583 | |
| | 1/4-20 UNC | | 20 | 1.2700 | |
| | 5/16-18 UNC | | 18 | 1.4111 | **TTP60FR½-N(S)** |
| | 3/8-16 UNC | | 16 | 1.5875 | **TTP60FR½-N02** |
| | 7/16-14 UNC | | 14 | 1.8143 | |
| | 1/2-13 UNC | | 13 | 1.9538 | |
| Fine (UNC) | No.0-80 UNF | | 80 | 0.3175 | **TTP60FR½2A(B)<br>TTP60FR½4A, AS(B, BS)** |
| | | No.1-72 UNF | 72 | 0.3528 | |
| | No.2-64 UNF | | 64 | 0.3969 | |
| | | No.3-56 UNF | 56 | 0.4536 | **TTP60FR½4A, AS(B, BS)<br>TTP60FR½8A, AS(B, BS)** |
| | No.4-48 UNF | | 48 | 0.5292 | |
| | No.5-44 UNF | | 44 | 0.5773 | |
| | No.6-40 UNF | | 40 | 0.6350 | |
| | No.8-36 UNF | | 36 | 0.7056 | |
| | No.10-32 UNF | | 32 | 0.7938 | **TTP60FR½8A, AS(B, BS)** |
| | | No.12-28 UNF | 28 | 0.9071 | |
| | 1/4-28 UNF | | 28 | 0.9071 | |
| | 5/16-24 UNF | | 24 | 1.0583 | **TTP60FR½8A, AS(B, BS)<br>TTP60FR½-N(S)** |
| | 3/8-24 UNF | | 24 | 1.0583 | |
| | 7/16-20 UNF | | 20 | 1.2700 | **TTP60FR½-N(S)** |
| | 1/2-20 UNF | | 20 | 1.2700 | |
| | 9/16-18 UNF | | 18 | 1.4111 | |
| | 5/8-18 UNF | | 18 | 1.4111 | |
| | 3/4-16 UNF | | 16 | 1.5875 | **TTP60FR½-N02** |
| | 7/8-14 UNF | | 14 | 1.8143 | |

## Metric (M) Threads / Fine and Coarse

| Thread Type | | | Pitch (mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2.00 | 1.50 | 1.25 | 1.00 | 0.80 | 0.75 | 0.70 | 0.50 | 0.40 | 0.35 | 0.25 | 0.20 |
| M1 | | | | | | | | | | | | | Coarse | Fine |
| M2 | | | | | | | | | | | Coarse | | Fine | |
| M3 | | | | | | | | | | Coarse | | Fine | | |
| M4 | | | | | | | | | Coarse | Fine | | | | |
| M5 | | | | | | | Coarse | | | | | | | |
| M6 | | | | | | Coarse | | Fine | | | | | | |
| | M7 | | | | | | | | | | | | | |
| M8 | | | | | Coarse | Fine | | | | | | | | |
| | | M9 | | | | | | | | | | | | |
| M10 | | | | Coarse | Fine | | | | | | | | | |
| | | M11 | | | | | | | | | | | | |
| M12 | | | | Fine | | | | | | | | | | |
| | M14 | | Coarse | | | | | | | | | | | |
| | | M15 | | | | | | | | | | | | |
| M16 | | | Coarse | | | | | | | | | | | |
| | | M17 | | | | | | | | | | | | |
| | M18 | | Fine | Fine | | | | | | | | | | |
| M20 | | | | | | | | | | | | | | |
| | M22 | | | | | | | | | | | | | |
| M24 | | | | | | | | | | | | | | |
| | | M25 | | | | | | | | | | | | |
| | | M26 | | | | | | | | | | | | |
| | M27 | | Fine | | | Fine | | | | | | | | |
| | | M28 | | | | | | | | | | | | |
| M30 | | | | | | | | | | | | | | |
| | | M32 | | | | | | | | | | | | |

Covered Thread Pitch Range

| Inserts | Pitch | |
|---|---|---|
| | (TPI) | (mm) |
| **TTP60FR/L2A(B)** | 127 - 63 | 0.2 - 0.4 |
| **TTP60FR/L4A,AS(B,BS)** | 127 - 34 | 0.2 - 0.75 |
| **TTP60FR/L8A,AS(B,BS)** | 63 - 21 | 0.4 - 1.25 |
| **TTP60FR/L-N(S)** | 25 - 17 | 1.0 - 1.5 |
| **TTP60FR/L-N02** | 16 - 13 | 1.5 - 2.0 |

**TTP60FR/L-N02** can be used up to M150 when the pitch is 2.0 mm

## Whitworth

| Applicable Insert | Thread Type | Pitch | |
|---|---|---|---|
| | | (TPI) | (mm) |
| **TTP55FR/L8A (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

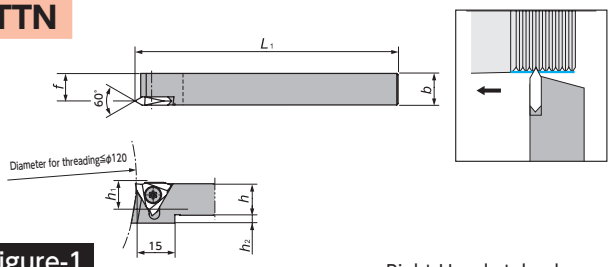



Figure-1

Right-Hand style shown

### NTTB

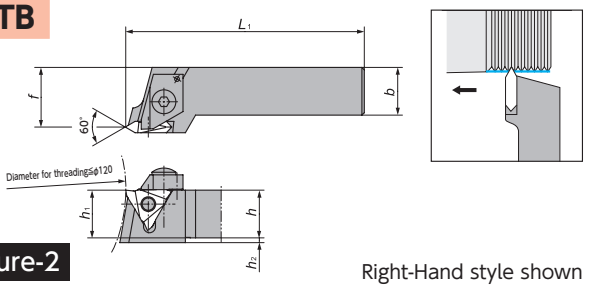



Figure-2

Right-Hand style shown

### DS-STT

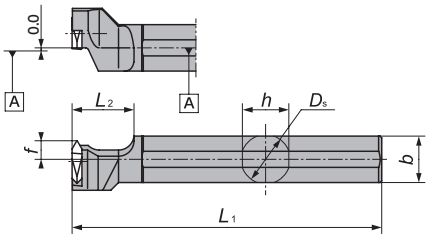
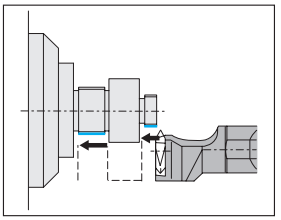



Figure-3



Left-Hand style shown
Takes Right-hand insert

### ■STTNR/L / NTTBR/L

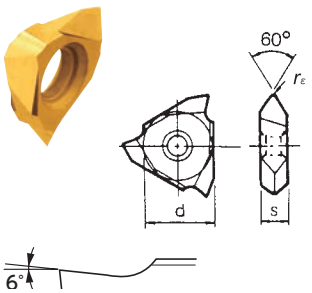
| Gage Insert | Item Number | Figure | Stock R | Stock L | h (Inch) | h (mm) | b (Inch) | b (mm) | h1 (Inch) | h1 (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | h2 (Inch) | h2 (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TTMH3260 | STTNR/L101032 | 1 | ○ | | .394 | 10 | .394 | 10 | .394 | 10 | 3.150 | 80 | .335 | 8.5 | .197 | 5.0 | LR-S-4 × 9 | RLR-20S |
| | STTNR/L121232 | 1 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 3.150 | 80 | .413 | 10.5 | .197 | 5.0 | LR-S-4 × 9 | RLR-20S |
| | STTNR/L121232-K | 1 | ○ | | .472 | 12 | .472 | 12 | .472 | 12 | 4.912 | 125 | .413 | 10.5 | .197 | 5.0 | LR-S-4 × 9 | RLR-20S |
| | NTTBR/L161632 | 2 | ○ | | .630 | 16 | .630 | 16 | .630 | 16 | 4.724 | 120 | .787 | 20.0 | .157 | 4.0 | – | LW-2.5 |
| | NTTBR/L202032 | 2 | ○ | | .787 | 20 | .787 | 20 | .787 | 20 | 5.512 | 140 | .984 | 25.0 | 0.0 | 0.0 | – | LW-2.5 |

### ■DS-STTR/L

| Gage Insert | Item Number | Figure | Stock R | Stock L | Ds (Inch) | Ds (mm) | h (Inch) | h (mm) | b (Inch) | b (mm) | L1 (Inch) | L1 (mm) | f (Inch) | f (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  TTMH3260 | DS-STTR/L14F | 3 | | ○ | .551 | 14.000 | .512 | 13 | .512 | 13 | 3.150 | 80 | .236 | 6.0 | LR-S-4 × 9 | RLR-20S |
| | DS-STTR/L15H | 3 | | ○ | 5/8 | 15.875 | 591 | 15 | 591 | 15 | 3.937 | 100 | .236 | 6.0 | LR-S-4 × 9 | RLR-20S |
| | DS-STTR/L16X* | 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 (Inch) | d (mm) | s (Inch) | s (mm) | rε (Inch) | rε (mm) | Pitch (Inch) | Pitch (mm) | Coated Carbide ZM3 R | Coated Carbide ZM3 L | Coated Cermet C7X R | Coated Cermet C7X L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Right-Hand style shown | 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 | | | ○ | |

# 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 | |
| | 3/8-16 UNC | | 16 | 1.5875 | TTMH3260R010,R015 TTMH3260R020 |
| | 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 | |
| | 5/16-24 UNF | | 24 | 1.0583 | TTMH3260R010 TTMH3260R015 |
| | 3/8-24 UNF | | 24 | 1.0583 | |
| | 7/16-20 UNF | | 20 | 1.2700 | |
| | 1/2-20 UNF | | 20 | 1.2700 | |
| | 9/16-18 UNF | | 18 | 1.4111 | |
| | 5/8-18 UNF | | 18 | 1.4111 | |
| | 3/4-16 UNF | | 16 | 1.5875 | TTMH3260R010,R015 TTMH3260R020 |
| | 7/8-14 UNF | | 14 | 1.8143 | TTMH3260R010,R015 TTMH3260R020,R025 |
| | 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 | | | | | | | | | |
| M8 | | | | | | | | Coarse | Fine | |
| | | M9 | | | | | | | | |
| M10 | | | | | | | Coarse | Fine | | |
| | | M11 | | | | | | | | |
| M12 | | | | | | Coarse | Fine | Fine | | |
| | M14 | | | | Coarse | | | | | |
| | | M15 | | | | | | | | |
| M16 | | | | | Coarse | | | | | |
| | | M17 | | | | | | | | |
| | M18 | | | Coarse | Fine | | | | | |
| M20 | | | | | | | | | | |
| | M22 | | | | | | | | | |
| M24 | | | Coarse | | | | | | | |
| | | M25 | | | | | | | | |
| | | M26 | | | | | Fine | | | |
| | M27 | | Coarse | | Fine | | | | | |
| | | M28 | | | | | | | | |
| M30 | | | Fine | | | | | | | |
| | | M32 | | | | | | | | |
| | M33 | | Fine | | | | | | | |
| | | M35 | | | | | | | | |
| M36 | | | Fine | | Fine | | | | | |
| | | M38 | | | | | | | | |
| | M39 | | Fine | | Fine | | | | | |
| | | M40 | | | | | | | | |

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 ➡K130

# Thread Whirling

## Features

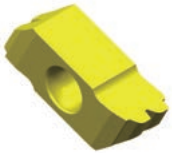
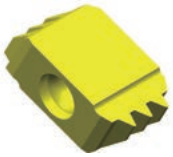


WATCH ON YouTube

- 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

## 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"(4.0㎜) | ϕ.278"(7.0㎜) |
| Minor Dia. | ϕ.094"(2.4㎜) | ϕ.185"(4.7㎜) |
| Lead [Pitch×No. of Lead] | .135"(3.42㎜) [.067"×2(1.71㎜×2)] | .193"(4.9㎜) [.064"×3(1.63㎜×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

| Conditions \ No. of teeth | | 9 | 6 | 4 | |
|---|---|---|---|---|---|
| Main spindle | RPM | **10 - 40** | 10 - 25 | 7 - 15 | Faster RPM reduces machining time |
| | F | **5400 - 14400** | 3600 - 9000 | 2500 - 5400 | |
| Whirling Catter | RPM | **1500 - 4000** | | | |
| Feed Rate | | **Same as thread-lead** | | | |
| Bar stock | $\phi$ | **~$\phi$.400" *** | | ~$\phi$.200" | * For cutter with $\phi$12㎜ ID |
| Work Material | | **Ti-6Al-4V ELI / 316SS / Titanium** | | | |

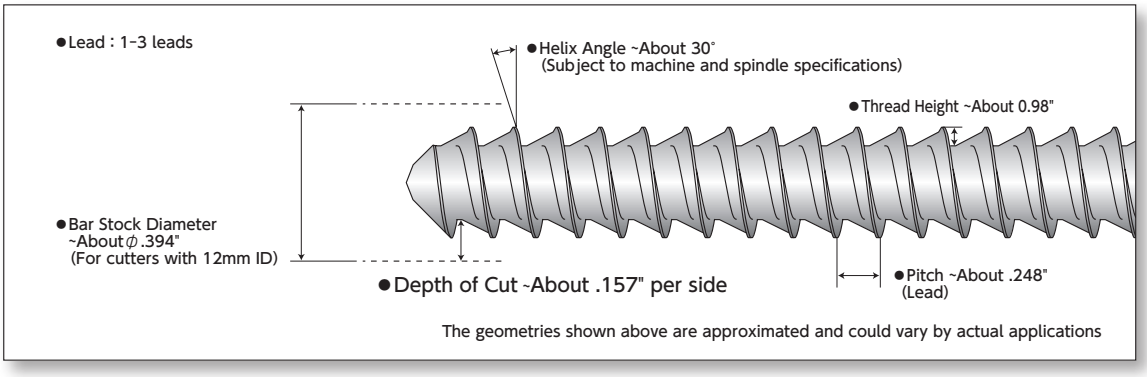
- Formula for calculating thread whirling process time

$$T\ (\text{Seconds}) = \frac{60 \times \text{Thread length}}{\text{Main spindle rpm} \times \text{Feed rate (Thread lead)}}$$

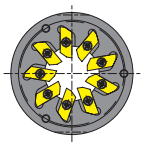
Ex.) Double lead / 2" length / .100" lead (2×.050" pitch) / 30 rpm

$$T\ (\text{Seconds}) = \frac{60 \times 2}{30 \times .100"} = 40 \text{ Seconds}$$

## Applicable Thread Geometry (Approximated)



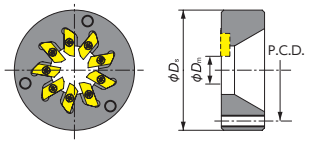
## Thread Whiring System


Type 1

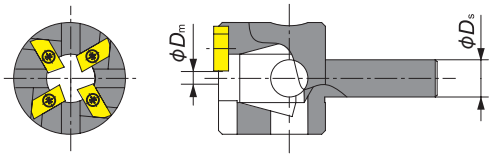

Type 2
Quick-change


Type 3
Quick-change

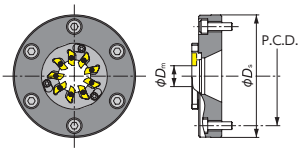
| Machine make | Model | Location | Spindle make | Spindle model | Helix angle | NTK Thread whirling system | Stock | No. of tooth | $\phi D_m$ (mm) | Type | $\phi D_s$ | P.C.D. | Mount adapter screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CITIZEN | $M_4$32-VIII | Gang | CITIZEN | BTW-4000 | 0° – 15° | **TWC9C0746HP1** | ● | 9 | **φ12** | 1 | φ46 | φ35 | M3 |
| | L20E/L20X | Gang | | BTW-3000 | 0° – 15° | | | | | | | | |
| | A20 | Gang | | BTW-2000 | ±25° | **TWC9C1040HP1**<br>**TWC6C1040HP1**<br>**TWC9C1040HP1-D16** | ●<br>●<br>● | 9<br>6<br>9 | **φ12**<br>**φ12**<br>**φ16** | 1 | φ33 | φ40 | M3<br>(Provided with spindle) |
| | $M_4$32 | | | BTW-1000 | 0° – 25° | | | | | | | | |
| | C32 | | | | ±25° | | | | | | | | |
| | L20 | | | | | | | | | | | | |
| | M20 | | | | +20° – –25° | | | | | | | | |
| | $M_3$32 | | | | ±25° | | | | | | | | |
| | C12/16 | Gang | CITIZEN | LTR0170 | ±15° | **TWC9C1037P2** | ● | 9 | **φ12** | 2 | φ37 | φ30.5 | CS0310(M3) |
| | M12/16 | Turret | | LTR0168 | | | | | | | | | |
| | M12/16 III | | | MSW105 | | | | | | | | | |
| | M20/32 III | | | KSW110 | | | | | | | | | |
| | L20 | Gang | | LTR0183 | ±15° | **TWC9J1040P2** | ● | 9 | **φ12** | 2 | φ40 | φ32.5 | H-M4 × 12 |
| | M20/32 | | | | | | | | | | | | |
| | M20/32 | Turret | | LTR0169 | | | | | | | | | |
| | K16 | Attachment | PCM | GSW-101 | ±15° | **TWC6P1620HP1-D9** | ● | 6 | **φ9** | 1 | φ32 | φ26 | M4<br>(Provided with spindle) |
| | L20 | Gang | | LSW-101-L20 | ±10° | **TWC9P1340P2** | ● | 9 | **φ12** | 2 | φ40 | φ32.5 | M4<br>(Provided with spindle) |
| | M12/16 | Turret | | MSW-101 | | | | | | | | | |
| | M20/M32 | | | KSW-101 | | | | | | | | | |
| STAR | ECAS-12/20 | Attachment | STAR | 54178 | ±10° | **TWC9S1640P2** | ● | 9 | **φ12** | 3 | φ40 | φ33 | CS04148S(M4) |
| | SB-20R | | | OM171 | -20° – 0° | | | | | | | | |
| | SR-20J/20R III/20R IV | | | 54172 | -20° – 0° | | | | | | | | |
| | ECAS-20T | Turret | | 59172 | ±20° | | | | | | | | |
| | ECAS-32T | | | 58171 | ±10° | | | | | | | | |
| | ST-38 | | | 43156 | ±10° | | | | | | | | |
| | SV-12 | | | 45172 | ±10° | | | | | | | | |
| | SV-20 | | | 42173 | ±10° | | | | | | | | |
| | SV-32 | | | 43172 | ±10° | | | | | | | | |
| | SV-38R | | | 43156 | ±20° | | | | | | | | |
| TSUGAMI | BH20/BH38 | Turret | TSUGAMI | 3263-Y481 | ±10° | **TWC9TS2252P2** | ● | 9 | **φ12** | 3 | φ52 | φ42 | CS0515(M5) |
| | BS20 | Attachment | | 3214-Y1371 | ±10° | **TWC9TS20550P2** | ● | 9 | **φ16** | 3 | φ50 | φ40 | CS0515(M5) |
| | SS20/SS26/SS32<br>B0265/B0266 - II<br>B0325/B0326 - II | Attachment | | 3268-Y450<br>3268-Y451 | 0° – 10° | **TWC9TS2244HP1** | ● | 9 | **φ12** | 4 | φ52 | φ44 | CS0520(M5) |
| | S205/S206 | | | 3281-Y450<br>3281-Y451 | 0° – 20° | **TWC9TS1944HP1** | ● | 9 | **φ12** | 4 | φ52 | φ44 | CS0520(M5) |
| | B0123/B0124/B0125/<br>B0126 - II / III<br>B0203/B0204/B0205/<br>B0205/B0206 - II / III | | | 3220-Y6540<br>3220-Y6541 | 0° – 25° | **TWC9TS1644HP1** | ● | 9 | **φ12** | 4 | φ52 | φ44 | CS0515(M5) |
| | | | | | 0° – 30° | **TWC9TS1044HP1** | ● | 9 | **φ12** | 4 | φ52 | φ44 | CS0515(M5) |
| | SS20/SS26/SS32 | | | 3268-Y271 | 0° – 10° | **TWC9TS1952P2BK** | ● | 9 | **φ12** | 4 | φ52 | φ38 | CS0515(M5) |
| | | | | | 0° – 20° | **TWC9TS1652P2BK** | ● | 9 | **φ12** | 4 | φ52 | φ38 | CS0515(M5) |
| | SS207/SS267/SS327 | — | Using B-axis | | 0° – 15° | **TWC4TS3010HP1** | ● | 4 | **φ7** | 5 | φ10 | For single-corner inserts only | |




Type 4



Type 5




Type 6
Quick-change

| Machine make | Model | Location | Spindle make | Spindle model | Helix angle | NTK Thread whirling system | Stock | No. of tooth | $\phi D_m$ (mm) | Type | $\phi D_s$ | P.C.D. | Mount adapter screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TORNOS | DECO 10/10a | Attachment | TORNOS | 224-1900 | ±15° | TWC6TO11542HP1 | ● | 6 | ϕ12 | 4 | ϕ42 | ϕ32 | CS0410(M4) |
| | Evo DECO 10/10 | | | 242-1900 | | | | | | | | | |
| | DECO 13a/13e | | | 226-1900 | ±15° | TWC9TO10540P2 | ● | 9 | ϕ12 | 3 | ϕ40 | ϕ31 | CS0410(M4) |
| | Evo DECO 16/10 | | | 243-1900 | | | | | | | | | |
| | Swiss ST26 | | | 246-1900 | | | | | | | | | |
| | DECO 20a | | | 223-1900 | | | | | | | | | |
| | DECO 26a | | | 225-1900 | | | | | | | | | |
| | Sigma 20 | | | 234-2750 | ±25° | TWC9TO12050P2-D18 | ● | 9 | ϕ18 | 3 | ϕ50 | ϕ40 | CS0410(M4) |
| | Sigma 32 | | | 236-2750 | | | | | | | | | |
| HASEGAWA | JS-1W | — | HASEGAWA | — | 0° - 20° | TWC9HA22594P2 | | 9 | ϕ16 | 6 | ϕ94 | ϕ76 | CS0620(M6) |

## ■Spare Insert Holder (Cartridge)

| Item number | No. of tooth | $\phi D_m$ (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

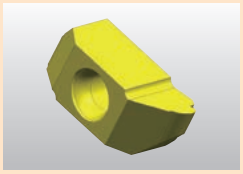
② Rotate the Insert Holder 10 degrees

③ Detach the Insert Holder without removing the Mounting Screws

● : Stock ○ : 1-2 week delivery

## Basic Insert Grade

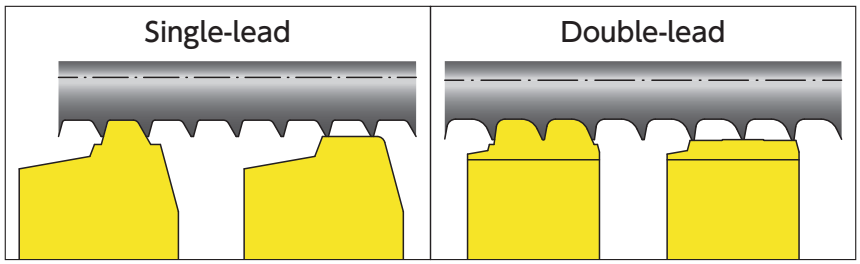
### ZM3



- 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

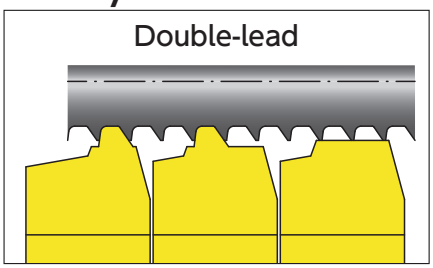
## NTK Experiences and Solutions Example

### For absolute flat on OD




- Two insert combination brings absolute flat on OD to meet the drawing

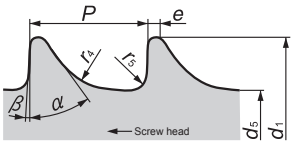
### For tiny thread



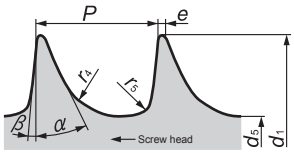

- NTK's Thread Whirling system can machine small diameter multi-lead screws to spec, with lower tool pressure, by using several types of specially designed and accurately ground inserts on the cutter.

## Standard Thread Whirling Inserts (two-sided) for ISO Style Threads

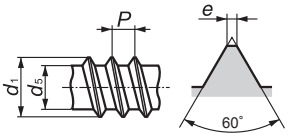
(Note: Must use Thread whirling cutters with 12㎜ ϕDm dimension. See page K18-19 to find ϕDm for each cutter.)



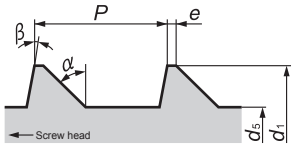

ISO5835 HA




ISO5835 HB




ISO9268 HC




ISO9268 HD

Metric dimensions

| Item number | ISO Standard | | $d_1$ | $d_5$ | $P$ | $e$ | $r_4$ | $r_5$ | $\alpha$ | $\beta$ | Supposition material Dia. | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TW5835-HA1.5-D12** | ISO5835 | HA1.5 | $1.5^{0}_{-0.15}$ | $1.1^{0}_{-0.1}$ | 0.5 | 0.1 | 0.3 | 0.1 | 35° | 3° | ϕ8 | ○ |
| **TW5835-HA2.0-D12** | | HA2.0 | $2.0^{0}_{-0.15}$ | $1.3^{0}_{-0.1}$ | 0.6 | 0.1 | 0.4 | 0.1 | 35° | 3° | | ○ |
| **TW5835-HA2.7-D12** | | HA2.7 | $2.7^{0}_{-0.15}$ | $1.9^{0}_{-0.15}$ | 1 | 0.1 | 0.6 | 0.2 | 35° | 3° | | ○ |
| **TW5835-HA3.5-D12** | | HA3.5 | $3.5^{0}_{-0.15}$ | $2.4^{0}_{-0.15}$ | 1.25 | 0.1 | 0.8 | 0.2 | 35° | 3° | | ○ |
| **TW5835-HA4.0-D12** | | HA4.0 | $4.0^{0}_{-0.15}$ | $2.9^{0}_{-0.15}$ | 1.5 | 0.1 | 0.8 | 0.2 | 35° | 3° | | ○ |
| **TW5835-HA4.5-D12** | | HA4.5 | $4.5^{0}_{-0.15}$ | $3.0^{0}_{-0.15}$ | 1.75 | 0.1 | 1 | 0.3 | 35° | 3° | | ○ |
| **TW5835-HA5.0-D12** | | HA5.0 | $5.0^{0}_{-0.15}$ | $3.5^{0}_{-0.15}$ | 1.75 | 0.1 | 1 | 0.3 | 35° | 3° | ϕ10 | ○ |
| **TW5835-HB4.0-D12** | | HB4.0 | $4.0^{0}_{-0.15}$ | $1.9^{0}_{-0.15}$ | 1.75 | 0.1 | 0.8 | 0.3 | 25° | 5° | ϕ8 | ○ |
| **TW5835-HB6.5-D12** | | HB6.5 | $6.5^{0}_{-0.15}$ | $3.0^{0}_{-0.15}$ | 2.75 | 0.2 | 1.2 | 0.8 | 25° | 5° | ϕ10 | ○ |
| **TW9268-HC2.9-D12** | ISO9268 | HC2.9 | 2.79 to 2.9 | 2.03 to 2.18 | 1.06 | 0.1max | — | — | — | — | ϕ8 | |
| **TW9268-HC3.5-D12** | | HC3.5 | 3.43 to 3.53 | 2.51 to 2.64 | 1.27 | 0.1max | — | — | — | — | | |
| **TW9268-HC3.9-D12** | | HC3.9 | 3.78 to 3.91 | 2.77 to 2.92 | 1.27 | 0.1max | — | — | — | — | | |
| **TW9268-HC4.2-D12** | | HC4.2 | 4.09 to 4.22 | 2.95 to 3.25 | 1.27 | 0.1max | — | — | — | — | | |
| **TW9268-HD4.0-D12** | | HD4.0 | 4.0±0.03 | 2.92±0.03 | 1.59 | 0.1 | — | — | 45° | 10° | | |
| **TW9268-HD4.5-D12** | | HD4.5 | 4.5±0.03 | 2.92±0.03 | 2.18 | 0.1 | — | — | 45° | 10° | | |

● : 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 Whiring | *Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.* | | |
| NTK thread whirling succeeded in double lead screw machining when one of the major thread whirling suppliers has failed many times. | | | |

| Double-lead Bone Screw | | | |
|---|---|---|---|
| Work Material : Ti-6Al-4v ELI | | | |
| Bar Stock Dia. | 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 Whiring | *Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.* | | |
| The customer could not get perfect double lead thread form in single pass from other manufacturers. NTK got perfect thread form with a single pass on first trial saving cycle time. | | | |

| Double-lead Bone Screw | | | |
|---|---|---|---|
| Work Material : Ti-6Al-4v ELI | | | |
| Bar Stock Dia. | 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 Whiring | *Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.* | | |
| Customer was concerned with stock rigidity and long cycle time. NTK applied three geometry inserts to achieve single pass machining, in dramatically short time. The up-sharp cutting edges and low cutting pressure produced "excellent" surface finish. | | | |

| Single-lead Bone Screw | | | |
|---|---|---|---|
| Work Material : 316SS | | | |
| Bar Stock Dia. | 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 Whiring | 1000 pcs | | |
| Some thread whirling manufacturers offer 6-teeth or 12-teeth systems, too many teeth cause chip packing issues and more tool pressure. Fewer teeth means greater cycle time. NTK concluded that 9-teeth is the best configuration. Our customers can run 1.5 times faster and get longer tool life. | | | |

| Single-lead Bone Screw | | | |
|---|---|---|---|
| Work Material : Ti-6Al-4v ELI | | | |
| Bar Stock Dia. | ϕ.197 | Number of start | 1 |
| Major Dia. | ϕ.091 | Helix Angle | 5.3˚ |
| Minor Dia. | ϕ.067 | Hand of thread | Right |
| Cutting condition | | | |
| Main Spindle Speed (rpm) | 30 | Speed of whirling cutter (rpm) | 3,100 |
| Pitch = Feed (IPR) | .023 | Result | OK |
| NTK Thread Whirling | 2200 pcs | | |
| This thread is up to 1.26" length with a small pitch. Cycle time could be increased with a single-point threading tool. NTK's inserts, designed for lower tool pressure, ran 2,200 pcs/corner at 30 rpm of bar stock (F10,800). It only took 110 seconds to finish a 1.26" length thread. | | | |

| Triple-lead Worm Gear | | | |
|---|---|---|---|
| Work Material : Brass | | | |
| Bar Stock Dia. | ϕ.315 | Number of start | 3 |
| Major Dia. | ϕ.276 | Helix Angle | 14.6˚ |
| Minor Dia. | ϕ.185 | Hand of thread | Left |
| Cutting condition | | | |
| Main Spindle Speed (rpm) | 20 | Speed of whirling cutter (rpm) | 3,500 |
| Lead = Feed (IPR) | .189 | Result | OK |
| Multi-lead threads, common in the Worm Gear industry are made by a forming or cutting process. The large helix angle is difficult to machine with single-point threading.<br>NTK now makes thread whilring inserts for multi-lead threads. Cycle time is reduced with a one pass process and thread form dimensions are stable with the low tool pressure. | | | |

MEMO

# K

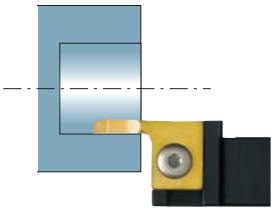


## ID Tooling

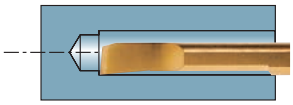

- ID Tooling Tools ····· K150
- Recommended Cutting Conditions··· K152
- Tools list ····· K154
  - LBM Series ····· K154
  - STICK DUO SPLASH ····· K156
  - STICK DUO HYPER ····· K158
  - STICK DUO ····· K162
  - ID Back Turning Tools ····· K165
  - ID Grooving Tools ····· K166
  - ID Threading Tools ····· K168
  - Mogul Bar Series ····· K171
- Chipbreakers for Mogul Bar ··· K180

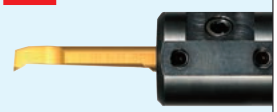
# NTK ID Tooling - Product Lines

## ID Boring

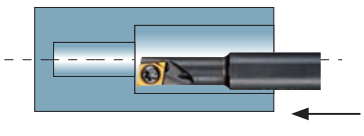


| Insert | LBM ➡K155 | | |
|---|---|---|---|
| | LBMA | DS-LBMB | CH-LBM |
| Holder |  ➡K154 |  ➡K154 |  ➡K154 |
| Min. Bore Dia. | ϕ.039"(1.0mm) | | |

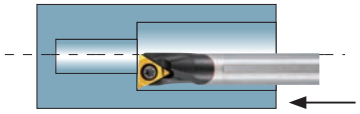


| Insert | SHFS • SHFB • SBFS • SBFB ➡K160 • 164 | | |
|---|---|---|---|
| | HY-NBH-OH | HY-NBH | NBH |
| Holder | NEW  ➡K157 STICK DUO HYPER with Coolant through |  ➡K159 STICK DUO HYPER |  ➡K162 |
| Min. Bore Dia. | ϕ.079"(2.0mm) | | |

| | Holder / Insert | HY-NBH-OH | HY-NBH | NBH |
|---|---|---|---|---|
| | | 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** |

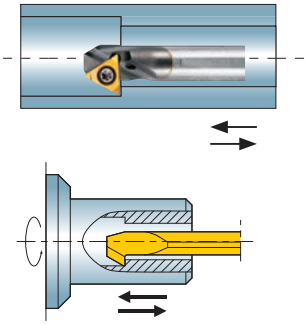


| Insert | MBL ➡K171 | | ERGP ➡K172 | |
|---|---|---|---|---|
| | C-MBR (Carbide shank) | S-MBR (Steel shank) | C-SEXR (Carbide shank) | S-SEXR (Steel shank) |
| Holder |  ➡K171 Coolant through |  ➡K171 Coolant through |  ➡K172 Coolant through |  ➡K172 Coolant through |
| Min. Bore Dia. | ϕ.197"(5.0mm) | | ϕ.236"(6.0mm) | |



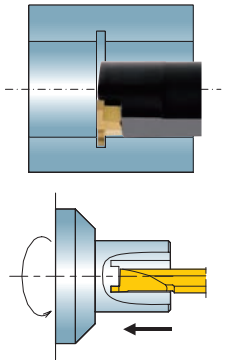
| Insert | CC/CP ➡K173・174 | | TC/TP ➡K178 | |
|---|---|---|---|---|
| Holder | C-SCLC/P (Carbide shank) | S-SCLC/P (Steel shank) | C-STUC/P (Carbide shank) | S-STUC/P (Steel shank) |
| | Coolant through ➡K173・174 | Coolant through ➡K173・174 | ➡K178 Coolant through | ➡K178 Coolant through |
| Min. Bore Dia. | ϕ.276"(7.0mm) | | ϕ.315"(8.0mm) | |

## ID Back Turning



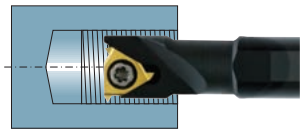
| Insert | NEW SBB ➡K165 | | TC/TP ➡K178 |
|---|---|---|---|
| Holder | HY-NBH-OH | NBH | C-STZP/C (Carbide shank) |
| | NEW ➡K157 Coolant through | ➡K162 | ➡K178 |
| Min. Bore Dia. | ϕ.118"(3.0mm) | | ϕ.394"(10mm) |

## ID Grooving



| Insert | SBG ➡K166 | | SFG ➡K166 | GTG ➡K167 |
|---|---|---|---|---|
| Holder | HY-NBH-OH | NBH | NBH | S-BGR/BGR |
| | NEW ➡K157 Coolant through | ➡K162 | ➡K162 | ➡K167 |
| Min. Bore Dia. | ϕ.118"(3.0mm) | | ϕ.118"(3.0mm) | ϕ.394"(10mm) |

## ID Threading



| Insert | SBT ➡K168 | | TMN ➡K170 |
|---|---|---|---|
| Holder | HY-NBH-OH | NBH | TGC/HN |
| | NEW ➡K157 Coolant through | ➡K162 | ➡K170 |
| Min. Bore Dia. | ϕ.118"(3.0mm) | | ϕ.315"(8.0mm) |

# Recommended Cutting Conditions

## ID Boring

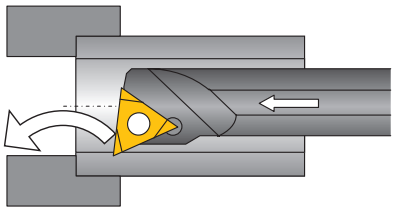
**diameter ≤ .240"**

| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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"**

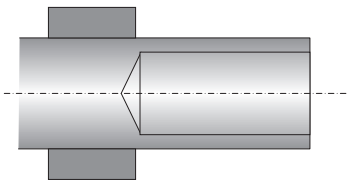
| Work Material | | High Temperature Alloys | Titanium Alloys | Cobalt Chrome Alloys | Stainless Steels | | Alloy Steels | Carbon Steels |
|---|---|---|---|---|---|---|---|---|
| | | | | | Hard to cut | Free cutting | | |
| Common Name | | Inconel<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 150 300 500<br>C7Z(X) 400 500 800 | |
| Feed Rate (IPR) | | .0008 .0024 .0047 | | | | | | |
| Depth Of Cut (DOC) | | .0039 .0197 .0787 | | | | | | |

## Through hole

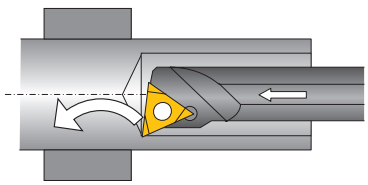


For chip control : chips can be evacuated forward

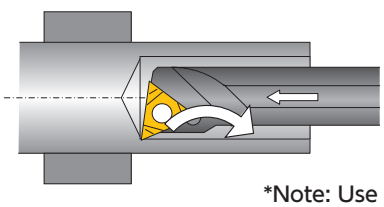
## Blind hole



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<br>Hastelloy<br>MP35N | Ti-6Al-4V | ASTM F-75 | 304<br>316<br>17-4PH | 303<br>430F | 5120<br>4137 | 1045<br>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 150 300 500<br>C7Z(X) 400 500 800 | |
| Feed Rate (IPR)<br>A. Grooving<br>B. Side turning* | Width .010-.020 | A. .0002 - .0012<br>B. .0001 - .0002 | | | | | | |
| | .020-.040 | A. .0008 - .0024<br>B. .0002 - .0004 | | | | | A. .0008 - .0028<br>B. .0002 - .0004 | |
| | .040-.080 | A. .0012 - .0028<br>B. .0008 - .0020 | | | | | A. .0012 - .0031<br>B. .0012 - .0024 | |
| | > .080 | A. .0012 - .0079<br>B. .0012 - .0024 | | | | | | |

*When side turining, 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 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 | 0.01 |

# LBM Series

Minimum bore diameter ϕ.039"(1.0㎜)-ϕ.118"(3.0㎜)

## LBMA / LBMA-S

LBMAR□□-S

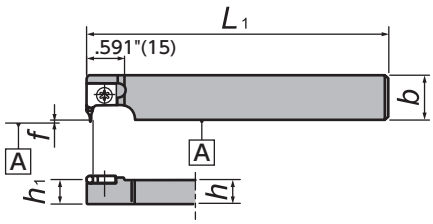



Figure-1

LBMAR□□

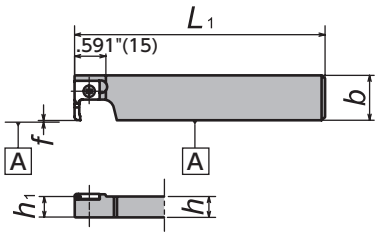



Figure-2

LBMAR□□-F

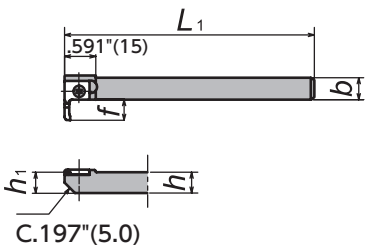



Figure-3

Right-Hand style shown

## DS-LBMB

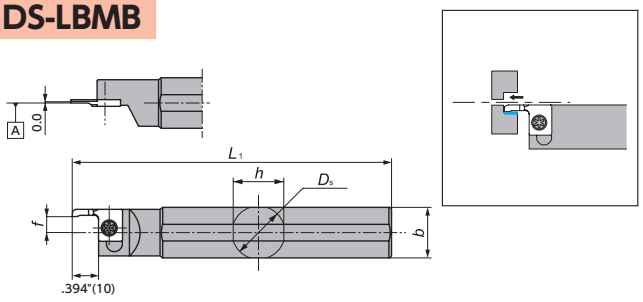



Figure-4

Left-Hand style shown

## CH-LBM

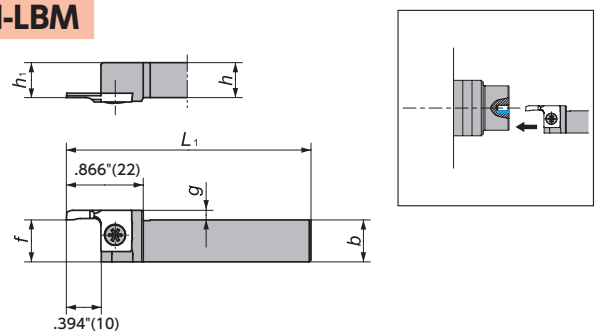



Figure-5

Left-Hand style shown

## ■LBMAR / CH-TTPL

| Gage Insert | Item Number | Figure | Stock | $D_s$ (Inch) | $D_s$ (㎜) | h (Inch) | h (㎜) | b (Inch) | b (㎜) | $h_1$ (Inch) | $h_1$ (㎜) | $L_1$ (Inch) | $L_1$ (㎜) | f (Inch) | f (㎜) | 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 |

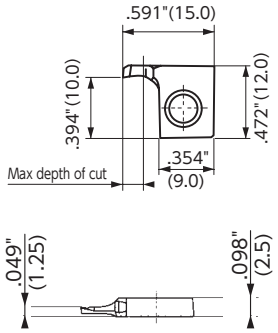
# LBM Series - Toolholders

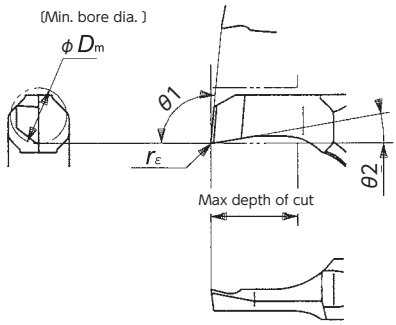
## LBMD-S

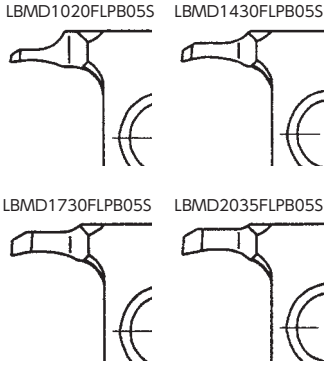
Short type

Mirror finish





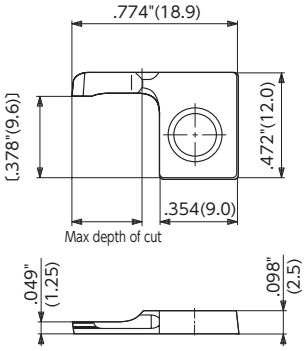

LBMD2335FLPB05S shown

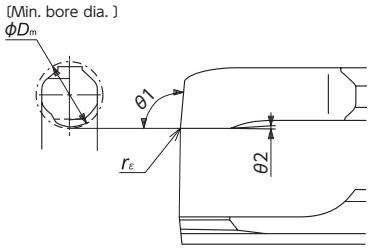
## DS-LBMB

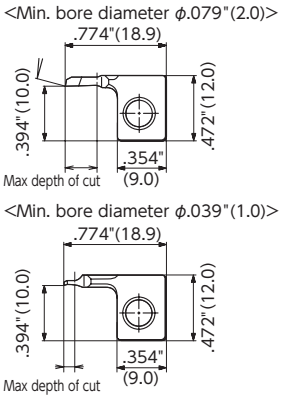
Long type

Mirror finish






Min. bore diameter ϕ.118"(3.0) shown

## LBM Mirror finish

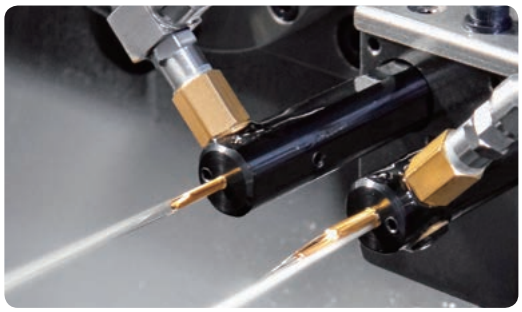
| Insert type | Item Number | | Chip-breaker | Min. Bore Dia. ϕDm (Inch) | (mm) | Max. Depth (Inch) | (mm) | θ1 | θ2 | rε (Inch) | (mm) | Coated Carbide VM1 | ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Short type | **LBMD1020FLVBS** | Ⓜ | Yes | .039 | 1.0 | .079 | 2.0 | 95° | 10° | .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 | ○ | ○ |
| | **LBM3080FLVB** | Ⓜ | Yes | .118 | 3.0 | .315 | 8.0 | 90° | 2° | .000 | 0.00 | ● | |
| | **LBM3080FLPB05** | Ⓜ | 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 Ⓜ : Mirror finish

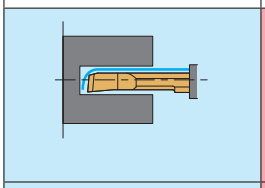
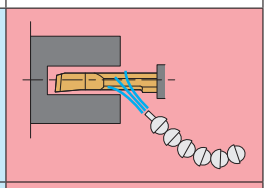
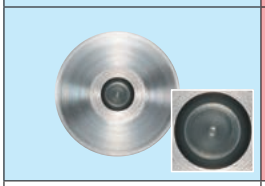
Cutting condition →K152

# STICK DUO SPLASH

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

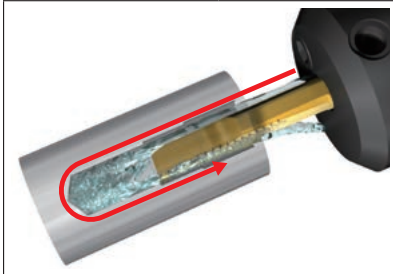
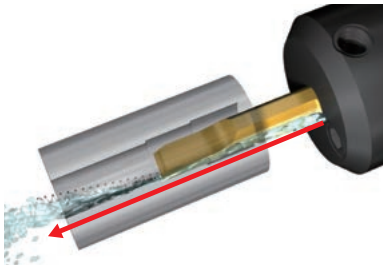
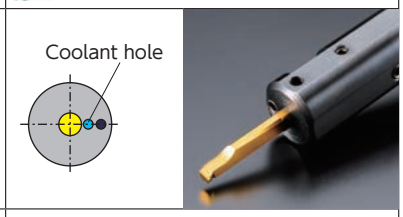
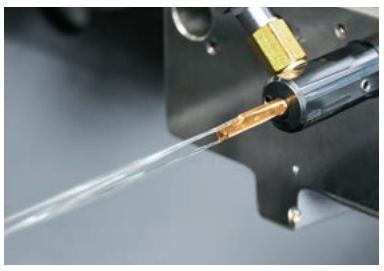
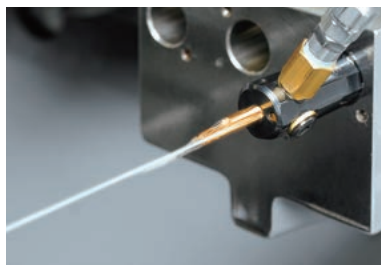


### ■No chip problems

| STICK DUO SPLASH | External coolant |
|---|---|
|  |  |
|  |  |
| *No chip inside hole* | *Chip packed* |

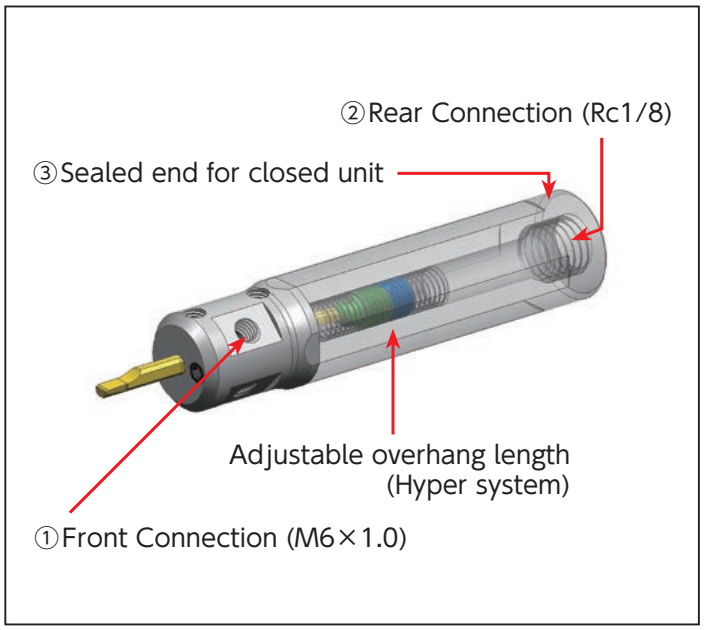
Material : 4140
Insert bar : SHFS040R005S
Hole depth : .590"(15㎜)
Pilot hole : φ.201"×1.102"L(φ5.1×28.0㎜L)
Coolant Pressure : 725psi(5MPa)

### ■Can choose 2-way coolant direct

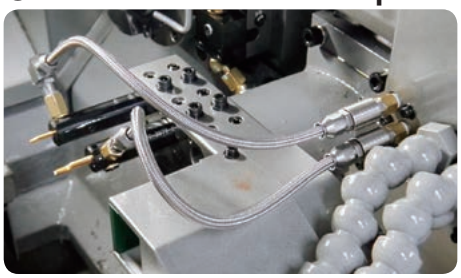
| Ⅰ) For Blind hole | Ⅱ) For Through hole |
|---|---|
|  |  |
|   |   |
|  |  |

Just rotated 180 degrees

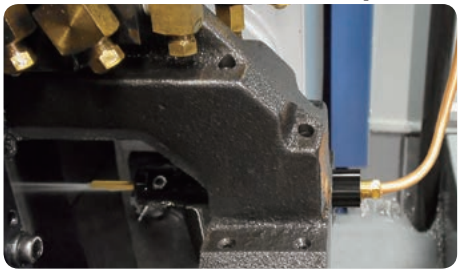
### ■3-way coolant connection




### ①Front Connection example



### ②Rear Connection example



# SPLASH DUO - Stick Duo Hyper with Coolant through -

## HY-NBH-OH (Coolant through)

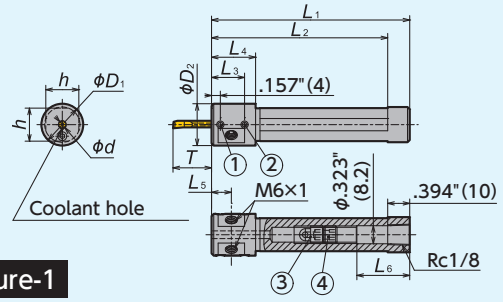



Figure-1

## HY-NBH-OH (Coolant through)

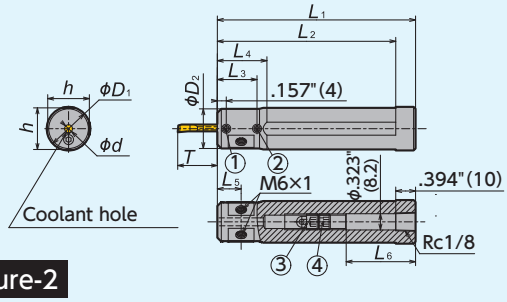
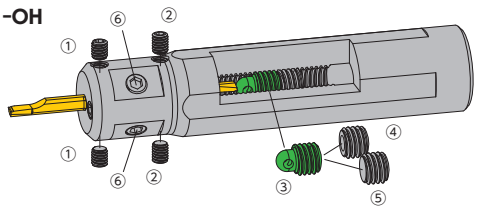



Figure-2

| Item Number | Stock | Figure | φ d | | φD1 | | φD2 | h | L1 | L2 | L3 | L4 | L5 | L6 | Overhang Length of Bar T | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Min. | | Max. | |
| | | | (Inch) | (mm) | (Inch) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (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 |
| | SS0606SC | | LW-2 | LW-4×104 | LW-3 |




● : Stock　　💧 : Coolant through

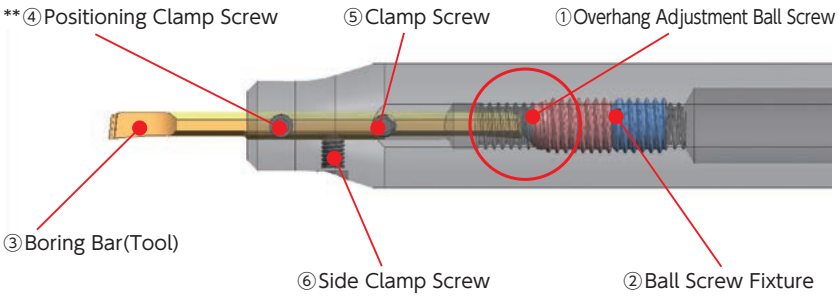
Insert bars ➡K160

# STICK DUO HYPER

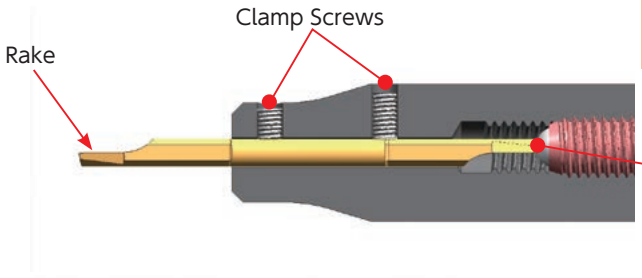
## - Sleeves for ID Boring with Adjustable Overhang Mechanism -



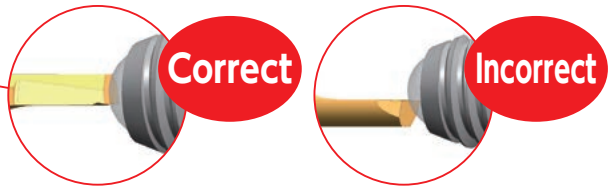
### ■Can Index boring bars like inserts

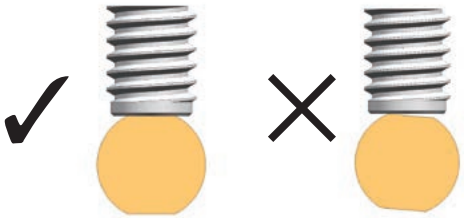



### ■Installation Procedure for STICK DUO Hyper




Caution: Improper installation dramatically increases the chance of chipping cutting edge

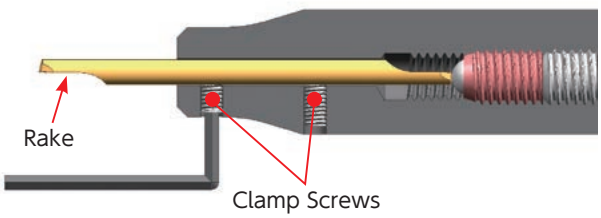


Improper clamping of boring bar causes unstable centerline height and offset

①Position the overhang adjustment ball screw to determine overhang amount
②Slide the ball screw fixture to secure the ball screw location
③Insert a boring bar (tool)
Note: Make sure to insert the boring bar correctly so that the rake faces is toward the side where the clamp screws are located
④Secure 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 flat surface of the bar makes proper contacts with clamp screws
⑤Secure the boring bar by tightening the remaining clamp screws ▶Recommended Clamping Torque:17.7 lb in
⑥Even if 4 and 5 cannot be performed due to tool clearance and layout, the tool can be used by only securing the side clamp screw
Once the initial setup is complete, repeat the above procedures 3 thru 5 for each index

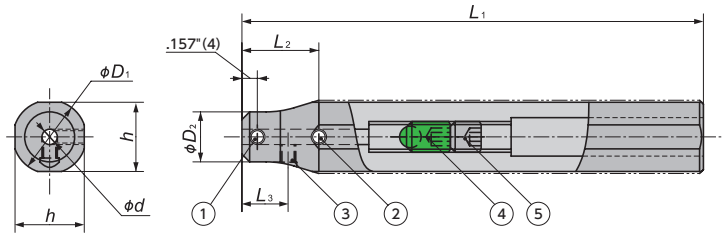
### ■When the tool is installed upside down




Toolholder must be installed so that clamp screws and rake of the tool face toward the same side

# STICK DUO HYPER

## HY-NBH




Please refer to φd to find correct-size inserts (bars)

| Item Number | Stock | φd (Inch) | φd (mm) | φD1 (Inch) | φD1 (mm) | φD2 (mm) | h (mm) | L1 (mm) | L2 (mm) | L3 (mm) | Clamp Screws 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 ④ | Overhang Adjustment ⑤ | Wrench for ①②③ | Wrench for ④⑤ |
|---|---|---|---|---|
| **HY-NBH ... K** | SS0812R | SS0808F | LW-2 | LW-4×104 |

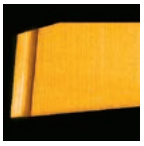
● : Stock　　○ : 1-2 week delivery

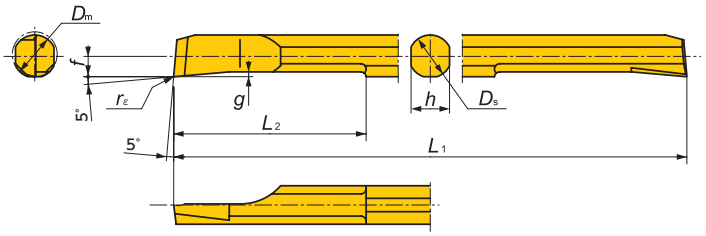
Insert bars ➡K160

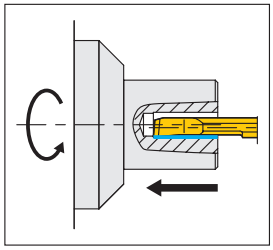
# Bars for STICK DUO SPLASH / STICK DUO HYPER

## SHFS-S type (for ID Boring)

Minimum Bore Diameter .087" (2.2㎜)

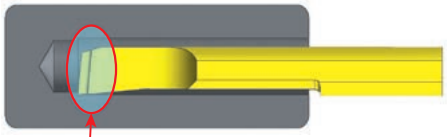




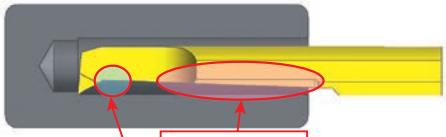
| Item Number | Ds (Inch) | Ds (㎜) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (㎜) | L1 (㎜) | L2 (㎜) | f (㎜) | h (㎜) | g (㎜) | rε (Inch) | rε (㎜) | Chipbreaker | Coated Carbide TM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHFS020R005S | .079 | 2 | .087 | 2.2 | 50 | 10 | 0.9 | 1.8 | 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



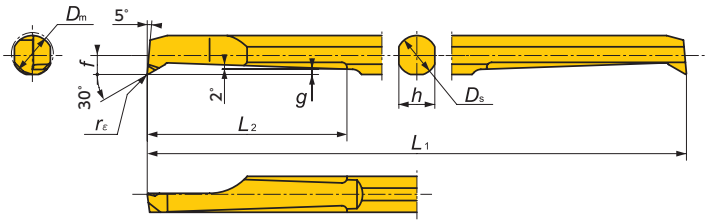
Back taper

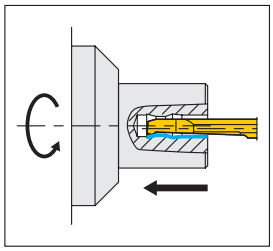
Wide area of chippocket

## SHFB-F type (for ID Boring)

Minimum Bore Diameter .087" (2.2㎜)





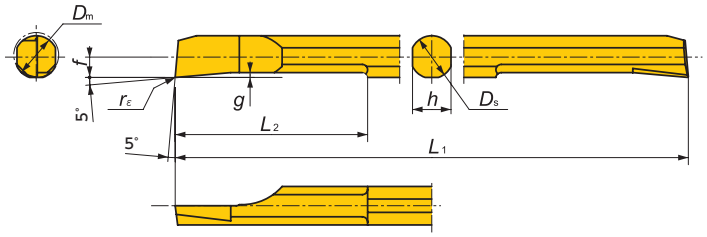



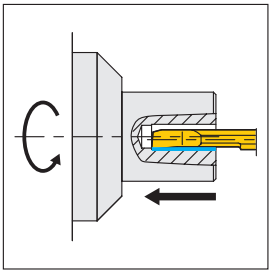
Evacuate chips backward

| Item Number | Ds (Inch) | Ds (㎜) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (㎜) | L1 (㎜) | L2 (㎜) | f (㎜) | h (㎜) | g (㎜) | rε (Inch) | rε (㎜) | Chipbreaker | Coated Carbide TM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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" (2.2㎜)



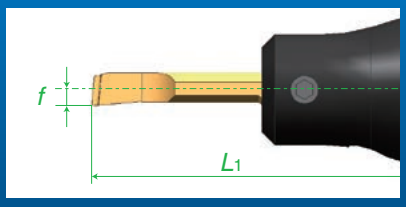


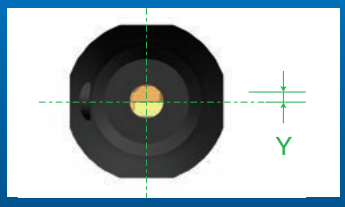
Mirror finish

| Item Number | Ds (Inch) | Ds (㎜) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (㎜) | L1 (㎜) | L2 (㎜) | f (㎜) | h (㎜) | g (㎜) | rε (Inch) | rε (㎜) | Chipbreaker | Coated Carbide TM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SHFS020R005H** Ⓜ | .079 | 2 | **.087** | **2.2** | 50 | 10 | 0.9 | 1.8 | 0.25 | .002 | 0.05 | None | ● |
| **SHFS025R005H** Ⓜ | .098 | 2.5 | **.106** | **2.7** | 50 | 12.5 | 1.15 | 2.3 | 0.30 | .002 | 0.05 | None | ● |
| **SHFS025R015H** Ⓜ | .098 | 2.5 | **.106** | **2.7** | 50 | 12.5 | 1.15 | 2.3 | 0.30 | .006 | 0.15 | None | ● |
| **SHFS030R005H** Ⓜ | .118 | 3 | **.126** | **3.2** | 50 | 15 | 1.4 | 2.7 | 0.40 | .002 | 0.05 | None | ● |
| **SHFS030R015H** Ⓜ | .118 | 3 | **.126** | **3.2** | 50 | 15 | 1.4 | 2.7 | 0.40 | .006 | 0.15 | None | ● |
| **SHFS035R005H** Ⓜ | .138 | 3.5 | **.146** | **3.7** | 60 | 17.5 | 1.65 | 3.2 | 0.40 | .002 | 0.05 | None | ● |
| **SHFS035R015H** Ⓜ | .138 | 3.5 | **.146** | **3.7** | 60 | 17.5 | 1.65 | 3.2 | 0.40 | .006 | 0.15 | None | ● |
| **SHFS040R005H** Ⓜ | .157 | 4 | **.165** | **4.2** | 60 | 20 | 1.9 | 3.6 | 0.45 | .002 | 0.05 | None | ● |
| **SHFS040R015H** Ⓜ | .157 | 4 | **.165** | **4.2** | 60 | 20 | 1.9 | 3.6 | 0.45 | .006 | 0.15 | None | ● |
| **SHFS050R005H** Ⓜ | .197 | 5 | **.205** | **5.2** | 70 | 25 | 2.4 | 4.5 | 0.50 | .002 | 0.05 | None | ● |
| **SHFS050R015H** Ⓜ | .197 | 5 | **.205** | **5.2** | 70 | 25 | 2.4 | 4.5 | 0.50 | .006 | 0.15 | None | ● |

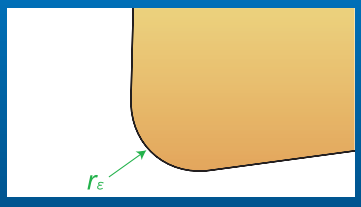
## ■Tolerance of SHFS-S/SHFB-F/SHFS-H bars




Offset $f$ : ±.0006"
Tool Length $L_1$ : ±.0008"

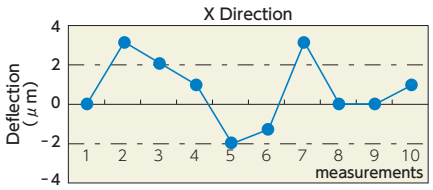


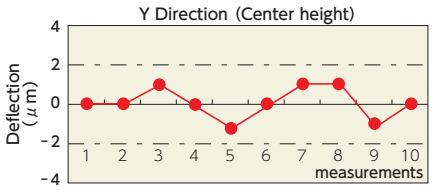

Centerline Y : +.002"/−.000"

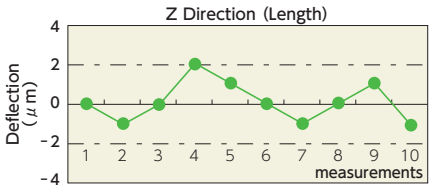



Corner r ε : ±.0006"

## ■Repeatability of (STICK DUO SPLASH / STICK DUO Hyper) with (SHFS / SHFB) bars



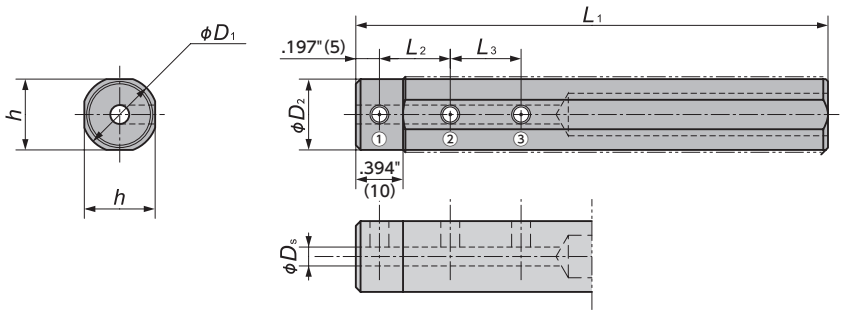




● : Stock ○ : 1-2 week delivery Ⓜ : Mirror finish

Sleeves ➡K157 • 159 Cutting condition ➡K152

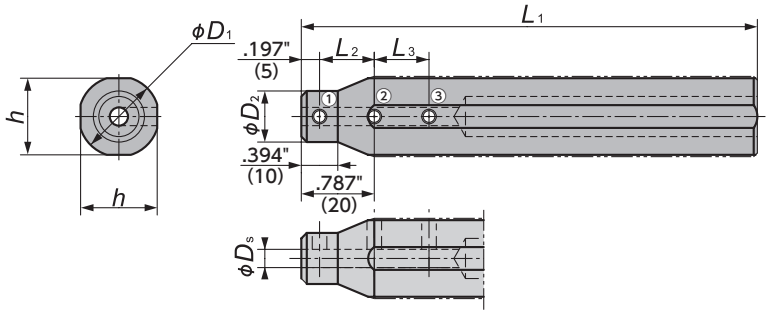
# STICK DUO - Sleeves for ID machining -

## NBH




| Item number | Stock | ϕDs (Inch) | ϕDs (mm) | ϕD1 (Inch) | ϕD1 (mm) | ϕD2 (mm) | h (mm) | L1 (mm) | L2 (mm) | L3 (mm) | Clamp screw ① | Clamp screw ② | Clamp screw ③ | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NBH02015H** | ○ | .079 | 2.0 | **5/8** | | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH02515H** | ○ | .098 | 2.5 | **5/8** | | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH03015H** | ○ | .118 | 3.0 | **5/8** | | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH03515H** | ○ | .138 | 3.5 | **5/8** | | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04015H** | ○ | .157 | 4.0 | **5/8** | | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04515H** | ○ | .177 | 4.5 | **5/8** | | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH05015H** | ○ | .197 | 5.0 | **5/8** | | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH06015H** | ○ | .236 | 6.0 | **5/8** | | 15 | 15 | 100 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH08015H** | ○ | .315 | 8.0 | **5/8** | | 15 | 15 | 100 | 20 | 20 | SS0403F | SS0403F | SS0403F | LW-2 |
| **NBH02016H** | ○ | .079 | 2.0 | **.630** | **16** | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH02516H** | ○ | .098 | 2.5 | **.630** | **16** | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH03016H** | ○ | .118 | 3.0 | **.630** | **16** | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH03516H** | ○ | .138 | 3.5 | **.630** | **16** | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04016H** | ○ | .157 | 4.0 | **.630** | **16** | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04516H** | ○ | .177 | 4.5 | **.630** | **16** | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH05016H** | ○ | .197 | 5.0 | **.630** | **16** | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH06016H** | ○ | .236 | 6.0 | **.630** | **16** | 15 | 15 | 100 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH07016H** | ○ | .276 | 7.0 | **.630** | **16** | 15 | 15 | 100 | 20 | 20 | SS0403F | SS0404F | SS0404F | LW-2 |
| **NBH08016H** | ○ | .315 | 8.0 | **.630** | **16** | 15 | 15 | 100 | 20 | 20 | SS0403F | SS0403F | SS0403F | LW-2 |
| **NBH02019K** | ○ | .079 | 2.0 | **3/4** | | 18 | 18 | 125 | 10 | — | SS0408F | SS0408F | — | LW-2 |
| **NBH02519K** | ○ | .098 | 2.5 | **3/4** | | 18 | 18 | 125 | 10 | — | SS0408F | SS0408F | — | LW-2 |
| **NBH03019K** | ○ | .118 | 3.0 | **3/4** | | 18 | 18 | 125 | 10 | 10 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH03519K** | ○ | .138 | 3.5 | **3/4** | | 18 | 18 | 125 | 10 | 10 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH04019K** | ○ | .157 | 4.0 | **3/4** | | 18 | 18 | 125 | 15 | 15 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH04519K** | ○ | .177 | 4.5 | **3/4** | | 18 | 18 | 125 | 15 | 15 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH05019K** | ○ | .197 | 5.0 | **3/4** | | 18 | 18 | 125 | 15 | 15 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH06019K** | ○ | .236 | 6.0 | **3/4** | | 18 | 18 | 125 | 20 | 20 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH07019K** | ○ | .276 | 7.0 | **3/4** | | 18 | 18 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH08019K** | ○ | .315 | 8.0 | **3/4** | | 18 | 18 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH10019K** | ○ | .394 | 10.0 | **3/4** | | 18 | 18 | 125 | 20 | 20 | SS0403F | SS0404F | SS0404F | LW-2 |

## NBH

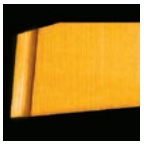


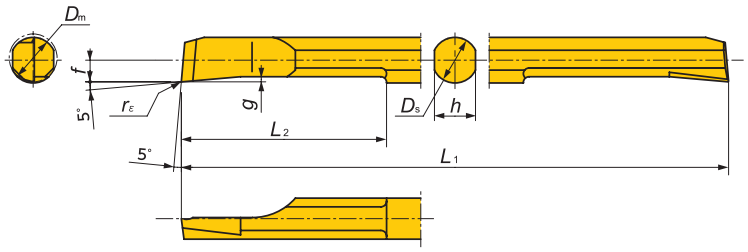

| Item number | Stock | $\phi D_s$ (Inch) | $\phi D_s$ (mm) | $\phi D_1$ (Inch) | $\phi D_1$ (mm) | $\phi D_2$ (mm) | $h_1$ (mm) | $L_1$ (mm) | $L_2$ (mm) | $L_3$ (mm) | Clamp screw ① | Clamp screw ② | Clamp screw ③ | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NBH02020K** | ○ | .079 | 2.0 | .787 | 20 | 11 | 19 | 125 | 10 | — | SS0404F | SS0404F | — | LW-2 |
| **NBH02520K** | ○ | .098 | 2.5 | .787 | 20 | 11 | 19 | 125 | 10 | — | SS0404F | SS0404F | — | LW-2 |
| **NBH03020K** | ○ | .118 | 3.0 | .787 | 20 | 12 | 19 | 125 | 10 | 10 | SS0404F | SS0404F | SS0406F | LW-2 |
| **NBH03520K** | ○ | .138 | 3.5 | .787 | 20 | 12 | 19 | 125 | 10 | 10 | SS0404F | SS0404F | SS0406F | LW-2 |
| **NBH04020K** | ○ | .157 | 4.0 | .787 | 20 | 13 | 19 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH04520K** | ○ | .177 | 4.5 | .787 | 20 | 13 | 19 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH05020K** | ○ | .197 | 5.0 | .787 | 20 | 14 | 19 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH06020K** | ○ | .236 | 6.0 | .787 | 20 | 15 | 19 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH07020K** | ○ | .276 | 7.0 | .787 | 20 | 16 | 19 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH08020K** | ○ | .315 | 8.0 | .787 | 20 | 17 | 19 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH10020K** | ○ | .394 | 10.0 | .787 | 20 | 19 | 19 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH02022K** | ○ | .079 | 2.0 | .866 | 22 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH02522K** | ○ | .098 | 2.5 | .866 | 22 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH03022K** | ○ | .118 | 3.0 | .866 | 22 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| **NBH03522K** | ○ | .138 | 3.5 | .866 | 22 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH04022K** | ○ | .157 | 4.0 | .866 | 22 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH04522K** | ○ | .177 | 4.5 | .866 | 22 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH05022K** | ○ | .197 | 5.0 | .866 | 22 | 14 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH06022K** | ○ | .236 | 6.0 | .866 | 22 | 15 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH07022K** | ○ | .276 | 7.0 | .866 | 22 | 16 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH08022K** | ○ | .315 | 8.0 | .866 | 22 | 17 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH10022K** | ○ | .394 | 10.0 | .866 | 22 | 19 | 21 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH12022K** | ○ | .472 | 12.0 | .866 | 22 | 21 | 21 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH02023K** | ○ | .079 | 2.0 | .906 | 23 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH02523K** | ○ | .098 | 2.5 | .906 | 23 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH03023K** | ○ | .118 | 3.0 | .906 | 23 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| **NBH03523K** | ○ | .138 | 3.5 | .906 | 23 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH04023K** | ○ | .157 | 4.0 | .906 | 23 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH04523K** | ○ | .177 | 4.5 | .906 | 23 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH05023K** | ○ | .197 | 5.0 | .906 | 23 | 14 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH06023K** | ○ | .236 | 6.0 | .906 | 23 | 15 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH08023K** | ○ | .315 | 8.0 | .906 | 23 | 17 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH10023K** | ○ | .394 | 10.0 | .906 | 23 | 19 | 21 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH12023K** | ○ | .472 | 12.0 | .906 | 23 | 21 | 21 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH02025K-MET** | ○ | .079 | 2.0 | .984 | 25 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH02525K-MET** | ○ | .098 | 2.5 | .984 | 25 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH03025K-MET** | ○ | .118 | 3.0 | .984 | 25 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| **NBH03525K-MET** | ○ | .138 | 3.5 | .984 | 25 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| **NBH04025K-MET** | ○ | .157 | 4.0 | .984 | 25 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH04525K-MET** | ○ | .177 | 4.5 | .984 | 25 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH05025K-MET** | ○ | .197 | 5.0 | .984 | 25 | 14 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH06025K-MET** | ○ | .236 | 6.0 | .984 | 25 | 15 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH07025K-MET** | ○ | .276 | 7.0 | .984 | 25 | 16 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH08025K-MET** | ○ | .315 | 8.0 | .984 | 25 | 17 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH10025K-MET** | ○ | .394 | 10.0 | .984 | 25 | 19 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH12025K-MET** | ○ | .472 | 12.0 | .984 | 25 | 21 | 24 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH02025K** | ○ | .079 | 2.0 | 1 | 25.4 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH02525K** | ○ | .098 | 2.5 | 1 | 25.4 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| **NBH03025K** | ○ | .118 | 3.0 | 1 | 25.4 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| **NBH03525K** | ○ | .138 | 3.5 | 1 | 25.4 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| **NBH04025K** | ○ | .157 | 4.0 | 1 | 25.4 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH04525K** | ○ | .177 | 4.5 | 1 | 25.4 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH05025K** | ○ | .197 | 5.0 | 1 | 25.4 | 14 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH06025K** | ○ | .236 | 6.0 | 1 | 25.4 | 15 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH07025K** | ○ | .276 | 7.0 | 1 | 25.4 | 16 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| **NBH08025K** | ○ | .315 | 8.0 | 1 | 25.4 | 17 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH10025K** | ○ | .394 | 10.0 | 1 | 25.4 | 19 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| **NBH12025K** | ○ | .472 | 12.0 | 1 | 25.4 | 21 | 24 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |

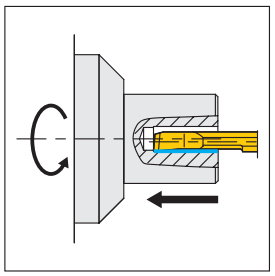
○ : 1-2 week delivery

Insert bars ➡K164

## SBFS-S type (for ID Boring) Minimum Bore Diameter .087" (2.2㎜)



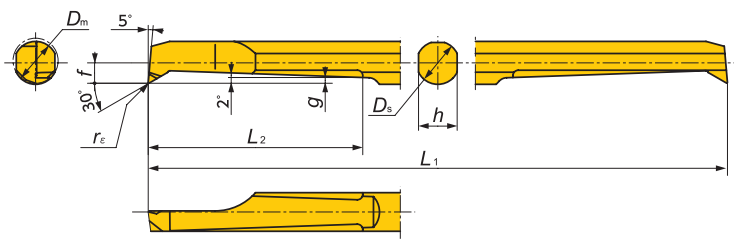


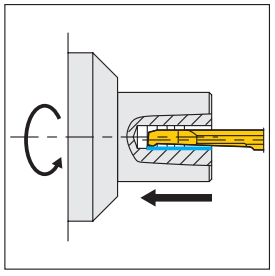



| Item Number | Ds (Inch) | Ds (㎜) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (㎜) | L1 (㎜) | L2 (㎜) | f (㎜) | h (㎜) | g (㎜) | rε (Inch) | rε (㎜) | Chipbreaker | Coated Carbide DT4 | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SBFS020R005S | .079 | 2 | .087 | 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" (2.2㎜)





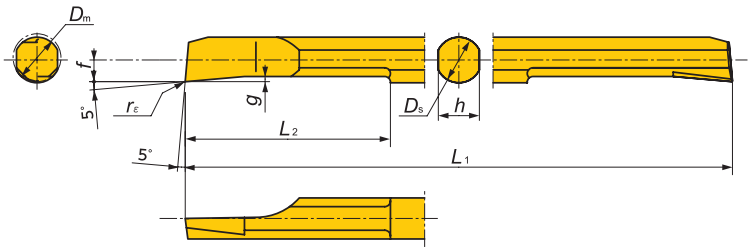



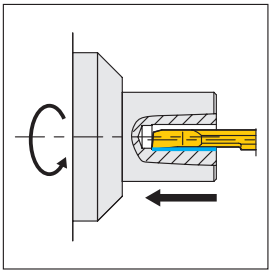
**Evacuate chips backward**

| Item Number | Ds (Inch) | Ds (㎜) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (㎜) | L1 (㎜) | L2 (㎜) | f (㎜) | h (㎜) | g (㎜) | rε (Inch) | rε (㎜) | Chipbreaker | Coated Carbide DT4 | Coated Carbide 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" (2.2㎜)





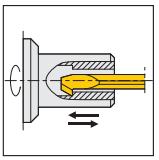
Mirror finish

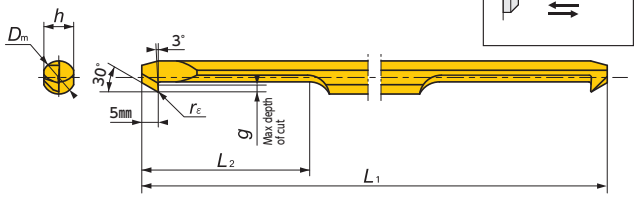
| Item Number | Ds (Inch) | Ds (㎜) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (㎜) | L1 (㎜) | L2 (㎜) | f (㎜) | h (㎜) | g (㎜) | rε (Inch) | rε (㎜) | Chipbreaker | Coated Carbide DT4 | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SBFS020R005H Ⓜ | .079 | 2 | .087 | 2.2 | 50 | 10 | 0.9 | 1.8 | 0.25 | .002 | 0.05 | None | | ○ |
| SBFS025R005H Ⓜ | .098 | 2.5 | .106 | 2.7 | 50 | 12.5 | 1.15 | 2.3 | 0.30 | .002 | 0.05 | None | | ○ |
| SBFS025R015H Ⓜ | .098 | 2.5 | .106 | 2.7 | 50 | 12.5 | 1.15 | 2.3 | 0.30 | .006 | 0.15 | None | | ○ |
| SBFS030R005H Ⓜ | .118 | 3 | .126 | 3.2 | 50 | 15 | 1.4 | 2.7 | 0.40 | .002 | 0.05 | None | | ○ |
| SBFS030R015H Ⓜ | .118 | 3 | .126 | 3.2 | 50 | 15 | 1.4 | 2.7 | 0.40 | .006 | 0.15 | None | | ○ |
| SBFS035R005H Ⓜ | .138 | 3.5 | .146 | 3.7 | 60 | 17.5 | 1.65 | 3.2 | 0.40 | .002 | 0.05 | None | | ○ |
| SBFS035R015H Ⓜ | .138 | 3.5 | .146 | 3.7 | 60 | 17.5 | 1.65 | 3.2 | 0.40 | .006 | 0.15 | None | | ○ |
| SBFS040R005H Ⓜ | .157 | 4 | .165 | 4.2 | 60 | 20 | 1.9 | 3.6 | 0.45 | .002 | 0.05 | None | | ○ |
| SBFS040R015H Ⓜ | .157 | 4 | .165 | 4.2 | 60 | 20 | 1.9 | 3.6 | 0.45 | .006 | 0.15 | None | | ○ |
| SBFS050R005H Ⓜ | .197 | 5 | .205 | 5.2 | 70 | 25 | 2.4 | 4.5 | 0.50 | .002 | 0.05 | None | | ○ |
| SBFS050R015H Ⓜ | .197 | 5 | .205 | 5.2 | 70 | 25 | 2.4 | 4.5 | 0.50 | .006 | 0.15 | None | | ○ |
| SBFS060R005H Ⓜ | .236 | 6 | .244 | 6.2 | 80 | 30 | 2.9 | 5.4 | 0.60 | .002 | 0.05 | None | | ○ |
| SBFS060R015H Ⓜ | .236 | 6 | .244 | 6.2 | 80 | 30 | 2.9 | 5.4 | 0.60 | .006 | 0.15 | None | | ○ |
| SBFS080R005H Ⓜ | .315 | 8 | .323 | 8.2 | 80 | 30 | 3.9 | 7.3 | 0.80 | .002 | 0.05 | None | | ○ |
| SBFS080R015H Ⓜ | .315 | 8 | .323 | 8.2 | 80 | 30 | 3.9 | 7.3 | 0.80 | .006 | 0.15 | None | | ○ |

# SBB Series ID Back turning

## SBB-S type (for ID Back turning)

Minimum Bore Diameter .118" (3.0㎜)

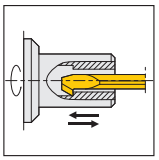


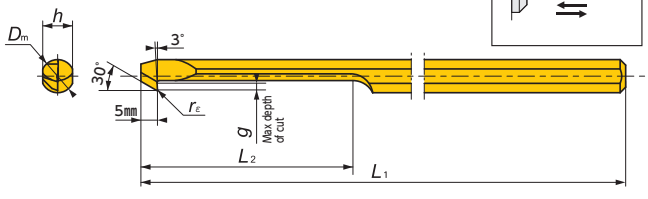



Short type
two-sided

## SBB type (for ID Back turning)

Minimum Bore Diameter .118" (3.0㎜)






Long type
single-sided

| | Item Number | Ds (Inch) | Ds (㎜) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (㎜) | L1 (㎜) | L2 (㎜) | f (㎜) | h (㎜) | g (㎜) | rε (Inch) | rε (㎜) | Chipbreaker | No. of edge | Coated Carbide 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  Ⓜ : Mirror finish

Sleeves ➡K157 • 162  Cutting condition ➡K152

# SBG / SFG Series ID Grooving

## SBG (for ID Grooving)

Minimum Bore Diameter .118" (3.0mm)

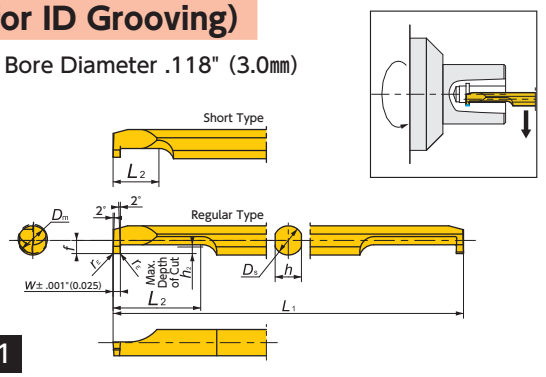



Figure-1

## SFG (for ID Face Grooving)

Minimum Bore Diameter .236" (6.0mm)

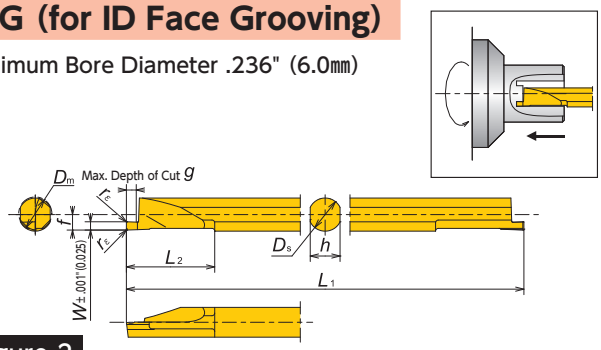



Figure-2

## SBG

| | Item Number | Groove width W (Inch) | Groove width W (mm) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (mm) | Ds (Inch) | Ds (mm) | L1 (mm) | L2 (mm) | f (mm) | h (mm) | h2 (mm) | rε (Inch) | rε (mm) | Chip-breaker | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Regular type | SBG030050RB | .020 | 0.50 | .118 | 3 | .118 | 3 | 50 | 9 | 1.3 | 2.7 | 0.8 | .002 | 0.05 | Yes | ● |
| | SBG030075RB | .030 | 0.75 | .118 | 3 | .118 | 3 | 50 | 9 | 1.3 | 2.7 | 0.8 | .002 | 0.05 | Yes | ● |
| | SBG030100RB | .039 | 1.00 | .118 | 3 | .118 | 3 | 50 | 9 | 1.3 | 2.7 | 0.8 | .002 | 0.05 | Yes | ● |
| | SBG040050RB | .020 | 0.50 | .157 | 4 | .157 | 4 | 60 | 12 | 1.8 | 3.6 | 1.0 | .002 | 0.05 | Yes | ● |
| | SBG040075RB | .030 | 0.75 | .157 | 4 | .157 | 4 | 60 | 12 | 1.8 | 3.6 | 1.0 | .002 | 0.05 | Yes | ● |
| | SBG040100RB | .039 | 1.00 | .157 | 4 | .157 | 4 | 60 | 12 | 1.8 | 3.6 | 1.0 | .002 | 0.05 | Yes | ● |
| | SBG050050RB | .020 | 0.50 | .197 | 5 | .197 | 5 | 70 | 20 | 2.3 | 4.5 | 1.2 | .002 | 0.05 | Yes | ● |
| | SBG050100RB | .039 | 1.00 | .197 | 5 | .197 | 5 | 70 | 20 | 2.3 | 4.5 | 1.2 | .002 | 0.05 | Yes | ● |
| | SBG050150RB | .059 | 1.50 | .197 | 5 | .197 | 5 | 70 | 20 | 2.3 | 4.5 | 1.2 | .002 | 0.05 | Yes | ● |
| | SBG060100RB | .039 | 1.00 | .236 | 6 | .236 | 6 | 80 | 20 | 2.8 | 5.4 | 1.8 | .002 | 0.05 | Yes | ● |
| | SBG060150RB | .059 | 1.50 | .236 | 6 | .236 | 6 | 80 | 20 | 2.8 | 5.4 | 1.8 | .002 | 0.05 | Yes | ● |
| | SBG060200RB | .079 | 2.00 | .236 | 6 | .236 | 6 | 80 | 20 | 2.8 | 5.4 | 1.8 | .002 | 0.05 | Yes | ● |
| | 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 | ● |
| Short type | SBG030050RB-S | .020 | 0.50 | .118 | 3 | .118 | 3 | 50 | 4.5 | 1.3 | 2.7 | 0.8 | .002 | 0.05 | Yes | ● |
| | SBG030075RB-S | .030 | 0.75 | .118 | 3 | .118 | 3 | 50 | 4.5 | 1.3 | 2.7 | 0.8 | .002 | 0.05 | Yes | ○ |
| | SBG030100RB-S | .039 | 1.00 | .118 | 3 | .118 | 3 | 50 | 4.5 | 1.3 | 2.7 | 0.8 | .002 | 0.05 | Yes | ○ |
| | SBG030150RB-S | .059 | 1.50 | .118 | 3 | .118 | 3 | 50 | 4.5 | 1.3 | 2.7 | 0.8 | .002 | 0.05 | Yes | ○ |
| | SBG040050RB-S | .020 | 0.50 | .157 | 4 | .157 | 4 | 60 | 6 | 1.8 | 3.6 | 1.0 | .002 | 0.05 | Yes | ○ |
| | SBG040075RB-S | .030 | 0.75 | .157 | 4 | .157 | 4 | 60 | 6 | 1.8 | 3.6 | 1.0 | .002 | 0.05 | Yes | ○ |
| | SBG040100RB-S | .039 | 1.00 | .157 | 4 | .157 | 4 | 60 | 6 | 1.8 | 3.6 | 1.0 | .002 | 0.05 | Yes | ○ |
| | SBG040150RB-S | .059 | 1.50 | .157 | 4 | .157 | 4 | 60 | 6 | 1.8 | 3.6 | 1.0 | .002 | 0.05 | Yes | ○ |
| | SBG050050RB-S | .020 | 0.50 | .197 | 5 | .197 | 5 | 70 | 7.5 | 2.3 | 4.5 | 1.2 | .002 | 0.05 | Yes | ○ |
| | SBG050100RB-S | .039 | 1.00 | .197 | 5 | .197 | 5 | 70 | 7.5 | 2.3 | 4.5 | 1.2 | .002 | 0.05 | Yes | ○ |
| | SBG050150RB-S | .059 | 1.50 | .197 | 5 | .197 | 5 | 70 | 7.5 | 2.3 | 4.5 | 1.2 | .002 | 0.05 | Yes | ○ |
| | SBG050200RB-S | .079 | 2.00 | .197 | 5 | .197 | 5 | 70 | 7.5 | 2.3 | 4.5 | 1.2 | .002 | 0.05 | Yes | ○ |
| | SBG060100RB-S | .039 | 1.00 | .236 | 6 | .236 | 6 | 80 | 7.5 | 2.8 | 5.4 | 1.8 | .002 | 0.05 | Yes | ○ |
| | SBG060150RB-S | .059 | 1.50 | .236 | 6 | .236 | 6 | 80 | 7.5 | 2.8 | 5.4 | 1.8 | .002 | 0.05 | Yes | ○ |
| | SBG060200RB-S | .079 | 2.00 | .236 | 6 | .236 | 6 | 80 | 7.5 | 2.8 | 5.4 | 1.8 | .002 | 0.05 | Yes | ○ |
| | SBG080100RB-S | .039 | 1.00 | .315 | 8 | .315 | 8 | 80 | 8.5 | 3.8 | 7.3 | 2.2 | .002 | 0.05 | Yes | ○ |
| | SBG080150RB-S | .059 | 1.50 | .315 | 8 | .315 | 8 | 80 | 8.5 | 3.8 | 7.3 | 2.2 | .002 | 0.05 | Yes | ○ |
| | SBG080200RB-S | .079 | 2.00 | .315 | 8 | .315 | 8 | 80 | 8.5 | 3.8 | 7.3 | 2.2 | .002 | 0.05 | Yes | ○ |

## SFG

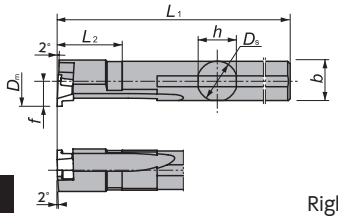
| Item Number | Groove width W (Inch) | Groove width W (mm) | Min Bore Dia. Dm (Inch) | Min Bore Dia. Dm (mm) | Ds (Inch) | Ds (mm) | L1 (mm) | L2 (mm) | f (mm) | h (mm) | g (mm) | rε (Inch) | rε (mm) | Chip-breaker | Coated Carbide TM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ○ |

Sleeves ➡K157 • 162

# BG Series - Toolholders

## S-BG (Takes Left-Hand Insert)

Minimum Bore Diameter .394"(10.0㎜)



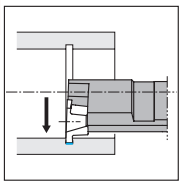
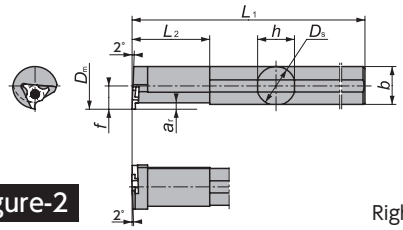



Figure-1

Right-Hand style shown

## BG (Takes Left-Hand Insert)

Minimum Bore Diameter .394"(10.0㎜)



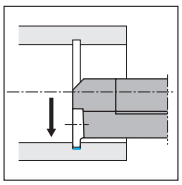



Figure-2

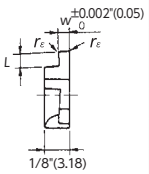
Right-Hand style shown

### ■S08H-BG / S10K-BG / BG

| Gage Insert | Item Number | Figure | Stock R | Stock L | Min. Bore Dia. $D_m$ (Inch) | Min. Bore Dia. $D_m$ (㎜) | Max. Depth Of Cut. $a_r$ (Inch) | Max. Depth Of Cut. $a_r$ (㎜) | $D_s$ (Inch) | $D_s$ (㎜) | $h$ (Inch) | $h$ (㎜) | $b$ (Inch) | $b$ (㎜) | $L_1$ (Inch) | $L_1$ (㎜) | $f$ (Inch) | $f$ (㎜) | $L_2$ (Inch) | $L_2$ (㎜) | Groove width covered $w$ (Inch) | Groove width covered $w$ (㎜) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  GTG10 | S08H-BG□10D10 | 1 | ○ | | .394 | 10 | .039 | 1.0 | .315 | 8 | .303 | 7.7 | .309 | 7.85 | 4.724 | 120 | .197 | 5.0 | .787 | 20 | .020-.079 | 0.50-2.00 | LR-S-2.5×6.8 | CLR-15S |
| | S10K-BG□10D12 | 1 | ○ | | .472 | 12 | .039 | 1.0 | .394 | 10 | .378 | 9.6 | .386 | 9.8 | 4.724 | 120 | .236 | 6.0 | .984 | 25 | .020-.079 | 0.50-2.00 | LR-S-2.5×6.8 | CLR-15S |
| GTG10 | BG□08-00S | 2 | ○ | | .394 | 10 | .039 | 1.0 | .315 | 8 | .276 | 7.0 | .295 | 7.5 | 4.921 | 125 | .197 | 5.0 | .787 | 20 | .020-.079 | 0.50-2.00 | LR-S-2.5×6.8 | CLR-15S |
| | BG□08-10S | 2 | ○ | | .394 | 10 | .039 | 1.0 | .315 | 8 | .276 | 7.0 | .295 | 7.5 | 4.921 | 125 | .197 | 5.0 | .787 | 20 | .039-.079 | 1.00-2.00 | LR-S-2.5×6.8 | CLR-15S |
| | BG□10-00S | 2 | ○ | | .472 | 12 | .079 | 2.0 | .394 | 10 | .354 | 9.0 | .374 | 9.5 | 5.906 | 150 | .236 | 6.0 | .984 | 25 | .020-.079 | 0.50-2.00 | LR-S-2.5×6.8 | CLR-15S |
| | BG□10-10S | 2 | ○ | | .472 | 12 | .079 | 2.0 | .394 | 10 | .354 | 9.0 | .374 | 9.5 | 5.906 | 150 | .236 | 6.0 | .984 | 25 | .039-.079 | 1.00-2.00 | LR-S-2.5×6.8 | CLR-15S |
| GTG14 | BG□12-00S | 2 | ○ | | .551 | 14 | .079 | 2.0 | .472 | 12 | .433 | 11.0 | .453 | 11.5 | 7.087 | 180 | .276 | 7.0 | 1.181 | 30 | .039-.079 | 1.00-2.00 | LR-S-3×7.8 | RLR-20S |
| | BG□12-12S | 2 | ○ | | .551 | 14 | .079 | 2.0 | .472 | 12 | .433 | 11.0 | .453 | 11.5 | 7.087 | 180 | .276 | 7.0 | 1.181 | 30 | .057-.079 | 1.45-2.00 | LR-S-3×7.8 | RLR-20S |
| | BG□14-00S | 2 | ○ | | .630 | 16 | .118 | 3.0 | .551 | 14 | .512 | 13.0 | .531 | 13.5 | 7.087 | 180 | .315 | 8.0 | 1.378 | 35 | .039-.079 | 1.00-2.00 | LR-S-3×7.8 | RLR-20S |
| | BG□14-12S | 2 | ○ | | .630 | 16 | .118 | 3.0 | .551 | 14 | .512 | 13.0 | .531 | 13.5 | 7.087 | 180 | .315 | 8.0 | 1.378 | 35 | .057-.079 | 1.45-2.00 | LR-S-3×7.8 | RLR-20S |
| GTG20 | BG□16 | 2 | ○ | | .787 | 20 | .118 | 3.0 | .630 | 16 | .591 | 15.0 | .610 | 15.5 | 7.874 | 200 | .394 | 10.0 | 1.575 | 40 | .059-.079 | 1.50-2.00 | LR-S-3×7.8 | RLR-20S |
| | BG□20 | 2 | ○ | | .984 | 25 | .118 | 3.0 | .787 | 20 | .748 | 19.0 | .768 | 19.5 | 7.874 | 200 | .472 | 12.0 | 1.575 | 40 | .059-.079 | 1.50-2.00 | LR-S-3×7.8 | RLR-20S |

# BG Series - Inserts

### ■GTG

| Shape | | Item Number | Groove width $w$ (Inch) | Groove width $w$ (㎜) | Max. Depth Of Cut. $a_r$ (Inch) | Max. Depth Of Cut. $a_r$ (㎜) | $L$ (Inch) | $L$ (㎜) | $r_\varepsilon$ (Inch) | $r_\varepsilon$ (㎜) | $d$ (Inch) | $d$ (㎜) | Coated Carbide QM3 | Coated Carbide TM4 | Coated Carbide ZM3 | Coated Cermet C7X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| |  | 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 | | | | ○ |
| Left-Hand style shown | | 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 ➡K153

# SBT Series ID Threading

## SBT Minimum Bore Diameter .098" (2.5㎜) ～

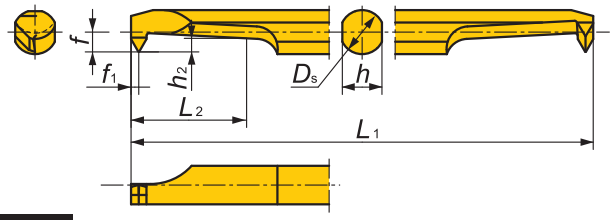
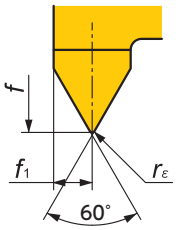
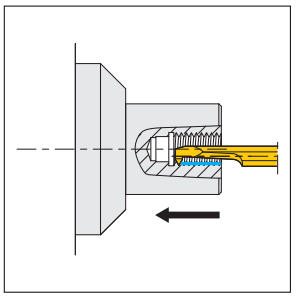



Figure-1



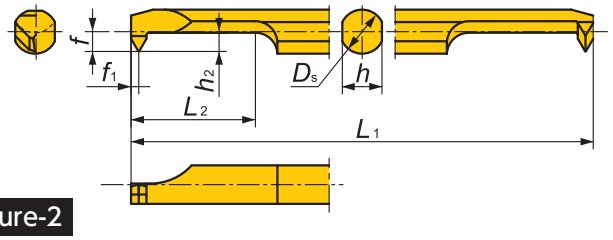



Figure-2

Right-Hand style shown

## SBT Insert dimension

| Item Number | Figure | Chip-breaker | Min. Bore Dia. $D_m$ (Inch) | (㎜) | $D_s$ (Inch) | (㎜) | $L_2$ (Inch) | (㎜) | $h_2$ (Inch) | (㎜) | $L_1$ (Inch) | (㎜) | $f$ (Inch) | (㎜) | $f_1$ (Inch) | (㎜) | $h$ (Inch) | (㎜) | $r_\varepsilon$ (Inch) | (㎜) | Coated Carbide ZM3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SBT025M3R** | 1 | No | **.098** | **2.5** | .098 | 2.5 | .213 | 5.4 | .024 | 0.6 | 1.969 | 50 | .043 | 1.10 | .016 | 0.40 | .091 | 2.3 | .002 MAX Flat | 0.05 MAX Flat | ● |
| **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 MAX Flat | 0.05 MAX Flat | ● |
| **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 MAX Flat | 0.05 MAX Flat | ● |
| **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 MAX Flat | 0.05 MAX Flat | ● |
| **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. $D_m$ (Inch) | (㎜) | Thread Type: Metric Thread | | UNF Thread | | Recommended Thread Type: 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 ➡K157 • 162

## 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 |
| | 3/8-16UNC | – | ϕ7.98 | 16 | 1.5875 | SBT060M10RB |
| Fine | No.8-36UNF | – | ϕ3.51 | 36 | 0.7056 | SBT030M4RB |
| | No.10-32UNF | – | ϕ4.07 | 32 | 0.7938 | SBT035M5RB |
| | – | No.12-28UNF | ϕ4.61 | 28 | 0.9071 | SBT040M6RB |
| | 1/4-28UNF | – | ϕ5.47 | 28 | 0.9071 | |
| | 5/16-24UNF | – | ϕ6.91 | 24 | 1.0583 | SBT050M8RB |
| | 3/8-24UNF | – | ϕ8.51 | 24 | 1.0583 | SBT060M10RB |
| | 7/16-20UNF | – | ϕ9.88 | 20 | 1.2700 | |
| | 1/2-20UNF | – | ϕ11.47 | 20 | 1.2700 | |
| | 9/16-18UNF | – | ϕ12.9 | 18 | 1.4111 | |
| | 5/8-18UNF | – | ϕ14.5 | 18 | 1.4111 | |
| | 3/4-16UNF | – | ϕ17.5 | 16 | 1.5875 | |

## ISO Metric

| Thread Type | | | Pitch (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 | #2 | #3 | 2.0 | 1.75 | 1.5 | 1.25 | 1.0 | 0.8 | 0.75 | 0.7 | 0.5 |
| M3 | | | | | | | | | | | Coarse |
| M4 | | | | | | | | | | Coarse | Fine |
| | M4.5 | | | | | | | | Coarse | | |
| M5 | | | | | | | | Coarse | | | |
| | | M5.5 | | | | | | | | | |
| M6 | | | | | | | Coarse | | Fine | | |
| | M7 | | | | | | | | | | |
| M8 | | | | | | Coarse | Fine | | | | |
| | | M9 | | | | | | | | | |
| M10 | | | | | Coarse | Fine | | | | | |
| | | M11 | | | | | | | | | |
| M12 | | | | Coarse | Fine | 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 | .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 |

# TMN Series

## TGC Minimum Bore Diameter .315" (80㎜) ～

Carbide shank

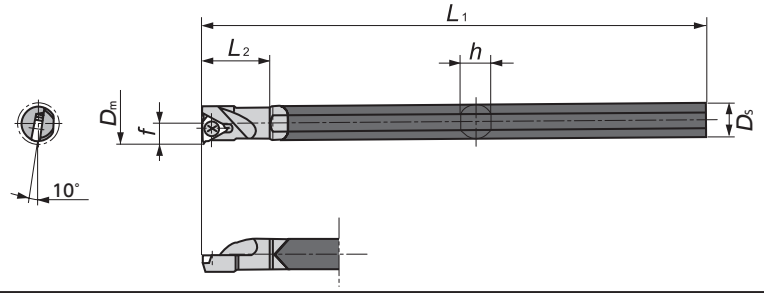
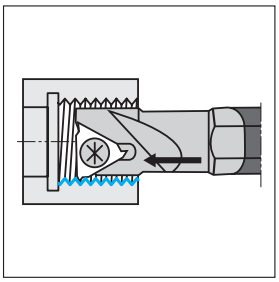



Figure-1



Right-Hand style shown

## HN Minimum Bore Diameter .315" (80㎜) ～

Steel shank

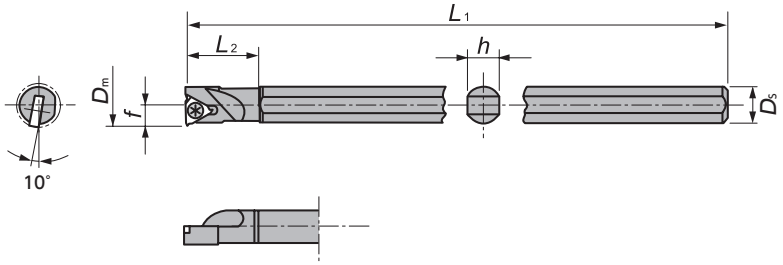
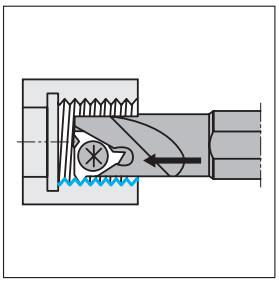



Figure-2



Right-Hand style shown

# TMN Series - Toolholders

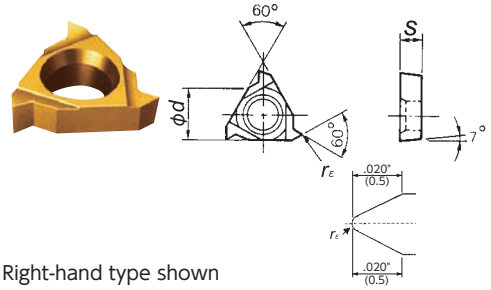


## ■TGC/HN

| Gage Insert | Item Number | Figure | Stock | Min. Machining Dia. $D_m$ (Inch) | (㎜) | $D_s$ (Inch) | (㎜) | $h$ (Inch) | (㎜) | $L_1$ (Inch) | (㎜) | $f$ (Inch) | (㎜) | $L_2$ (Inch) | (㎜) | 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 | $\phi d$ (Inch) | (㎜) | $s$ (Inch) | (㎜) | $r_\varepsilon$ (Inch) | (㎜) | Recommended Pitch (TPI) | (㎜) | Pitch (TPI) | (㎜) | Coated Carbide 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 ➡K153

# Mogul Bar for 75° Diamond (MBL style)

**Minimum Bore Diameter .197"(5.0㎜)**

## S-MBR (Coolant through) Steel shank (tapered type)

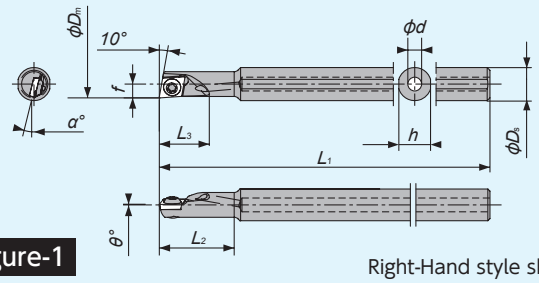
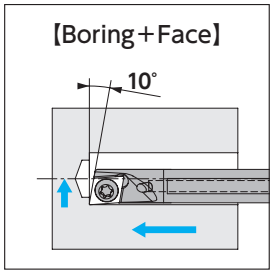



Figure-1

Right-Hand style shown






F1 chipbreakers evacuates chips BACKWARD (S-STUC style shown)

## C-MBR (Coolant through) Carbide shank (straight type)

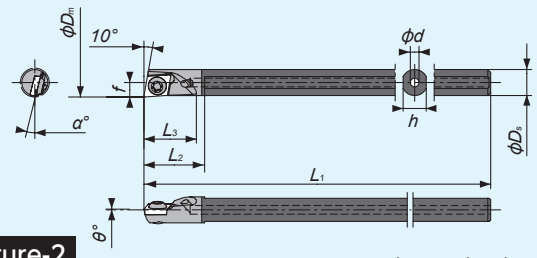



Figure-2

Right-Hand style shown

## C-MBR (Coolant through) Carbide shank (tapered type)

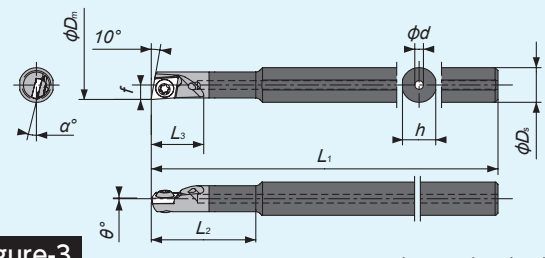



Figure-3

Right-Hand style shown

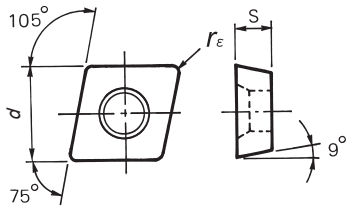
# MBL style - Toolholders

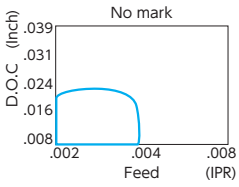
| Gage Insert | Item number* | Figure | Stock | ϕDs (inch) | ϕDs (㎜) | Min. bore Dia. ϕDm (inch) | Min. bore Dia. ϕDm (㎜) | h (㎜) | L1 (㎜) | f (㎜) | L2 (㎜) | L3 (㎜) | L4 (㎜) | ϕd (㎜) | θ | α | Std. corner radius rε (inch) | Std. corner radius rε (㎜) | Clamp screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  MBL | S06F-MBRD05-OH | 1 | ● | .236 | 6.0 | .197 | 5.0 | 5.7 | 80 | 2.5 | 13.5 | 9 | — | 2.5 | 0° | −13° | .0059 | 0.15 | LR-S-2 × 3.5 | CLR-13S |
| | C045F-MBRD05-OH | 2 | ● | .177 | 4.5 | .197 | 5.0 | 4.0 | 80 | 2.5 | 10.5 | 9 | — | 1.5 | 0° | −13° | .0059 | 0.15 | LR-S-2 × 3.5 | CLR-13S |
| | C06F-MBRD05-OH | 3 | ● | .236 | 6.0 | .197 | 5.0 | 5.7 | 80 | 2.5 | 18 | 9 | — | 1.5 | 0° | −13° | .0059 | 0.15 | LR-S-2 × 3.5 | CLR-13S |

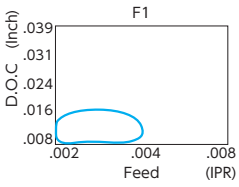
* "S" denotes steel shank, "C" denotes carbide shank

# MBL style - Insert

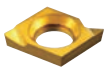
## MBL




## MBL

| | Item Number | d (Inch) | d (㎜) | s (Inch) | s (㎜) | rε (Inch) | rε (㎜) | Coated Carbide TM4 | Coated Carbide 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 ➡K152

# Mogul Bar for 75° Diamond (ERGP style)

**Minimum Bore Diameter .236"(6.0㎜)**

## S-SEXR (Coolant through) Steel shank (tapered type)

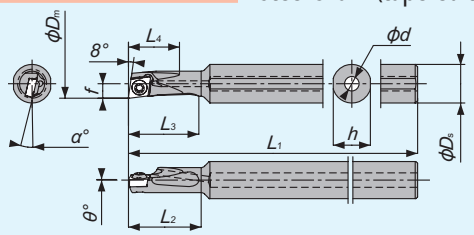
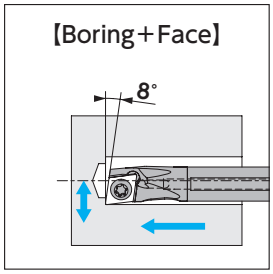



Figure-1

Right-Hand style shown






F1 chipbreakers evacuates chips BACKWARD (S-STUC style shown)

## C-SEXR (Coolant through) Carbide shank (straight type)

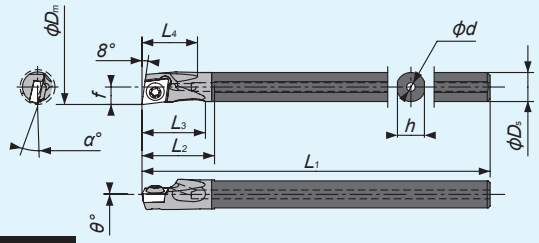



Figure-2

Right-Hand style shown

## C-SEXR (Coolant through) Carbide shank (tapered type)

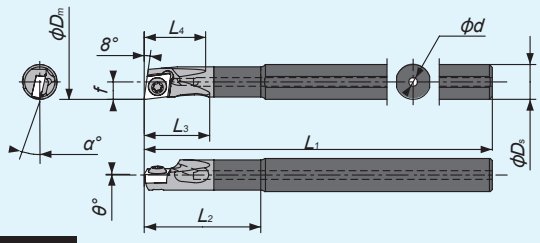



Figure-3

Right-Hand style shown

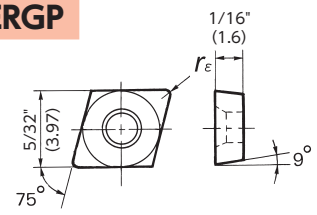
# ERGP style - Toolholders

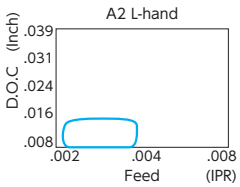
| Gage Insert | Item number* | Figure | Stock R | Stock L | ϕDs (inch) | ϕDs (㎜) | Min. bore Dia. ϕDm (inch) | Min. bore Dia. ϕDm (㎜) | h (㎜) | L1 (㎜) | f (㎜) | L2 (㎜) | L3 (㎜) | L4 (㎜) | ϕd (㎜) | θ | α | Std. corner radius rε (inch) | Std. corner radius rε (㎜) | Clamp screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  ERGP52.. | S08G-SEXR℄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 × 3.7 | CLR-13S |
| | C05G-SEXR℄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 × 3.7 | CLR-13S |
| | C06G-SEXR℄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 × 3.7 | CLR-13S |

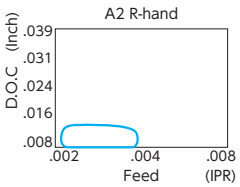
* "S" denotes steel shank, "C" denotes carbide shank

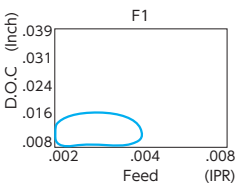
# ERGP style - Insert

## ERGP



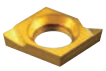




●Right-Hand style shown

## ■ ERGP

| | Item Number | ISO Item Number | IC (Inch) | IC (㎜) | Thickness (Inch) | Thickness (㎜) | rε (Inch) | rε (㎜) | Coated Carbide TM4 R | Coated Carbide TM4 L | Coated Carbide VM1 R | Coated Carbide VM1 L | Coated Carbide ZM3 R | Coated Carbide ZM3 L | Cermet XT3 R | Cermet XT3 L | Cermet C7X R | Cermet C7X L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  L-hand shown | ERGP 52Y- F℄ A2 | ERGHT 30102 FR A2 | 5/32 | 3.97 | 1/16 | 1.6 | .008 | 0.2 | R | Ⓛ | Ⓡ | Ⓛ | Ⓡ | Ⓛ | Ⓡ | Ⓛ | Ⓡ | Ⓛ |
| | ERGP 521- F℄ A2 | ERGHT 30104 FR A2 | 5/32 | 3.97 | 1/16 | 1.6 | .016 | 0.4 | R | | | | | Ⓛ | | | | |
|  R-hand shown | ERGP 5204 FR-- F1 | ERGHT 30101 FR F1 | 5/32 | 3.97 | 1/16 | 1.6 | .004 | 0.1 | | | | | | | R | | | |
| | ERGP 52Y- FR-- F1 | ERGHT 30102 FR F1 | 5/32 | 3.97 | 1/16 | 1.6 | .008 | 0.2 | | | | | | | R | | | |
| | ERGP 521- FR-- F1 | ERGHT 30104 FR F1 | 5/32 | 3.97 | 1/16 | 1.6 | .016 | 0.4 | | | | | | | R | | | |

*For F1 chipbreaker, right-hand inserts fit to right-hand toolholder

Note: F1 chipbreaker evacuates chips BACKWARD

● : 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 ➡K152

# Mogul Bar for 80° Diamond (CP style)

**Minimum Bore Diameter .276"(7.0㎜)**

## S-SCLP (Coolant through) Steel shank

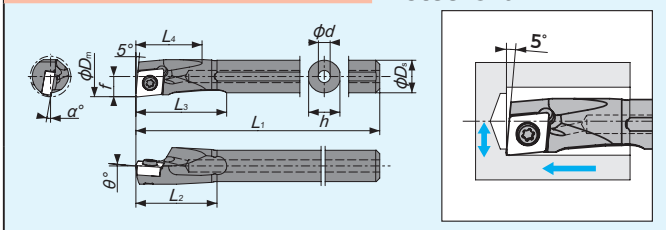



Figure-1

Right-Hand style shown

## C-SCLP (Coolant through) Carbide shank

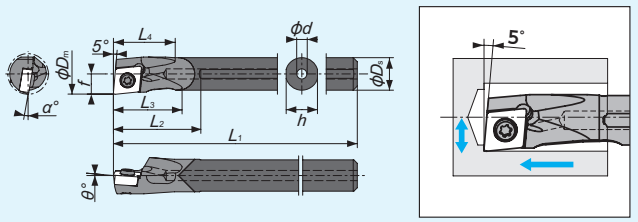



Figure-2

Right-Hand style shown

# CP style - Toolholders



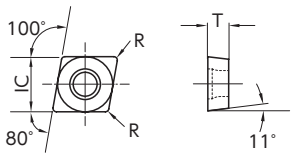
| Gage Insert | Item number* | Figure | Stock R | Stock L | $\phi D_s$ (inch) | $\phi D_s$ (㎜) | Min. bore Dia. $\phi D_m$ (inch) | Min. bore Dia. $\phi D_m$ (㎜) | h (㎜) | $L_1$ (㎜) | f (㎜) | $L_2$ (㎜) | $L_3$ (㎜) | $L_4$ (㎜) | $\phi d$ (㎜) | θ | α | Std. corner radius $r_\varepsilon$ (inch) | Std. corner radius $r_\varepsilon$ (㎜) | Clamp screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-S-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-S-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-S-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-S-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-S-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-S-2.5 × 6 | CLR-15S |

* "S" denotes steel shank, "C" denotes carbide shank

# CP style - Insert - Carbide/Cermet

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

## ■80 degree Diamond Positive type (CP..)




| | | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | PVD Coated 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

| Shape | Item Number | ISO Item Number | IC | R | 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 FR/L A1 | CPGH 040102 FR/L A1 | .187 | .008 | | | | Ⓛ | | | Ⓛ | | | | | |
| | CPGP 621 FR/L A1 | CPGH 040104 FR/L A1 | .187 | .016 | | | | Ⓛ | | | Ⓛ | | | | | |
| | CPGP 21.508 FR/L A | CPGH 060202 FR/L A | 1/4 | .008 | | | | Ⓛ | | | Ⓛ | | | | | |
| | CPGP 21.51 FR/L A | CPGH 060204 FR/L A | 1/4 | .016 | | | | Ⓛ | | | Ⓛ | | | | | |
| | CPGP 6208 R/L A1 | CPGH 040102 TR/L A1 | .187 | .008 | | | | | | | | Ⓛ | Ⓛ | | | |
| | CPGP 621 R/L A1 | CPGH 040104 TR/L A1 | .187 | .016 | | | | | | | | Ⓛ | Ⓛ | | | |
| | CPGP 21.508 R/L A | CPGH 060202 TR/L A | 1/4 | .008 | | | | | | | | Ⓛ | Ⓛ | | | |
| | CPGP 21.51 R/L A | CPGH 060204 TR/L A | 1/4 | .016 | | | | | | | | Ⓛ | Ⓛ | | | |
|  | CPGP 6204 FR/L F1 | CPGH 040101 FR/L F1 | .187 | .004 | | | | R | | | | | | | | |
| | CPGP 6208 FR/L F1 | CPGH 040102 FR/L F1 | .187 | .008 | | | | R | | | | | | | | |
| | CPGP 621 FR/L F1 | CPGH 040104 FR/L F1 | .187 | .016 | | | | R | | | | | | | | |
| | CPGP 21.504 FR/L F1 | CPGH 060201 FR/L F1 | 1/4 | .004 | | | | Ⓡ | | | | | | | | |
| | CPGP 21.508 FR/L F1 | CPGH 060202 FR/L F1 | 1/4 | .008 | | | | R | | | | | | | | |
| | CPGP 21.51 FR/L F1 | CPGH 060204 FR/L F1 | 1/4 | .016 | | | | R | | | | | | | | |
|  | 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"(10㎜)

### S-SCLC (Coolant through)

Steel shank

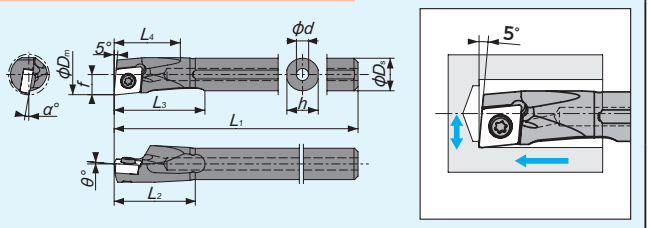


Figure-1

Right-Hand style shown

### C-SCLC (Coolant through)

Carbide shank

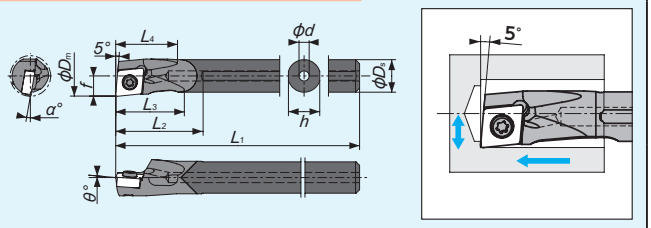


Figure-2

Right-Hand style shown

## "CC" style - Toolholders

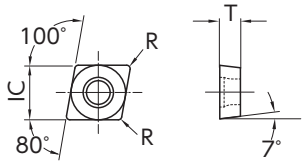


| Gage Insert | Item number* | Figure | Stock R | Stock L | φ $D_s$ (inch) | φ $D_s$ (㎜) | Min. bore Dia. φ $D_m$ (inch) | Min. bore Dia. φ $D_m$ (㎜) | $h$ (㎜) | $L_1$ (㎜) | $f$ (㎜) | $L_2$ (㎜) | $L_3$ (㎜) | $L_4$ (㎜) | φ $d$ (㎜) | θ | α | Std. corner radius $r_ε$ (inch) | Std. corner radius $r_ε$ (㎜) | Clamp screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..21.5.. | S08H-SCLC⅜06D10-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 | LRIS-2.5 × 5 | CLR-15S |
| | S10K-SCLC⅜06D12-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 | LRIS-2.5 × 5 | CLR-15S |
| | S12M-SCLC⅜06D14-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 | LRIS-2.5 × 5 | CLR-15S |
| CC..32.5.. | S16Q-SCLC⅜09D18-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 | LRIS-4 × 8 | LLR-25S |
| CC..21.5.. | C08K-SCLC⅜06D10-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 | LRIS-2.5 × 5 | CLR-15S |
| | C10M-SCLC⅜06D12-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 | LRIS-2.5 × 5 | CLR-15S |
| | C12M-SCLC⅜06D14-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 | LRIS-2.5 × 5 | CLR-15S |

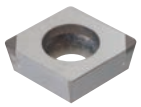
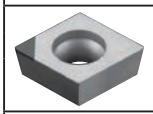
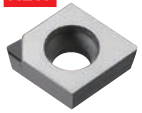
* "S" denotes steel shank, "C" denotes carbide shank

## CC.. inserts - CBN / PCD

### ■80° Diamond Positive type (CC..)




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

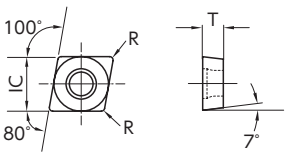
| Shape | Item Number | ISO Item Number | Edge Prep. | IC | R | No. of edge | Length of edge | CBN (Brazed) B5K (Coated) | CBN (Brazed) B52 | CBN (Brazed) B6K (Coated) | CBN (Brazed) B36 | CBN (Brazed) B40 | CBN (Brazed) B23 | CBN (Brazed) B30 | PCD PD1 | PCD PD2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 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 | | ● | | | | | | | |
| | CCGW 32.52 PD | CCGW 09T308 PD | S0635 | 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 | – | | | | | | | | ○ | |
| NEW  with chipbreaker | 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 ➡K152

# CC.. inserts - Carbide / Cermet

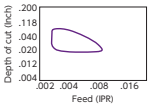
| (inch) | IC | T |
|---|---|---|
| CC..21.5 | 1/4 | 3/32 |
| CC..32.5 | 3/8 | 5/32 |

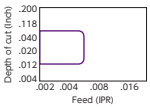


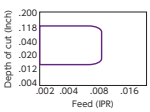

| | | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cast Iron | K | | | | | | | | ● | ● | | ● | ● |
| Non-Ferrous Material | N | | | | ● | ● | ● | ● | ● | ● | | | ● |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | | | |
| Hardened Material | H | ● | ● | ● | | | | | | | | | |

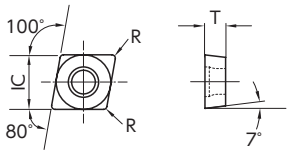
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 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 FNXAM3 | 3/8 | .016 | | | | | | | | | ● | | | |
| | CCGT 32.52 FNAM3 | CCGT 09T308 FNAM3 | 3/8 | .031 | ● | | | | | | | | | | | |
| | CCGT 32.52 FNXAM3 | CCGT 09T308 FNXAM3 | 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 | | | | | | | | | ● | | | ○ |
| | 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 32.504M 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 | | ● | | ● | | | | | | | | |



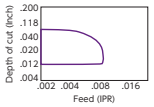



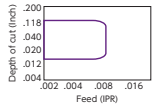


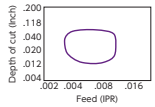

| | | |
|---|---|---|
| Steel | P | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Stainless Steel | M | ● ● ● ● ● ● ● ● ● ● ● ● ● |
| Cast Iron | K | ● ● ● ● ● ● |
| Non-Ferrous Material | N | ● ● ● ● ● ● |
| Heat Resistant Alloy | S | ● ● ● ● |
| Hardened Material | H | ● ● ● |

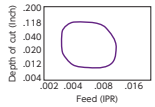
● : 1st Choice
● : Alternate choice

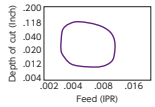
| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | CCGT 21.501 FNAZ7 | CCGT 060200 FNAZ7 | 1/4 | .001 | ○ | | | | | | | | | | | |
| | CCGT 21.504M FNAZ7 | CCGT 060201M FNAZ7 | 1/4 | .003 | ○ | | | | | | | | | | | |
| | CCGT 21.508M FNAZ7 | CCGT 060202M FNAZ7 | 1/4 | .007 | ○ | | | | | | | | | | | |
| | CCGT 32.501 FNAZ7 | CCGT 09T300 FNAZ7 | 3/8 | .001 | ● | ○ | | ○ | | ○ | | | | | | |
| | CCGT 32.504M FNAZ7 | CCGT 09T301M FNAZ7 | 3/8 | .003 | ● | ○ | | ○ | | ○ | | | | | | |
| | CCGT 32.508M FNAZ7 | CCGT 09T302M FNAZ7 | 3/8 | .007 | ● | ○ | | ○ | | ○ | | | | | | |
| | CCGT 32.51M FNAZ7 | CCGT 09T304M FNAZ7 | 3/8 | .015 | ● | ○ | | ○ | | ○ | | | | | | |
|  | CCGT 21.508 FN1L | CCGT 060202 FN1L | 1/4 | .008 | ○ | | | | | | | | | | | |
| | CCGT 32.51 FN1L | CCGT 09T304 FN1L | 3/8 | .016 | ○ | | | | | | | | | | | |
|  | 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 | | | | | | | | | ○ | | | ○ |

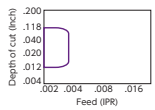


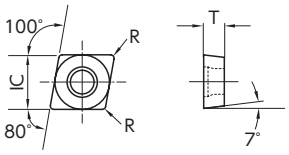




● : Stock ○ : 1-2 week delivery ■ : While stock lasts
R : Stock (Right-hand only) L : Stock (Left-hand only)
Ⓡ : 1-2 week delivery (Right-hand only) Ⓛ : 1-2 week delivery (Left-hand only) Ⓜ : Mirror finish

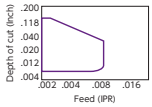
ID boring bars ➡K174
Cutting condition ➡K152

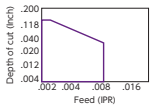


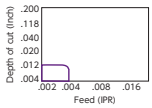

| | | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cast Iron | K | | | | | | | | ● | ● | | ● | ● |
| Non-Ferrous Material | N | | | | ● | ● | ● | ● | ● | ● | | | ● |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | | | |
| Hardened Material | H | ● | ● | ● | | | | | | | | | |

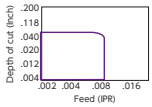
● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | Cermet PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | CCGT 21.501 R/L S | CCGT 060200 R/L S | 1/4 | .001 | R | Ⓡ | | | Ⓡ Ⓛ | Ⓡ Ⓛ | | | | | | Ⓡ Ⓛ |
| | CCGT 21.504M R/L S | CCGT 060201M R/L S | 1/4 | .003 | R | Ⓡ | | | | | | | | | | |
| | CCGT 21.504 R/L S | CCGT 060201 R/L S | 1/4 | .004 | | | | | Ⓡ Ⓛ | R Ⓛ | | | Ⓡ Ⓛ | | | |
| | CCGT 21.508M R/L S | CCGT 060202M R/L S | 1/4 | .007 | R | | | | | | | | | | | |
| | CCGT 21.508 R/L S | CCGT 060202 R/L S | 1/4 | .008 | | | | | R Ⓛ | Ⓡ Ⓛ | | | Ⓡ Ⓛ | | | |
| | CCGT 21.51 R/L S | CCGT 060204 R/L S | 1/4 | .016 | R | | | | | | | | | | | |
| | CCGT 32.501 R/L S | CCGT 09T300 R/L S | 3/8 | .001 | R | R | | R | Ⓡ Ⓛ | Ⓡ | | | | | | |
| | CCGT 32.504M R/L S | CCGT 09T301M R/L S | 3/8 | .003 | Ⓡ | R | | R | | | | | | | | |
| | CCGT 32.504 R/L S | CCGT 09T301 R/L S | 3/8 | .004 | R | | | | Ⓡ Ⓛ | Ⓡ Ⓛ | | | | | | |
| | CCGT 32.508M R/L S | CCGT 09T302M R/L S | 3/8 | .007 | Ⓡ | R | | R | | | | | | | | |
| | CCGT 32.508 R/L S | CCGT 09T302 R/L S | 3/8 | .008 | R | | | | R Ⓛ | Ⓡ | | | | | | |
| | CCGT 32.51M R/L S | CCGT 09T304M R/L S | 3/8 | .015 | Ⓡ | | | R | | | | | | | | |
| | CCGT 32.51 R/L S | CCGT 09T304 R/L S | 3/8 | .016 | R | | | | | | | | | | | |
| | CCMT 21.504 TR/L AS | CCMT 060201 TR/L AS | 1/4 | .004 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | CCMT 21.508 TR/L AS | CCMT 060202 TR/L AS | 1/4 | .008 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | CCMT 21.51 TR/L AS | CCMT 060204 TR/L AS | 1/4 | .016 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | CCMT 32.504 TR/L AS | CCMT 09T301 TR/L AS | 3/8 | .004 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | CCMT 32.508 TR/L AS | CCMT 09T302 TR/L AS | 3/8 | .008 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
| | CCMT 32.51 TR/L AS | CCMT 09T304 TR/L AS | 3/8 | .016 | | | | | | | | | Ⓡ Ⓛ | | | Ⓡ Ⓛ |
|  | CCGT 21.501 R/L U | CCGT 060200 R/L U | 1/4 | .001 | | Ⓡ | | | | Ⓡ | | | | | | |
| | CCGT 21.504 R/L U | CCGT 060201 R/L U | 1/4 | .004 | | Ⓡ | | | | Ⓡ Ⓛ | | | | | | |
| | CCGT 21.508 R/L U | CCGT 060202 R/L U | 1/4 | .008 | | Ⓡ | | | | Ⓡ Ⓛ | | | | | | |
| | CCGT 32.501 R/L U1 | CCGT 09T300 R/L U1 | 3/8 | .001 | | | | Ⓡ | | Ⓡ Ⓛ | | | | | | |
| | CCGT 32.504 R/L U1 | CCGT 09T301 R/L U1 | 3/8 | .004 | | Ⓡ | | Ⓡ | | Ⓡ Ⓛ | | | | | | |
| | CCGT 32.508 R/L U1 | CCGT 09T302 R/L U1 | 3/8 | .008 | | Ⓡ | | Ⓡ | | Ⓡ Ⓛ | | | | | | |
| | CCGT 32.51 R/L U1 | CCGT 09T304 R/L U1 | 3/8 | .016 | | | | Ⓡ | | Ⓡ Ⓛ | | | | | | |
|  | CCET 21.502 R/L KHG | CCET 0602005 R/L KHG | 1/4 | .002 | | | | | Ⓡ Ⓛ | | | | | | | |
| | CCET 21.503 R/L KHG | CCET 0602008 R/L KHG | 1/4 | .003 | | | | | Ⓡ Ⓛ | | | | | | | |
| | CCET 21.507 R/L KHG | CCET 0602018 R/L KHG | 1/4 | .007 | | | | | Ⓡ Ⓛ | | | | | | | |
| | CCET 21.508 R/L KHG | CCET 060202 R/L KHG | 1/4 | .008 | | | | | Ⓡ Ⓛ | | | | | | | |
| | CCET 32.502 R/L KHG | CCET 09T3005 R/L KHG | 3/8 | .002 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | CCET 32.503 R/L KHG | CCET 09T3008 R/L KHG | 3/8 | .003 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | CCET 32.507 R/L KHG | CCET 09T3018 R/L KHG | 3/8 | .007 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
| | CCET 32.508 R/L KHG | CCET 09T302 R/L KHG | 3/8 | .008 | | | | Ⓡ | Ⓡ Ⓛ | | | | | | | |
|  | CCGT 21.508 FR/L F1 | CCGT 060202 FR/L F1 | 1/4 | .008 | | | | Ⓡ | | | | | | | | |
| | CCGT 21.51 FR/L F1 | CCGT 060204 FR/L F1 | 1/4 | .016 | | | | Ⓡ | | | | | | | | |
| | CCGT 32.508 FR/L F1 | CCGT 09T302 FR/L F1 | 3/8 | .008 | | | | Ⓡ | | | | | | | | |
| | CCGT 32.51 FR/L F1 | CCGT 09T304 FR/L F1 | 3/8 | .016 | | | | Ⓡ | | | | | | | | |
|  | CCGW 21.501 FN | CCGW 060200 FN | 1/4 | .001 | | | | | | ○ | | | | | | |
| | CCGW 21.501 H Ⓜ | CCGW 060200 H | 1/4 | .001 | | | | | | | ○ | | | | | |
| | CCGW 21.504 FN | CCGW 060201 FN | 1/4 | .004 | | | | | | ○ | | | | | | |
| | CCGW 21.504 H Ⓜ | CCGW 060201 H | 1/4 | .004 | | | | | | | ○ | | | | | |
| | CCGW 21.508 H Ⓜ | CCGW 060202 H | 1/4 | .008 | | | | | | | ○ | | | | | |
| | CCGW 21.51 FN | CCGW 060204 FN | 1/4 | .016 | | | | | | ○ | | | | | | |
| | CCGW 21.52 FN | CCGW 060208 FN | 1/4 | .031 | | | | | | ■ | | | | | | |
| | CCGW 32.500 V Ⓜ | CCGW 09T30 V | 3/8 | 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 | | | | | ○ | | | | | | | |




—

[ ID Tooling ]

For Swiss-type Lathes

# Mogul Bar for 60° Triangle (TC/TP style)

**Minimum Bore Diameter .315"(8.0㎜)**

## S-STUC(P) (Coolant through)

Steel shank

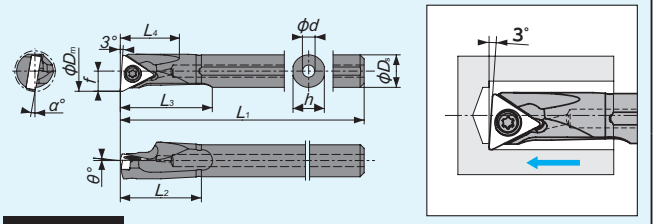


Figure-3

Right-Hand style shown

## C-STUC(P) (Coolant through)

Carbide shank

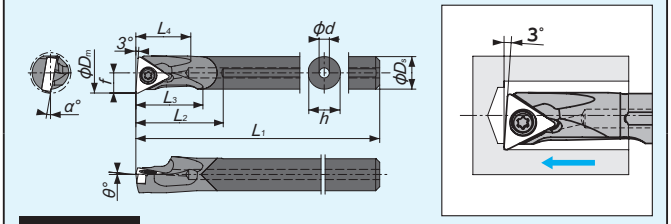


Figure-4

Right-Hand style shown

## TC/TP style - Toolholders

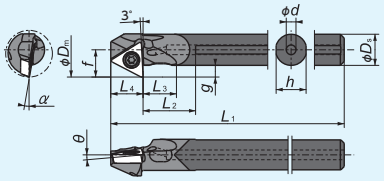
| GageInsert | Item number* | Figure | Stock R | Stock L | φ $D_s$ (inch) | φ $D_s$ (mm) | Min. bore Dia. φ $D_m$ (inch) | Min. bore Dia. φ $D_m$ (mm) | h (mm) | $L_1$ (mm) | f (mm) | $L_2$ (mm) | $L_3$ (mm) | $L_4$ (mm) | φ d (mm) | θ | α | Std. corner radius $r_\varepsilon$ (inch) | Std. corner radius $r_\varepsilon$ (mm) | Clamp screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-S-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-S-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-S-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-S-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-S-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-S-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-S-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-S-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-S-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-S-3 × 5.8 | RLR-20S |

* "S" denotes steel shank, "C" denotes carbide shank

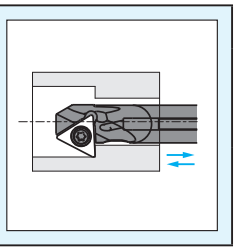
## C-STZP(C) (Coolant through)

NEW

Minimum Bore Diameter .394"(10㎜) Carbide shank



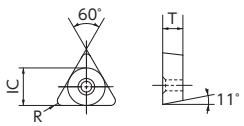
●Use right-hand inserts for machining backward
Use left-hand inserts for machining forward



| Insert | Item number* | Stock R | φ $D_s$ (inch) | φ $D_s$ (mm) | Min. bore Dia. φ $D_m$ (inch) | Min. bore Dia. φ $D_m$ (mm) | Max. shoulder height g (inch) | Max. shoulder height g (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 $r_\varepsilon$ (inch) | Std. corner radius $r_\varepsilon$ (mm) | Clamp screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TC..52.. | C06H-STZCR06D10-OH 💧 | ○ | .236 | 6 | .394 | 10 | .098 | 2.5 | 5.75 | 100 | 5.5 | 10.5 | 6 | 6 | 2.0 | 0° | -10° | .008 | 0.2 | LR-S-2 × 4 | 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-S-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-S-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-S-3 × 5.8 | RLR-20S |

## TPG
## CBN / PCD

| (inch) | IC | T |
|---|---|---|
| TP.. 22 | 1/4 | 1/8 |

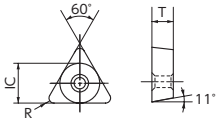


| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | | | | | | | | | | | | | | | | | | | | |
| Stainless Steel | M | | | | | | | | | | | | | | | | | | | | |
| Cast Iron | K | ● | ● | | | | | | ● | ● | | | | | | | | | | | |
| 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 | CBN (Brazed) Coated B5K | B52 | Coated B6K | B36 | B40 | B23 | B30 | PCD 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 |

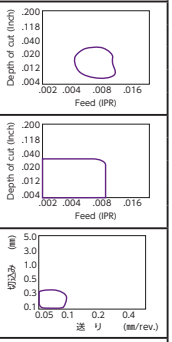



| | | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cast Iron | K | | | | | | | | ● | ● | | ● | ● |
| Non-Ferrous Material | N | | | | ● | ● | ● | ● | ● | ● | | | ● |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | | | |
| Hardened Material | H | ● | ● | ● | | | | | | | | | |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R |
|---|---|---|---|---|
|  | TCGH 5204 TR/LB1 | TCGH 060101 TR/LB1 | 5/32 | .004 |
| | TCGH 5208 FR/LB1 | TCGH 060102 FR/LB1 | 5/32 | .008 |
| | TCGH 5208 TR/LB1 | TCGH 060102 TR/LB1 | 5/32 | .008 |
| | TCGH 521 FR/LB1 | TCGH 060104 FR/LB1 | 5/32 | .016 |
| | TCGH 521 TR/LB1 | TCGH 060104 TR/LB1 | 5/32 | .016 |
|  | TCGP 5204 FR/LF05 | TCGH 060101 FR/LF05 | 5/32 | .004 |
| | TCGP 5208 FR/LF05 | TCGH 060102 FR/LF05 | 5/32 | .008 |
| | TCGP 5208 R/LF05 | TCGH 060102 TR/LF05 | 5/32 | .008 |
| | TCGP 521 FR/LF05 | TCGH 060104 FR/LF05 | 5/32 | .016 |
| | TCGP 521 R/LF05 | TCGH 060104 TR/LF05 | 5/32 | .016 |
|  | TCGH 5208 FR/LK | TCGH 060102 FR/LK | 5/32 | .008 |
| | TCGH 5521 FR/LK | TCGH 060104 FR/LK | 5/32 | .016 |
|  | TCGD 52Y | TCGB 060102 TN | 5/32 | .008 |
| | TCGD 521 | TCGB 060104 TN | 5/32 | .016 |

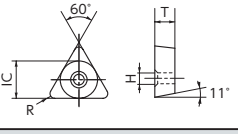
| Shape | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | Ⓛ | | Ⓛ | | L | | | | |
| | | | | Ⓛ | | Ⓛ | | ⓇⓁ | | | | |
| | | | | Ⓛ | | Ⓛ | | L | | | | |
|  | | | | R | | | | | | | | |
| | | | | ⓁR | Ⓡ | ⓇⓁ | | | Ⓛ | | | ⓇⓁ |
| | | | | R | Ⓡ | Ⓡ | | | Ⓛ | | | ⓇⓁ |
|  | | | | Ⓛ | | | | | | | | |
| | | | | Ⓛ | | | | | | | | |
|  | | | | | | | | ○ | | | | |
| | | | | | | | | ● | | | | |




## ■60° Triangle Positive type Carbide / Cermet (TP..)

| (inch) | IC | T |
|---|---|---|
| TP..22 | 1/4 | 1/8 |

| (inch) | IC | T |
|---|---|---|
| TP..73 | 7/32 | 3/32 |

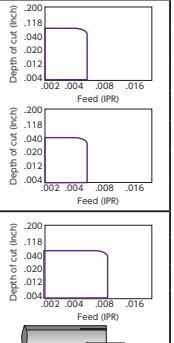



| | | QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | XT3 | C7X | XN4 | Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Stainless Steel | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Cast Iron | K | | | | | | | | ● | ● | | ● | ● |
| Non-Ferrous Material | N | | | | ● | ● | ● | ● | ● | ● | | | ● |
| Heat Resistant Alloy | S | ● | ● | ● | ● | | | | | | | | |
| Hardened Material | H | ● | ● | ● | | | | | | | | | |

● : 1st Choice
● : Alternate choice

| Shape | Item Number | ISO Item Number | IC | R |
|---|---|---|---|---|
|  | TPGH 7308 FR/LB2 | TPGH 090202 FR/LB2 | 7/32 | .008 |
| | TPGH 731 FR/LB2 | TPGH 090204 FR/LB2 | 7/32 | .016 |
| | TPGH 731 R/LB2 | TPGH 090204 TR/LB2 | 7/32 | .016 |
| | TPGH 732 R/LB2 | TPGH 090208 FR/LB2 | 7/32 | .031 |
| | TPGH 2204 R/LB3 | TPGH 110301 TR/LB3 | 1/4 | .004 |
| | TPGH 221 R/LB3 | TPGH 110304 TR/LB3 | 1/4 | .016 |
| | TPGH 222 R/LB3 | TPGH 110308 TR/LB3 | 1/4 | .031 |
|  | TPGH 7304 FR/LF1 | TPGH 090201 FR/LF1 | 7/32 | .004 |
| | TPGH 7308 FR/LF1 | TPGH 090202 FR/LF1 | 7/32 | .008 |
| | TPGH 731 FR/LF1 | TPGH 090204 FR/LF1 | 7/32 | .016 |
| | TPGH 732 FR/LF1 | TPGH 090208 FR/LF1 | 7/32 | .031 |
| | TPGH 2208 FR/LF1 | TPGH 110302 FR/LF1 | 1/4 | .008 |
| | TPGH 221 FR/LF1 | TPGH 110304 FR/LF1 | 1/4 | .016 |
| | TPGH 222 FR/LF1 | TPGH 110308 FR/LF1 | 1/4 | .031 |
|  | TPGP 7308 R/LF1 | TPGH 090202 TR/LF1 | 7/32 | .008 |
| | TPGP 731 R/LF1 | TPGHP 090204 TR/LF1 | 7/32 | .016 |
| | TPGP 2208 R/LF1 | TPGH 110302 TR/LF1 | 1/4 | .008 |
| | TPGP 221 R/LF1 | TPGH 110304 TR/LF1 | 1/4 | .016 |
| | TPGP 222 R/LF1 | TPGH 110308 TR/LF1 | 1/4 | .031 |
|  | TPGP 7308 R/LFG | TPGH 090202 R/LFG | 7/32 | .008 |
| | TPGP 731 R/LFG | TPGH 090204 R/LFG | 7/32 | .016 |
| | TPGH 2208 R/LFG | TPGH 110302 R/LFG | 1/4 | .008 |
| | TPGH 221 R/LFG | TPGH 110304 R/LFG | 1/4 | .016 |
|  | TPGP 7308 FR/LK | TPGH 090202 FR/LK | 1/4 | .008 |
| | TPGP 7318 FR/LK | TPGH 090204 FR/LK | 1/4 | .016 |
| | TPGP 7328 FR/LK | TPGH 090208 FR/LK | 1/4 | .031 |

| Shape | Carbide PVD Coated QM3 | DT4 | DM4 | TM4 | VM1 | ZM3 | KM1 | Cermet XT3 | C7X | XN4 | PVD Coated Q15 | C7Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | Ⓛ | | Ⓛ | | | | | | |
| | | | | Ⓛ | | Ⓛ | | R L | | | | |
| | | | | Ⓛ | | Ⓛ | | | | | | |
|  | | | | Ⓡ | | | | | | | | |
| | | | | Ⓡ | Ⓡ | Ⓡ | | | | | | |
| | | | | Ⓡ | Ⓡ | Ⓡ | | | | | | |
| | | | | Ⓡ | | Ⓡ | | | | | | |
| | | | | Ⓡ | Ⓡ | Ⓡ | | | | | | |
| | | | | Ⓡ | Ⓡ | Ⓡ | | | | | | |
| | | | | Ⓡ | | Ⓡ | | | | | | |
|  | | | | | | | | | Ⓡ | | | Ⓡ |
| | | | | | | | | | Ⓡ | | | Ⓡ |
| | | | | | | | | | Ⓡ | | | Ⓡ |
| | | | | | | | | | Ⓡ | | | Ⓡ |
|  | | | | R | | | | | | | | Ⓡ |
| | | | | R | | | | | | | | Ⓡ |
| | | | | R | | | | | | | | Ⓡ |
| | | | | R | | | | | | | | Ⓡ |
|  | | | | Ⓛ | | | | | | | | |
| | | | | Ⓛ | | | | | | | | |
| | | | | Ⓛ | | | | | | | | |



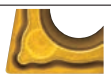

● : Stock ○ : 1-2 week delivery
R : Stock (Right-hand only)
Ⓡ : 1-2 week delivery (Right-hand only)
L : Stock (Left-hand only)
Ⓛ : 1-2 week delivery (Left-hand only)
💧 : Coolant through

*For F05, F1 and FG chipbreaker, right-hand inserts fit to right-hand toolholder
Note: F05, F1 and FG chipbreaker evacuates chips BACKWARD

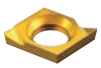
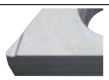
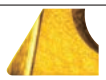
Cutting condition ➡K152

# Chipbreakers for Mogul Bar

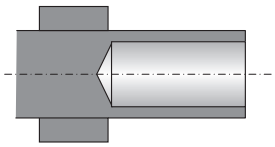
## Molded Chipbreakers

| 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<br>●Covers extremely wide range<br>●Excellent chip control | — |  | — | — | — |
| CL |  | ●Double-positive geometry<br>●Sharp edge and low tool pressure<br>●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 | — |  |  | — | — |

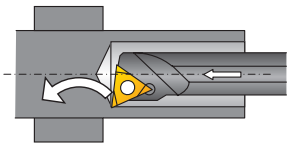
## Ground Chipbreakers

| Name | Chipbreaker Geometry | Features | ER Style | CC Style | CP Style | TC Style | TP Style |
|---|---|---|---|---|---|---|---|
| F05・F1 |  | ●Exclusively designed for ID boring<br>●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<br>●For super high-precision machining | — |  | — | — | — |
| K |  | ●Superb chip control on finishing applications | — | — | — |  | — |
| A・A1 |  | ●Tough cutting edge and good chip control<br>●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 cuttting edges from breaking

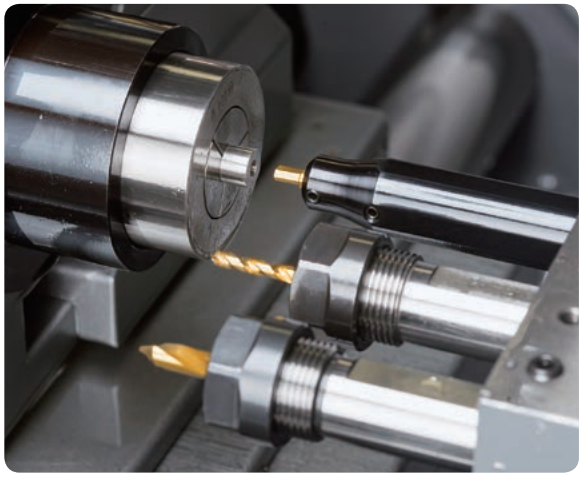
Note: Use right-hand inserts with FG, F1 and F05 chipbreakers for right-hand boring bars

K



# Shaper

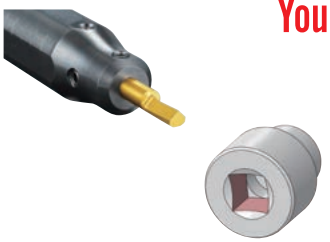
# SHAPER DUO



■Hexagon Socket



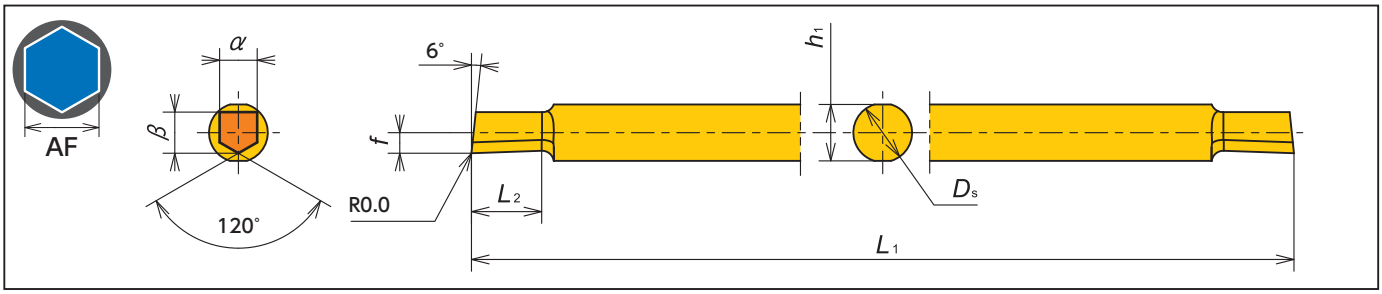
■Square Socket



WATCH ON YouTube

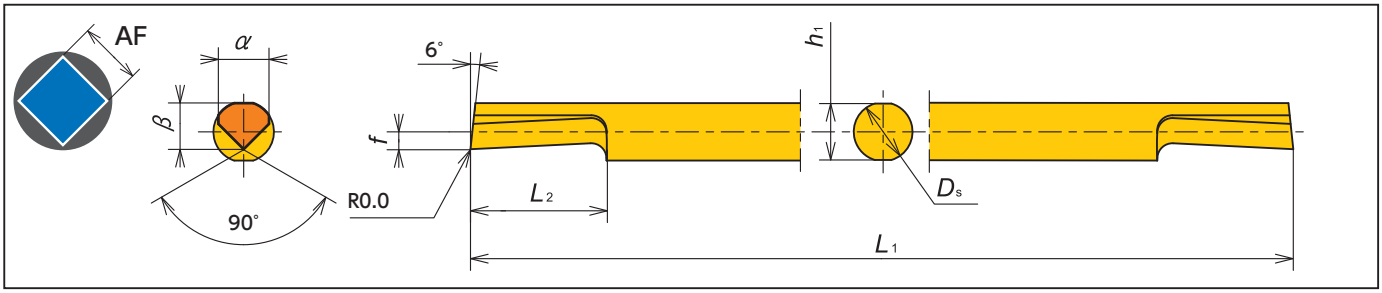
- Perfect fit for back spinde of Swiss machine
- Achieves good corner edge sharpness
- Less tool pressure than Rotary-Broaching
- Easy to adjust for correct dimension
- Economical two-sided insert bar

## Insert Bar -Hexagon-




| Item Number | Base AF (mm) | HEX Standard size range (mm) | AF range (mm) | $D_s$ (mm) | $L_1$ (mm) | $L_2$ (mm) | $h_1$ (mm) | α (mm) | β (mm) | f (mm) | Corted Carbide TM4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SSP020N1130H** | HEX 1.5 | HEX 1.5 – 2.0 | 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 | 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 | 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 | 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 | 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 | 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 | 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 (mm) | $D_s$ (mm) | $L_1$ (mm) | $L_2$ (mm) | $h_1$ (mm) | α (mm) | β (mm) | f (mm) | Corted Carbide TM4 |
|---|---|---|---|---|---|---|---|---|---|---|
| **SSP020N1740S** | 2.0 | 1.9 – 2.3 | ϕ 2.0 | 50 | 4.0 | 1.8 | 1.70 | 1.60 | 0.70 | ○ |
| **SSP025N1940S** | 2.5 | 2.2 – 2.6 | ϕ 2.5 | 50 | 4.0 | 2.3 | 1.95 | 1.80 | 0.65 | ○ |
| **SSP030N2260S** | 3.0 | 2.5 – 3.0 | ϕ 3.0 | 50 | 6.0 | 2.8 | 2.20 | 2.05 | 0.65 | ○ |
| **SSP035N2760S** | 3.5 | 2.9 – 3.7 | ϕ 3.5 | 60 | 6.0 | 3.3 | 2.70 | 2.25 | 0.60 | ○ |
| **SSP040N3380S** | 4.0 | 3.6 – 4.6 | ϕ 4.0 | 60 | 8.0 | 3.8 | 3.35 | 3.05 | 1.15 | ○ |
| **SSP050N39100S** | 5.0 | 4.5 – 5.4 | ϕ 5.0 | 70 | 10.0 | 4.8 | 3.90 | 3.95 | 1.55 | ○ |
| **SSP060N47120S** | 6.0 | 5.3 – 6.6 | ϕ 6.0 | 80 | 12.0 | 5.6 | 4.75 | 4.50 | 1.70 | ○ |
| **SSP080N58160S** | 8.0 | 6.5 – 8.1 | ϕ 8.0 | 80 | 16.0 | 7.6 | 5.80 | 5.50 | 1.70 | ○ |

● : Stock ○ : 1-2 week delivery

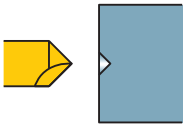
Sleeves ➡K186 • K187 • K188

## Comparison Chart of HEX Socket Machining

| | Tool Pressure | Cycle Time | Pliability | Tool Cost | |
|---|---|---|---|---|---|
| Shaper Duo  | ◎ | △ ＊Can be off-set by over-wrapping operation | ○ | ◎ | ●Less tool pressure-especially on small diameter parts<br>●One size can cover several socket sizes |
| Broach Tool | △ | ○ | × | △ | ●Need to have tools for each socket size |

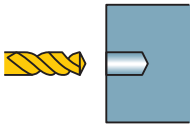
## Process Chart

### ① Center drilling



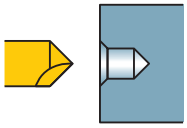
Select a pilot hole drill which is bigger dia. than AF.

### ② Drilling (Pilot hole)



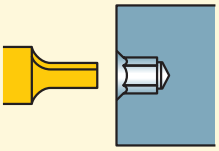
Select a drill with same dia. as AF and machine a bit deeper because burrs may cause chipping on shaper insert

### ③ Chamfering



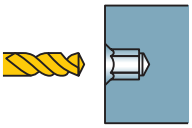
Chamfer with the same pilot hole drill as ① (Chamfer could be done at same time as ①).

### ④ Shaper tool



Machine HEX portion rotating 120 degrees 6 times

### ⑤ Deburring



Finishing and deburring with the same drill as in process②
☆Reduce cutting conditions due to heavy interruption

## SHAPER DUO Process Chart

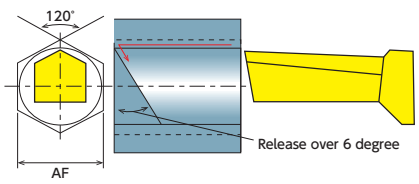
| HEX Standard | Tool | Pilot bore Dia. (㎜) | Total DOC /side (㎜) | Number of passes: Total pass /side | Roughing pass 0.025㎜ | Finishing pass 0.010㎜ | Estimated cycle time *: ISO 2936 standard depth of Hex hole (㎜) | Whole process ①-⑤ | Process④ Shaper |
|---|---|---|---|---|---|---|---|---|---|
| HEX 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 ㎜/min
DOC : 0.025 ㎜ (Roughing), 0.010 ㎜ (Finishing)

## Recommended Cutting Conditions

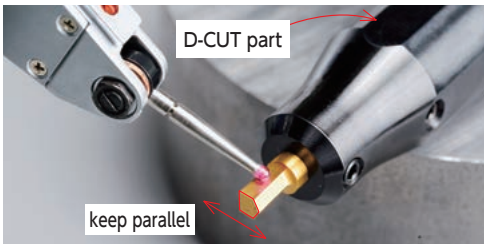
Feed : 4000-1000 ㎜/min (150-40 IPM)
DOC : 0.05 ㎜-0.01 ㎜ (.0020"-.0004")
☆Combination of Roughing (0.025 ㎜) and Finishing (0.010 ㎜) is recommended



## SHAPER DUO Set-up Instruction -Hexagontal

### ■Outside machine

①




- Set the insert bar in the sleeve and check the parallelism of the flat portion of the sleeve and the insert bar.
- Minimize the overhang of the insert.

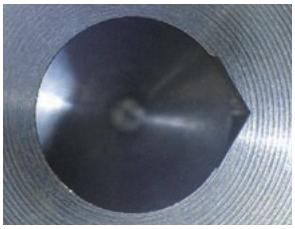
### ■Inside machine

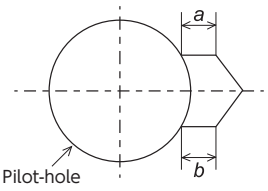
②




- Set the sleeve into the tool post and make sure the sleeve is set parallel.
- Minimize sleeve overhang.

③






- 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.

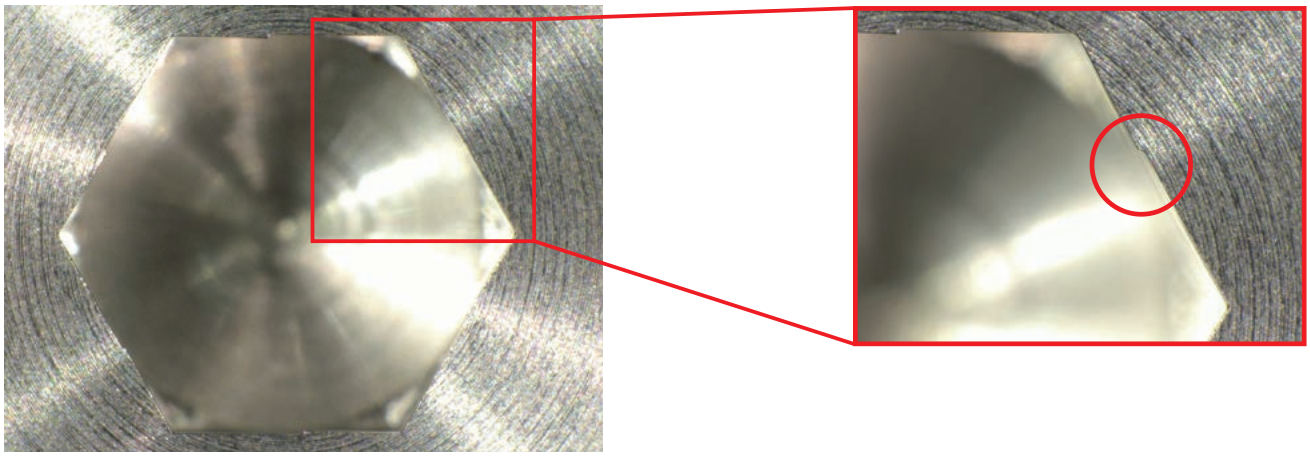
④ **Machine Hexagontal shape**

- Run full HEX machining program.



## SHAPER DUO Trouble Shooting

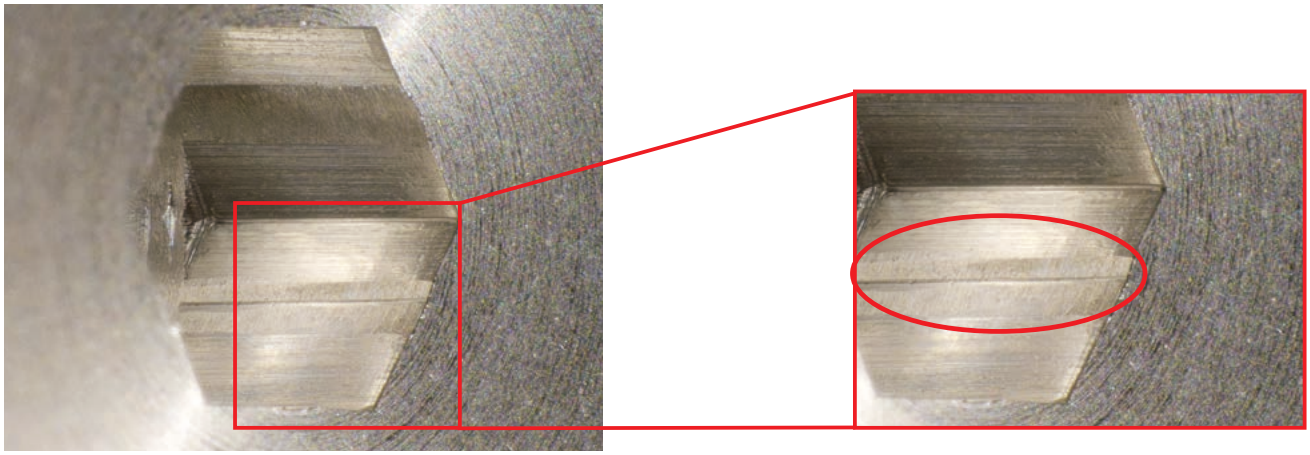
### ■Problem: Step on sides



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:
- Slower feed rate
- Smaller depth of cut

# SPLASH DUO - Stick Duo Hyper with Coolant through -

## HY-NBH-OH (Coolant through)

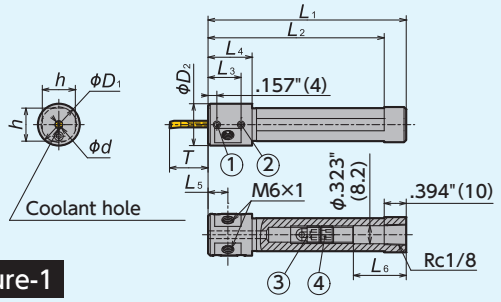



Figure-1

## HY-NBH-OH (Coolant through)

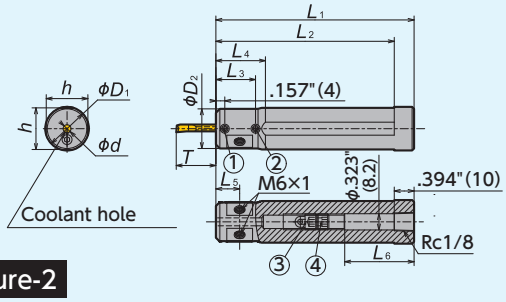
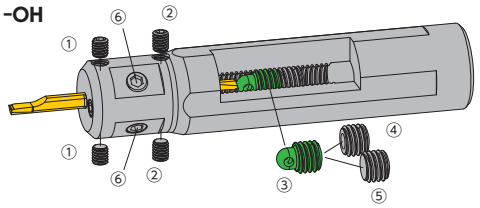



Figure-2

| Item Number | Stock | Figure | φ d | | φD1 | | φD2 | h | L1 | L2 | L3 | L4 | L5 | L6 | Overhang Length of Bar T | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Min. | | Max. | |
| | | | (Inch) | (mm) | (Inch) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (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 |

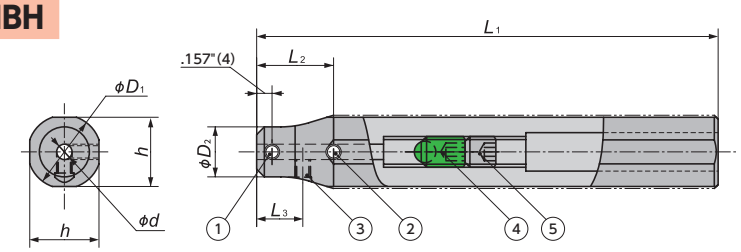
## Parts for SPLASH DUO

| Item Number | Clamp Screw | | Overhang Adjustment | | |
|---|---|---|---|---|---|
| HY-NBH ... -OH | ① | ② | ③ | ④ | ⑤ |
|  | SS04045FS | SS0406F | SS0811R-OH | SS0806F-OH (Through hole) | SS0806F |
| | M6 Screw | | Wrench | | |
| | ⑥ | | for ①② | for ③④⑤ | for ⑥ |
| | SS0606SC | | LW-2 | LW-4×104 | LW-3 |

● : Stock　　💧 : Coolant through

# STICK DUO HYPER

## HY-NBH




### Spare Parts

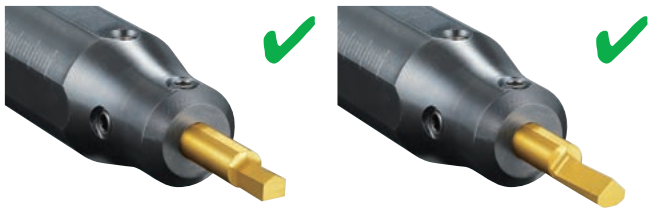
| Item Number | Overhang Adjustment | | Wrench | |
|---|---|---|---|---|
| | ④ | ⑤ | for①②③ | for④⑤ |
| HY-NBH ... K | SS0812R | SS0808F | LW-2 | LW-4×104 |

Please refer to $\phi d$ to find correct-size inserts (bars)

| Item Number | Stock | $\phi d$ (Inch) | $\phi d$ (mm) | $\phi D_1$ (Inch) | $\phi D_1$ (mm) | $\phi D_2$ (mm) | h (mm) | $L_1$ (mm) | $L_2$ (mm) | $L_3$ (mm) | Clamp Screws 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 |

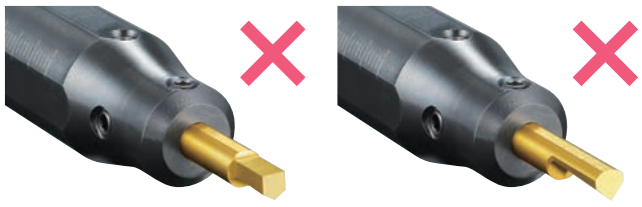
### Precaution for Shaper duo with STICK DUO HYPER sleeve

● Set insert in this position



Hexagon Square

● To avoid insert chipping don't set insert in this position



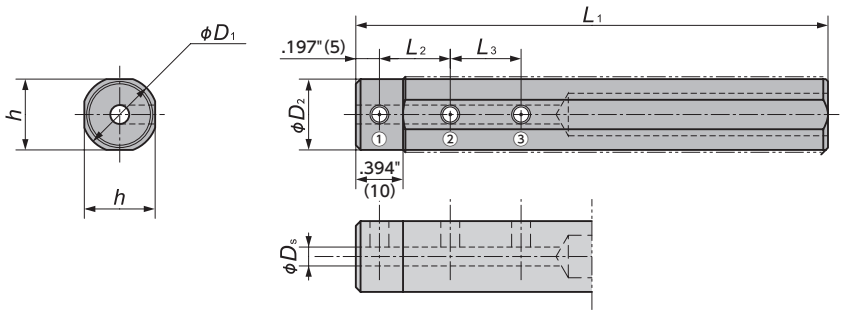
Hexagon Square

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

Insert bars ➡K182 Cutting condition ➡K183

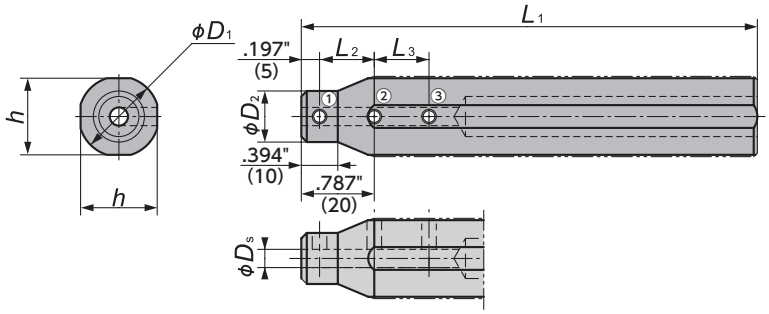
# STICK DUO - Sleeves for ID machining -

## NBH




| Item number | Stock | ϕDs (Inch) | ϕDs (mm) | ϕD1 (Inch) | ϕD1 (mm) | ϕD2 (mm) | h (mm) | L1 (mm) | L2 (mm) | L3 (mm) | Clamp screw ① | Clamp screw ② | Clamp screw ③ | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NBH02015H** | ○ | .079 | 2.0 | 5/8 | | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH02515H** | ○ | .098 | 2.5 | 5/8 | | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH03015H** | ○ | .118 | 3.0 | 5/8 | | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH03515H** | ○ | .138 | 3.5 | 5/8 | | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04015H** | ○ | .157 | 4.0 | 5/8 | | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04515H** | ○ | .177 | 4.5 | 5/8 | | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH05015H** | ○ | .197 | 5.0 | 5/8 | | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH06015H** | ○ | .236 | 6.0 | 5/8 | | 15 | 15 | 100 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH08015H** | ○ | .315 | 8.0 | 5/8 | | 15 | 15 | 100 | 20 | 20 | SS0403F | SS0403F | SS0403F | LW-2 |
| **NBH02016H** | ○ | .079 | 2.0 | .630 | 16 | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH02516H** | ○ | .098 | 2.5 | .630 | 16 | 15 | 15 | 100 | 10 | — | SS0406F | SS0406F | — | LW-2 |
| **NBH03016H** | ○ | .118 | 3.0 | .630 | 16 | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH03516H** | ○ | .138 | 3.5 | .630 | 16 | 15 | 15 | 100 | 10 | 10 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04016H** | ○ | .157 | 4.0 | .630 | 16 | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH04516H** | ○ | .177 | 4.5 | .630 | 16 | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH05016H** | ○ | .197 | 5.0 | .630 | 16 | 15 | 15 | 100 | 15 | 15 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH06016H** | ○ | .236 | 6.0 | .630 | 16 | 15 | 15 | 100 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH07016H** | ○ | .276 | 7.0 | .630 | 16 | 15 | 15 | 100 | 20 | 20 | SS0403F | SS0404F | SS0404F | LW-2 |
| **NBH08016H** | ○ | .315 | 8.0 | .630 | 16 | 15 | 15 | 100 | 20 | 20 | SS0403F | SS0403F | SS0403F | LW-2 |
| **NBH02019K** | ○ | .079 | 2.0 | 3/4 | | 18 | 18 | 125 | 10 | — | SS0408F | SS0408F | — | LW-2 |
| **NBH02519K** | ○ | .098 | 2.5 | 3/4 | | 18 | 18 | 125 | 10 | — | SS0408F | SS0408F | — | LW-2 |
| **NBH03019K** | ○ | .118 | 3.0 | 3/4 | | 18 | 18 | 125 | 10 | 10 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH03519K** | ○ | .138 | 3.5 | 3/4 | | 18 | 18 | 125 | 10 | 10 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH04019K** | ○ | .157 | 4.0 | 3/4 | | 18 | 18 | 125 | 15 | 15 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH04519K** | ○ | .177 | 4.5 | 3/4 | | 18 | 18 | 125 | 15 | 15 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH05019K** | ○ | .197 | 5.0 | 3/4 | | 18 | 18 | 125 | 15 | 15 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH06019K** | ○ | .236 | 6.0 | 3/4 | | 18 | 18 | 125 | 20 | 20 | SS0406F | SS0406F | SS0406F | LW-2 |
| **NBH07019K** | ○ | .276 | 7.0 | 3/4 | | 18 | 18 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH08019K** | ○ | .315 | 8.0 | 3/4 | | 18 | 18 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| **NBH10019K** | ○ | .394 | 10.0 | 3/4 | | 18 | 18 | 125 | 20 | 20 | SS0403F | SS0404F | SS0404F | LW-2 |

## NBH




| Item number | Stock | $\phi D_s$ (Inch) | $\phi D_s$ (mm) | $\phi D_1$ (Inch) | $\phi D_1$ (mm) | $\phi D_2$ (mm) | $h_1$ (mm) | $L_1$ (mm) | $L_2$ (mm) | $L_3$ (mm) | Clamp screw ① | Clamp screw ② | Clamp screw ③ | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NBH02020K | ○ | .079 | 2.0 | .787 | 20 | 11 | 19 | 125 | 10 | — | SS0404F | SS0404F | — | LW-2 |
| NBH02520K | ○ | .098 | 2.5 | .787 | 20 | 11 | 19 | 125 | 10 | — | SS0404F | SS0404F | — | LW-2 |
| NBH03020K | ○ | .118 | 3.0 | .787 | 20 | 12 | 19 | 125 | 10 | 10 | SS0404F | SS0404F | SS0406F | LW-2 |
| NBH03520K | ○ | .138 | 3.5 | .787 | 20 | 12 | 19 | 125 | 10 | 10 | SS0404F | SS0404F | SS0406F | LW-2 |
| NBH04020K | ○ | .157 | 4.0 | .787 | 20 | 13 | 19 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH04520K | ○ | .177 | 4.5 | .787 | 20 | 13 | 19 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH05020K | ○ | .197 | 5.0 | .787 | 20 | 14 | 19 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH06020K | ○ | .236 | 6.0 | .787 | 20 | 15 | 19 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH07020K | ○ | .276 | 7.0 | .787 | 20 | 16 | 19 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH08020K | ○ | .315 | 8.0 | .787 | 20 | 17 | 19 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| NBH10020K | ○ | .394 | 10.0 | .787 | 20 | 19 | 19 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| NBH02022K | ○ | .079 | 2.0 | .866 | 22 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH02522K | ○ | .098 | 2.5 | .866 | 22 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH03022K | ○ | .118 | 3.0 | .866 | 22 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| NBH03522K | ○ | .138 | 3.5 | .866 | 22 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH04022K | ○ | .157 | 4.0 | .866 | 22 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH04522K | ○ | .177 | 4.5 | .866 | 22 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH05022K | ○ | .197 | 5.0 | .866 | 22 | 14 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH06022K | ○ | .236 | 6.0 | .866 | 22 | 15 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH07022K | ○ | .276 | 7.0 | .866 | 22 | 16 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH08022K | ○ | .315 | 8.0 | .866 | 22 | 17 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH10022K | ○ | .394 | 10.0 | .866 | 22 | 19 | 21 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| NBH12022K | ○ | .472 | 12.0 | .866 | 22 | 21 | 21 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |
| NBH02023K | ○ | .079 | 2.0 | .906 | 23 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH02523K | ○ | .098 | 2.5 | .906 | 23 | 11 | 21 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH03023K | ○ | .118 | 3.0 | .906 | 23 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| NBH03523K | ○ | .138 | 3.5 | .906 | 23 | 12 | 21 | 125 | 10 | 10 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH04023K | ○ | .157 | 4.0 | .906 | 23 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH04523K | ○ | .177 | 4.5 | .906 | 23 | 13 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH05023K | ○ | .197 | 5.0 | .906 | 23 | 14 | 21 | 125 | 15 | 15 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH06023K | ○ | .236 | 6.0 | .906 | 23 | 15 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH08023K | ○ | .315 | 8.0 | .906 | 23 | 17 | 21 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH10023K | ○ | .394 | 10.0 | .906 | 23 | 19 | 21 | 125 | 20 | 20 | SS0404F | SS0404F | SS0404F | LW-2 |
| NBH12023K | ○ | .472 | 12.0 | .906 | 23 | 21 | 21 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |
| NBH02025K-MET | ○ | .079 | 2.0 | .984 | 25 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH02525K-MET | ○ | .098 | 2.5 | .984 | 25 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH03025K-MET | ○ | .118 | 3.0 | .984 | 25 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| NBH03525K-MET | ○ | .138 | 3.5 | .984 | 25 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| NBH04025K-MET | ○ | .157 | 4.0 | .984 | 25 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH04525K-MET | ○ | .177 | 4.5 | .984 | 25 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH05025K-MET | ○ | .197 | 5.0 | .984 | 25 | 14 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH06025K-MET | ○ | .236 | 6.0 | .984 | 25 | 15 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH07025K-MET | ○ | .276 | 7.0 | .984 | 25 | 16 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH08025K-MET | ○ | .315 | 8.0 | .984 | 25 | 17 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH10025K-MET | ○ | .394 | 10.0 | .984 | 25 | 19 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH12025K-MET | ○ | .472 | 12.0 | .984 | 25 | 21 | 24 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |
| NBH02025K | ○ | .079 | 2.0 | 1 | 25.4 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH02525K | ○ | .098 | 2.5 | 1 | 25.4 | 11 | 24 | 125 | 10 | — | SS0404F | SS0406F | — | LW-2 |
| NBH03025K | ○ | .118 | 3.0 | 1 | 25.4 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| NBH03525K | ○ | .138 | 3.5 | 1 | 25.4 | 12 | 24 | 125 | 10 | 10 | SS0404F | SS0406F | SS0408F | LW-2 |
| NBH04025K | ○ | .157 | 4.0 | 1 | 25.4 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH04525K | ○ | .177 | 4.5 | 1 | 25.4 | 13 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH05025K | ○ | .197 | 5.0 | 1 | 25.4 | 14 | 24 | 125 | 15 | 15 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH06025K | ○ | .236 | 6.0 | 1 | 25.4 | 15 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH07025K | ○ | .276 | 7.0 | 1 | 25.4 | 16 | 24 | 125 | 20 | 20 | SS0404F | SS0408F | SS0408F | LW-2 |
| NBH08025K | ○ | .315 | 8.0 | 1 | 25.4 | 17 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH10025K | ○ | .394 | 10.0 | 1 | 25.4 | 19 | 24 | 125 | 20 | 20 | SS0404F | SS0406F | SS0406F | LW-2 |
| NBH12025K | ○ | .472 | 12.0 | 1 | 25.4 | 21 | 24 | 125 | 25 | 25 | SS0404F | SS0404F | SS0404F | LW-2 |

● : Stock ○ : 1-2 week delivery

Insert bars ➡K182 Cutting condition ➡K183

MEMO

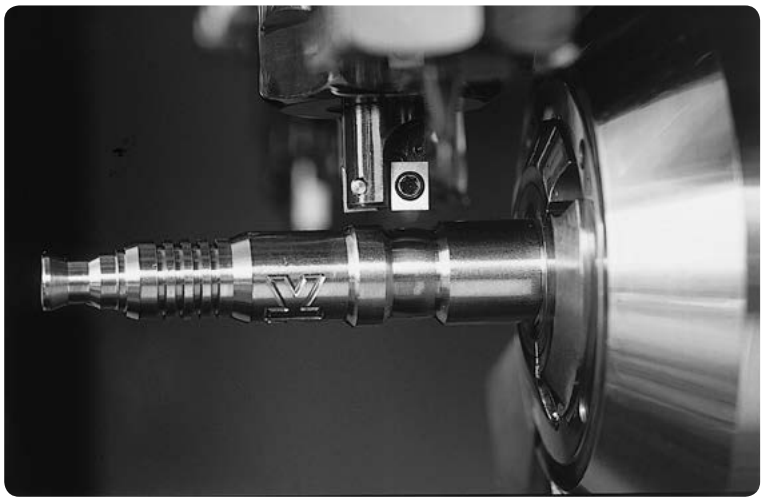
K

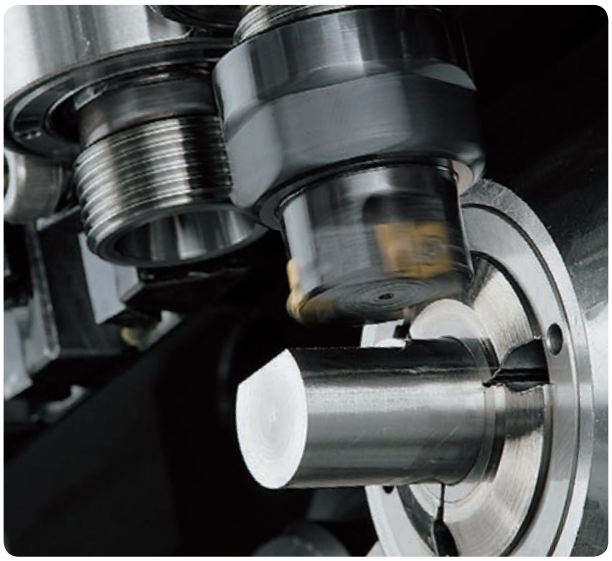


# Indexable End Mills

# Small Diameter Indexable End Mills







## Features

- **Attach .787"(20㎜) 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

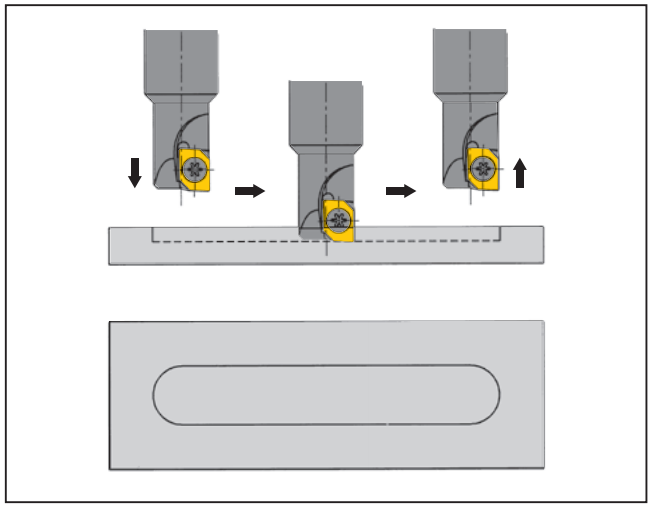


## 【Recommended Cutting Conditions】

| 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 |

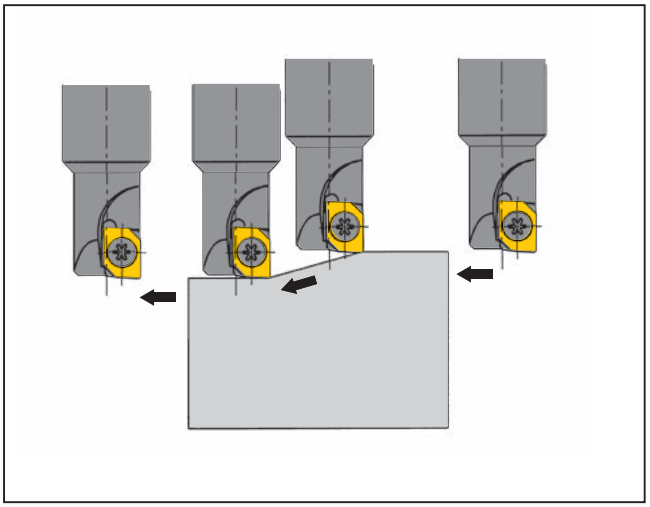
## Application Example

### Application Example-1



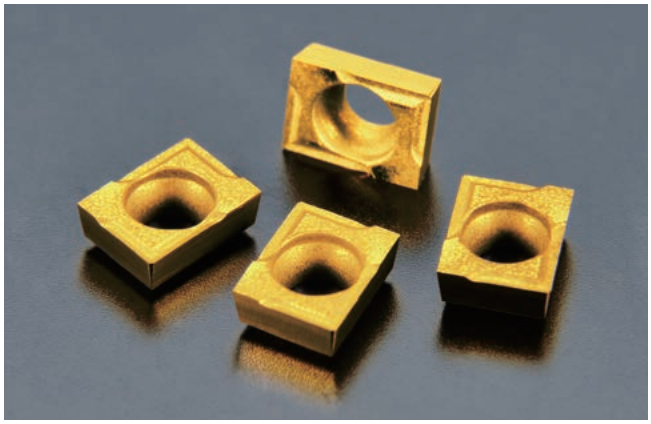
- A single tooth endmill equipped with a center cutting edge insert can be used for both plunge and side cut operations.

### Application Example-2



- A single tooth endmill equipped with a center cutting edge insert can be used for slope milling operations.

## Insert



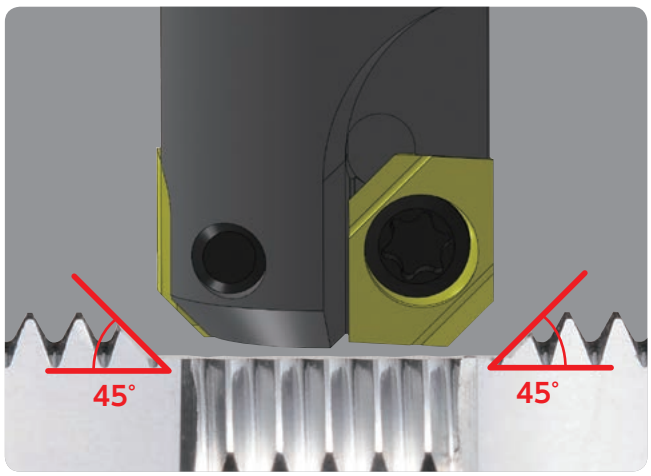
### Wiper

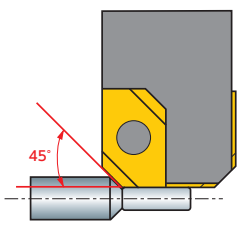
- Excellent surface finish obtained with new wiper insert

### 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〉

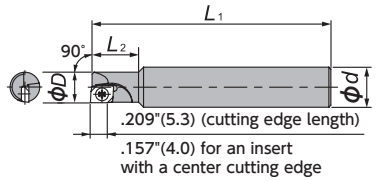



Figure-1

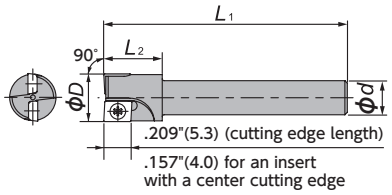



Figure-2

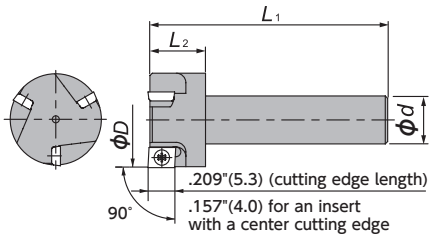



Figure-3

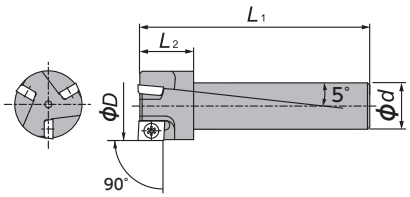



Figure-4 Right-Hand style shown

〈D cutting = lead angle 45 type end milling tool〉

NEW

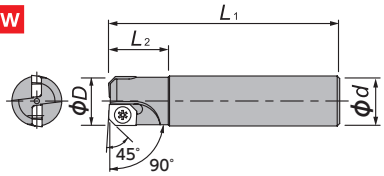



Figure-5

# REZ Series - Toolholders



## ■REZ

| Gage Insert | Item Number | Figure | Stock R | Stock L | No. of teeth | ϕD (Inch) | ϕD (mm) | ϕd (Inch) | ϕd (mm) | $L_1$ (Inch) | $L_1$ (mm) | $L_2$ (Inch) | $L_2$ (mm) | Clamp Screw | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 CZH04..CFR... | **REZ100C2R466** | 5 | ○ | | 2 | .394 | 10 | .276 | 7 | 1.969 | 50 | .472 | 12 | FS102-2.2 × 4.3 | T-07 |
| | **REZ100C2R461** | 5 | ● | | 2 | .394 | 10 | .394 | 10 | 1.969 | 50 | .472 | 12 | FS102-2.2 × 4.3 | T-07 |

# CZH Series - Inserts

NEW

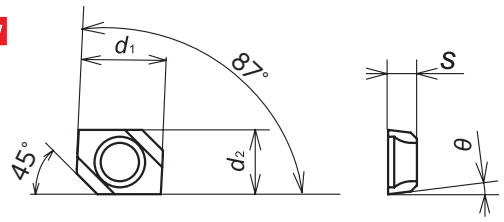



Figure-1 Chipbreaker with wiper

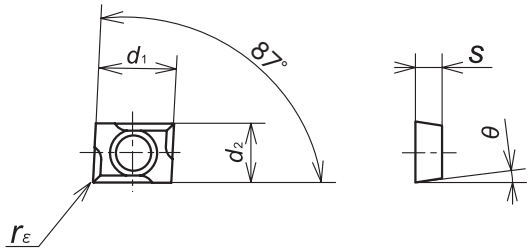



Figure-2 Chipbreaker

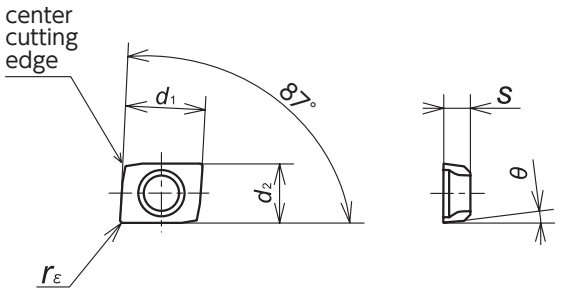



Figure-3 Center cutting edge without wiper

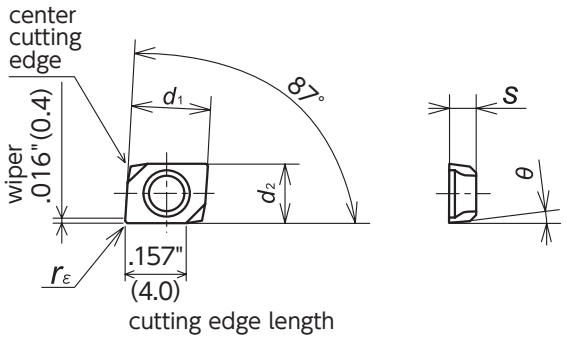



Figure-4 Center cutting edge with wiper

## ■CZH

| Item Number | Figure | Chip-breaker | Center Blade | Wiper | $d_1$ (Inch) | $d_1$ (mm) | $d_2$ (Inch) | $d_2$ (mm) | $s$ (Inch) | $s$ (mm) | θ | C or $r_\varepsilon$ (Inch) | C or $r_\varepsilon$ (mm) | Coated Carbide 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 REZ100C2R461/466Cuters

● : Stock ○ : 1-2 week delivery

Cutting condition ➡K192

MEMO

# L

# Information


- Grade Comparison Chart ····· L2
- Turning Tool Terminology ····· L4
- Milling Cutter Terminology ····· L5
- Calculation Formula for Turning ····· L6
- Troubleshooting for Turning ····· L8
- Calculation Formula for Milling Processes··· L10
- Troubleshooting for Milling ····· L12
- Surface Roughness Standards ····· L14
- Spare Parts - Wrenches ····· L16
- Clamp Screws and Wrenches ····· L17
- Material Cross Reference Chart ····· L18
- Ni-based Heat Resistant Alloys ····· L20
- Co-based Heat Resistant Alloys ····· L24
- Swiss Machine List ····· L26
- Hardness Comparison Chart ····· L30

# Grade Comparison Chart

* Italic type = Coated insert

## BIDEMICS/Ceramics

| | NTK | GREENLEAF | HERTEL | INDEXABLE | ISCAR | KENNAMETAL | KYOCERA | NEWCOMER | ROMAY | SANDVIK | SPK | SSANGYONG | SUMIOTOMO | TAEGUTECH | TUNGALOY | VALENITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cast iron K | **HC1**<br>**HW2** | GEM19 | AC5 | I50 | IN11 | | KA30 | NP5200 | CC10 | | | SZ200<br>SZ300 | | AW20<br>AB120 | | |
| | **HC2**<br>**HC5**<br>**HC6** | GEM7 | MC2 | I100 | IN22<br>IN23 | K090<br>KY1615 | A65<br>*A66N*<br>*PT600M* | NP5000 | CC20<br>CC30 | CC620<br>CC650 | SH2 | ST100<br>ST300<br>ST500<br>SD200<br>*TC300*<br>*TA300* | NB90S | AB30 | *LX11*<br>LX21<br>CX710 | Q32 |
| | **SX6**<br>***SP9*** | CSN100<br>*CSN200* | | MW30<br>MW43 | IS8<br>*IS80* | *KYK25*<br>KYK35<br>KY3000<br>KY3400<br>KY3500 | *CS7050*<br>KS6000<br>KS6050 | | CC510<br>CC513<br>CC514<br>*CC514SC*<br>CC516<br>*CC516SC* | CC6190<br>*CC1690* | SL506<br>SL508<br>*SL554C*<br>SL808<br>*SL550C*<br>SL654<br>*SL854C* | SN26<br>SN300<br>SN400<br>SN600<br>SN500<br>SN600<br>SN700<br>SN800 | SN2000K<br>SN2100K<br>NS260<br>NS260C | AS10<br>SC10<br>AS500 | FX105 | VPQ130<br>VPQ135 |
| Heat resistant alloy S | **JX1** | | | | | | | | | | | | | | | |
| | **WA1** | WG300<br>*WG600* | | | IW7 | KY4300 | | | CC600 | CC670 | | SW400<br>SW500<br>SW700 | WX2000 | TC430 | | |
| | **SX5**<br>**SX7**<br>**SX9** | | | MW37 | | *KYS25*<br>KYS30<br>KY2100<br>KY1525<br>KY1540 | CF1 | | CC5477 | CC6060<br>CC6065 | | SN900 | | AS20 | | |
| Hardened material H | **HC4**<br>***ZC4***<br>**HC5**<br>**HC7**<br>***ZC7*** | GEN7 | | I100 | IN22 | *KY4400* | A65<br>KT66<br>*A66N*<br>*PT600M* | | CC30SC | CC6050 | | | NB90S | *AB20* | LX11 | Q35<br>*VPZ215*<br>*VPZ205* |
| | **WA1** | WG300<br>WG600 | | | IW7 | KYS25<br>KY4300 | | | | CC670 | | SW400<br>SW500<br>SW700 | | | | |

## Cermet

| | NTK | DIJET | HITACHI | ISCAR | KENNAMETAL | KYOCERA | MITSUBISHI | SANDVIK | SECO | SSANGYONG | SUMIOTOMO | TAEGUTECH | TUNGALOY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel P | **XT3**<br>***Q15***<br>**C7X**<br>***C7Z***<br>**XN4** | LN10<br>CX50<br>CX75<br>CX90<br>CX99<br>NIT<br>NAT<br>SUZ | CH350<br>CZ25<br>CH550<br>CH7030<br>*CZ1025* | IC20N<br>IC520N<br>IC530N<br>IC75T<br>IC30N | *KT315*<br>*KTP10* | TN30<br>*PV30*<br>TN6010<br>*PV7010*<br>TN60<br>TN6020<br>*PV7020*<br>*PV7025*<br>TN90 | *AP25N*<br>NX2525<br>NX3035<br>*VP45N* | CT5015<br>*GC1525* | CM<br>C15M | TX510<br>TX515<br>TX520<br>TX530 | T110A<br>T1200A<br>*T2000Z*<br>*T3000Z* | PV3010<br>PV3030<br>CT3000<br>CT5000 | NS520<br>*GT530*<br>*GT730*<br>NS730<br>NS740 |
| Stainless steel M | **XT3**<br>***Q15***<br>**C7X**<br>***C7Z***<br>**XN4** | LN10<br>CX50<br>CX75<br>CX90<br>CX99<br>NIT<br>NAT<br>SUZ | CH350<br>CH550<br>CH7030<br>*CZ1025* | IC20N<br>IC520N<br>IC530N<br>IC30N | *KT315*<br>*KTP10* | TN60<br>TN6020<br>*PV7020*<br>*PV7025*<br>TN90 | NX2525<br>*AP25N*<br>NX3035 | *GC1525* | CM<br>C15M | TX510<br>TX515<br>TX520<br>TX530 | *T2000Z* | PV3010<br>PV3030<br>CT3000<br>CT5000 | NS520<br>NS530<br>*GT730*<br>NS740 |
| Cast iron K | **T15**<br>***Q15*** | LN10<br>NIT | CH350 | | *KT315*<br>*KTP10* | TN30<br>*PV30*<br>*PV7005*<br>TN60<br>TN6010<br>*PV7005*<br>*PV7010* | *AP25N*<br>NX2525 | CT5015 | | TX510<br>TX515<br>TX520<br>TX530 | T110A<br>T1200A | PV3010<br>PV3030<br>CT3000<br>CT5000 | NS520<br>NS530<br>NS730<br>*GT730* |

## Non coated carbide

| | NTK | DIJET | GREENLEAF | HITACHI | INDEXABLE | ISCAR | KENNAMETAL | KYOCERA | MITSUBISHI | ROMAY | SANDVIK | SECO | SUMIOTOMO | TAEGUTECH | TUNGALOY | WALTER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel P | **KM1** | SRT<br>DX30<br>DX35<br>SR30 | G60<br>G20M | WS10<br>EX35<br>EX40<br>EX45 | CI9<br>CI7<br>CI6<br>CI5 | IC70<br>IC50M<br>IC54 | KU10 | PW30 | UTi20T | | | S10M<br>S25M<br>S60M | ST10P<br>ST20E<br>ST30E<br>A30 | CT3000 | UX30<br>TX40 | |
| Cast iron K | **KM1** | KG03<br>KG1<br>KG10<br>KT9<br>CR1<br>KG20<br>KG30<br>LF12 | G02 | WH02<br>WH05<br>WH10<br>WH20D | CI65<br>CI2<br>CI3<br>CI1<br>CI4 | IC04<br>IC20<br>IC10<br>IC28 | K68<br>K313 | KW10<br>GW15<br>GW25 | HTi05T<br>HTi10T<br>UTi20T | R600 | H10<br>H13A | 890<br>883<br>HX | G10E | UF1 | TH03<br>KS05F<br>G1F<br>TH10<br>G2<br>G2F<br>KS15F<br>KS20<br>G3 | WSN10<br>WK1 |

## ● PVD coated carbide

| | NTK | DIJET | GREENLEAF | HITACHI | INDEXABLE | ISCAR | KENNAMETAL | KYOCERA | MITSUBISHI | SANDVIK | SECO | SUMIOTOMO | TAEGUTECH | TUNGALOY | WALTER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel P | **VM1<br>ZM3<br>QM3<br>TM4<br>DT4<br>DM4** | JC5003<br>JC5030<br>JC5015<br>JC5040 | G915<br>G920<br>G925 | CY15<br>CY150<br>IP2000<br>CY250<br>CY9020<br>HC844<br>IP3000 | CI29<br>CI25A | IC507<br>IC807<br>IC907<br>IC908<br>IC328<br>IC928<br>IC3028 | KC5510<br>KC5010<br>KCU10<br>KCU25<br>KC5025<br>KC5525 | PR915<br>PR1005<br>PR930<br>PR1025<br>PR1115<br>PR1215<br>PR1225 | VP10MF<br>VP10RT<br>VP15TF<br>VP20MF<br>VP20RT | GC1125<br>GC1525 | CP200<br>CP250<br>CP500 | ACZ150<br>ACZ310<br>AC520U<br>ACZ330<br>ACZ350<br>AC530U | TT1040<br>TT7220<br>TT8010<br>TT8020<br>TT9030<br>TT9080 | AH710<br>AH725<br>AH730<br>SH730<br>GH330<br>AH120<br>AH740<br>AH130<br>GH130<br>AH140 | WSM30<br>WXP43<br>WXM33<br>WXP20 |
| Stainless steel M | **VM1<br>ZM3<br>QM3<br>TM4<br>DT4<br>DM4** | JC5003<br>JC5015<br>JC5030<br>JC5040 | G915<br>G920<br>G925 | IP050S<br>IP100S<br>CY250<br>CY9020 | CI29<br>CI24<br>CI23 | IC507<br>IC520<br>IC907<br>IC308<br>IC908<br>IC3028<br>IC1008<br>IC1028<br>IC3028<br>IC928 | KCU10<br>KCU25<br>KC5010<br>KC5025<br>KC5510<br>KC5525 | PR915<br>PR1025<br>PR1215<br>PR1225<br>PR930<br>PR1125 | VP10MF<br>VP10RT<br>VP15TF<br>VP20MF<br>VP20RT | GC15<br>GC1005<br>GC1105<br>GC1115<br>GC1525<br>GC2035 | TS2000<br>CP200<br>TS2500<br>CP500 | EH510Z<br>ACZ150<br>AC510U<br>EH520Z<br>ACZ310<br>AC520U<br>ACZ330<br>ACZ350<br>AC530U | TT1040<br>TT5080<br>TT7010<br>TT7080<br>TT7220<br>TT8010<br>TT8020 | AH710<br>AH725<br>AH730<br>GH330<br>SH730<br>GH730<br>AH120<br>AH130<br>GH130<br>AH140 | WXN10<br>WXP43<br>WXM33<br>WXP20<br>WXM20 |
| Cast iron K | **QM3<br>DM4** | JC5003<br>JC5015 | | CY100H<br>CY10H<br>CY9020 | | IC910<br>IC507<br>IC908<br>IC508 | KCU10<br>KCU25<br>KC5010<br>KC5025<br>KC5510<br>KC5525 | PR905<br>PR1215 | VP10RT<br>VP15TF<br>VP20RT | | TS2000<br>CP200<br>DTS2500<br>CP250<br>CP500 | EH10Z<br>EH510Z<br>AC510U<br>EH20Z<br>ACZ310<br>AC520U<br>AC530U | TT1040<br>TT6080<br>TT7010<br>TT7080 | AH110<br>GH110<br>AH120<br>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<br>JC605X<br>JC605W<br>JC050W<br>JC110V<br>JC610<br>JC215V | GA5022<br>GA5023 | HG3305<br>HG3315<br>HX3505<br>HX3515<br>GM8015<br>HG8010<br>GM8020<br>GM8025<br>GM25 | CIN2<br>CIT3<br>CIT6<br>CINX<br>CIX | IC428<br>IC9007<br>IC9150<br>IC418<br>IC428<br>IC9015<br>IC9007 | KCP05<br>KCK05<br>KCP10<br>KCK15<br>KCP25<br>KCK20<br>KCP30 | CA4010<br>CA4505<br>CA5505<br>CA4115<br>CA4515<br>CA4120 | UC5105<br>UC5115<br>UC6110<br>UE6110 | R100<br>R200<br>R500 | GC3005<br>GC3205<br>GC3210<br>GC3215<br>GC4215 | TK1000<br>TH1000<br>TK2000<br>MK1500<br>TX150<br>TP200<br>TP2500 | AC300G<br>AC410K<br>AC700G<br>ACK200<br>DAC820P<br>AC420K<br>ACK200 | TT6300<br>TT6800<br>TT7005<br>TT7015 | T5105<br>T5115<br>T1115<br>T5125 | WPP01<br>WPP10<br>WPP20 |

## ● BIDEMICS/CBN

| | NTK | DIJET | HITACHI | INDEXABLE | ISCAR | KENNAMETAL | KYOCERA | MITSUBISHI | SANDVIK | SECO | SPK | SSANGYONG | SUMIOTOMO | TAEGUTECH | TUNGALOY | WALTER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cast iron K | **B23<br>B30<br>B99** | JBN795<br>JBN330 | BH200<br>BH250 | CBN90<br>CBN95<br>CBN100 | IB50<br>IB85<br>IB55 | KB5630<br>KB1630<br>KB1345<br>*KB9610*<br>*KB9640* | *KBN60M*<br>*KBN900* | MB710<br>MB5015<br>MB730<br>MBS140<br>BC5030 | CB7525<br>CB7925 | *CBN050C*<br>*CBN300P*<br>CBN20<br>CBN200<br>CBN300<br>CBN350 | WBN115<br>WBN105<br>WBN100<br>WBN120<br>WBN750 | SBN1600 | BN700<br>BNS800<br>BN600<br>BN500 | TB730<br>TB650<br>KB90<br>KB90A<br>TB670 | BX930<br>BX90S<br>BX870<br>BX470<br>BX480<br>BX950<br>BXC90 | |
| Heat resistant alloy S | ***JP2*** | | | CBN80 | | KB5630<br>KB1630<br>KB1340 | | MB730 | | CBN170 | | | BN700 | TB730<br>KB90 | BX950 | |
| Hardened material H | **B52<br>B36<br>B40<br>*B5K*<br>*B6K*** | JBN300<br>JBN245 | BH200<br>BH250 | CBN45<br>CBN50<br>CBN60<br>CBN70 | IB50<br>IB55 | KB1610<br>KB1625<br>KB5610<br>KB1340<br>KB5625<br>*KB9610*<br>*KB9640* | KBN510<br>KBN525<br>*KBN10C*<br>*KBN25C*<br>*KBN05M*<br>*KBN10M*<br>*KBN25M*<br>*KBN30M*<br>*KBN35N*<br>*KBN900* | *MBC010*<br>MB810<br>*BC8020*<br>MB8025<br>MB825<br>MB835 | CB7015<br>CB20<br>CB50<br>CB7025<br>CB7525 | *CBN050C*<br>CBN10<br>CBN100<br>CBN150<br>CBN170<br>CBN200<br>*CBN160P*<br>CBN350<br>*CBN300P* | | SBN2000 | BNX10<br>BNX20<br>BN250<br>BNX25<br>BN300<br>*BNC150*<br>*BNC80*<br>*DBNC200*<br>*BNC300* | KB50<br>TB650<br>TB610<br>TB670 | BX310<br>*BXM10*<br>BX330<br>BX360<br>*BXC50*<br>BX530<br>BX380<br>*BXM20* | WLB30<br>WLB50 |

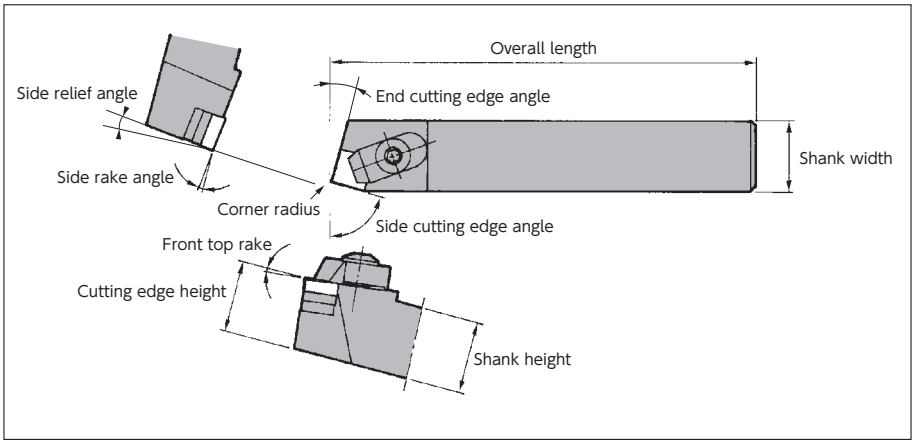
## ● PCD

| | NTK | DIJET | INDEXABLE | ISCAR | KENNAMETAL | KYOCERA | MITSUBISHI | SANDVIK | SECO | SSANGYONG | SUMIOTOMO | TAEGUTECH | TUNGALOY | WALTER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Non-ferrous material N | **PD1<br>PD2** | JDA30<br>JDA735<br>JDA40<br>JDA745<br>JDA10<br>JDA715 | PCD3<br>PCD-F<br>PCD-UF | ID5 | KD1400<br>KD1405<br>KD1425 | KPD001<br>KPD010<br>KPD230 | MD205<br>MD220<br>MD230 | CD10 | PD10<br>PD20<br>PD30 | SPD100<br>SPD200<br>SPD300 | DA1000<br>DA2200<br>DA150<br>DA200<br>DA90 | KP100<br>KP300<br>KP500 | DX180<br>DX160<br>DX140<br>DX110<br>DX120 | WCD10 |

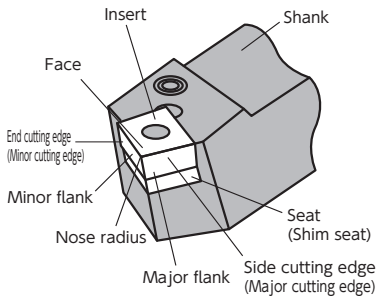
(Note) This chart is based on published data and not authorized by each manufacturer

# Turning Tool Terminology

## Toolholder part names



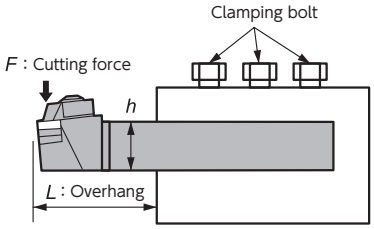

Part names of a cutting tool




## Holder rigidity

Toolholder deflection

$$\delta = \frac{4 \times F \times L^3}{E \times b \times h^3} = \frac{4 \times k_c \times f \times L^3}{E \times b \times h^3}$$

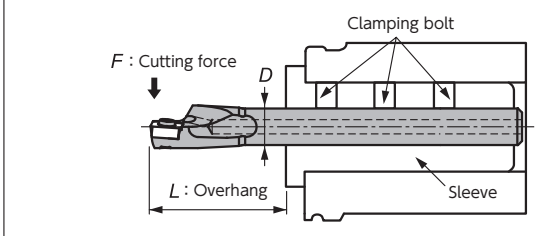



| Symbol | Term | Unit |
|---|---|---|
| $\delta$ | Deflection amount | mm |
| $b$ | Shank width | mm |
| $h$ | Shank height | mm |
| $E$ | Young's modulus | N/mm² |
| $a_p$ | Depth of cut | mm |
| $f$ | Feed amount | mm/rev |
| $k_c$ | Specific cutting force | N/mm² |
| $L$ | Overhang | mm |
| $F$ | Cutting force | N |

( $F = k_c \times a_p \times f$ )

Boring bar deflection

$$\delta = \frac{64 \times F \times L^3}{3 \times E \times \pi \times D^4} = \frac{64 \times k_c \times a_p \times f \times L^3}{3 \times E \times \pi \times D^4}$$



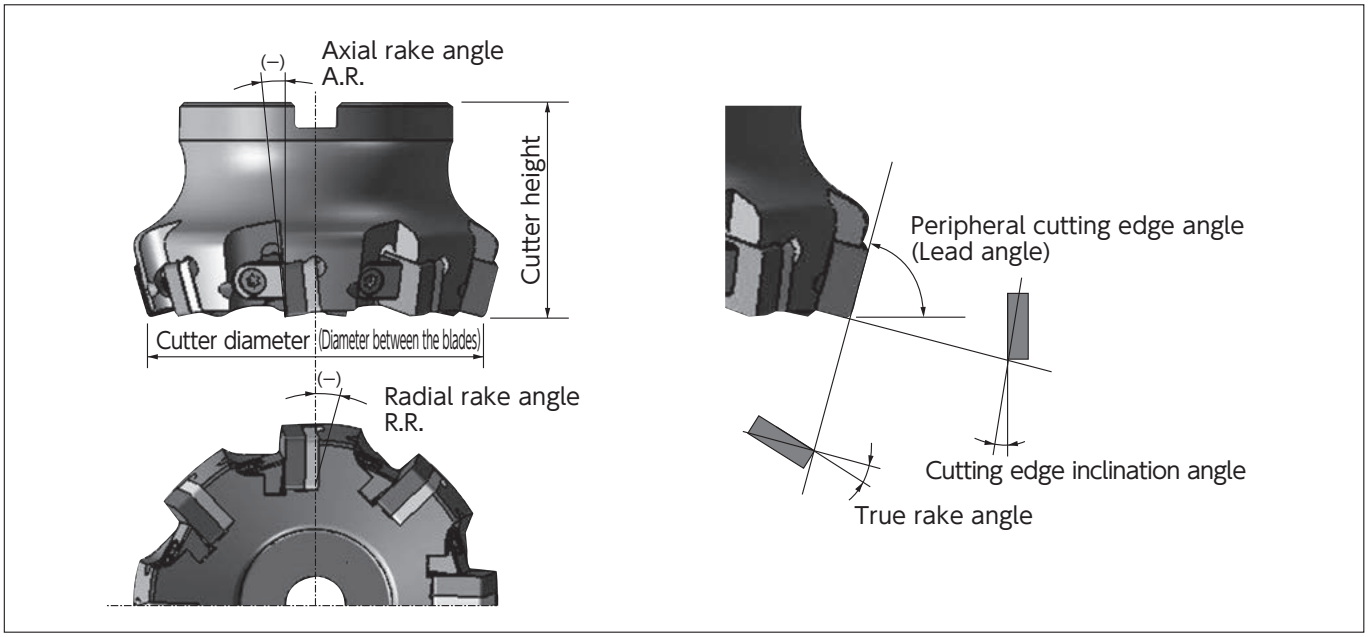

| Symbol | Term | Unit |
|---|---|---|
| $\delta$ | Deflection amount | mm |
| $D$ | Shank width | mm |
| $E$ | Young's modulus | N/mm² |
| $a_p$ | Depth of cut | mm |
| $f$ | Feed amount | mm/rev |
| $k_c$ | Specific cutting force | N/mm² |
| $L$ | Overhang | mm |
| $F$ | Cutting force | N |

( $F = k_c \times a_p \times f$ )

**An important factor in improving the rigidity of a toolholder is to ensure the overhang of the tool shank is as short as possible.**

# Milling Cutter Terminology

## Milling cutter terminology



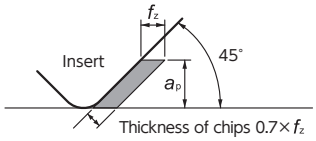

## Functions of each cutting edge angle

| Name | Function | Effects |
|---|---|---|
| Radial rake angle: R.R. | Controls the direction of chip evacuation and cutting force | Negative (−): Excels in chip control performance |
| Axial rake angle: A.R. | Controls the direction of chip evacuation and cutting force | Positive (+): Excels in cutting performance and BUE resistance |
| Lead angle | Controls the thickness and evacuation direction of chips | Larger lead angles decrease the thickness of chips and relieves cutting load |
| True rake angle | Actual rake angle | Larger angles excel in cutting performance and BUE resistance, but lower the cutting edge strength<br>Smaller angles increase the cutting edge strength but lower the BUE resistance |
| Cutting edge tilt angle | Controls the direction of chip evacuation | Larger angles excel in chip control performance and relieve cutting load, but lower the strength of the insert corner |

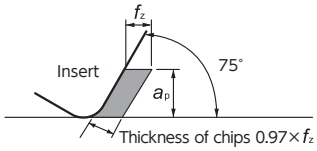
## Functions of each angle

《Lead angle》: Relationship of this angle and chip thickness

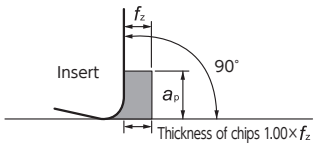
Lead angle : 45 degrees



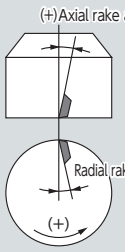
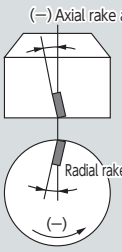
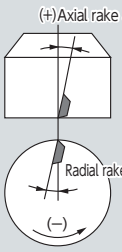

Lead angle : 75 degrees




Lead angle : 90 degrees

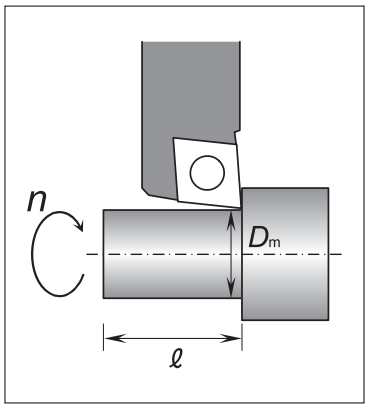



《Rake angle》: Combinations and characteristics

| Combinations of the angles for basic cutting edge shapes | |  Double-positive cutting edge shape(DP edge shape) |  Double-negative cutting edge shape(DN edge shape) |  Negative-positive cutting edge shape(NP edge shape) |
|---|---|---|---|---|
| Radial rake angle(R.R.) | | Positive (+) | Negative (–) | Negative (–) |
| Axial rake angle(A.R.) | | Positive (+) | Negative (–) | Positive (+) |
| Insert specification | | Positive (single side used) | Negative(both sides used) | Positive(single side used) |
| Work material | Steel | ● | – | ● |
| | Cast iron | – | ● | ● |
| | Aluminum alloy | ● | – | – |

## Calculation Formula for Turning

### Calculating the cutting speed




Calculating the cutting speed from the rotation speed

$$V_c = \frac{\pi \times D_m \times n}{12} \quad (SFM)$$

Calculating the revolution speed from the cutting speed

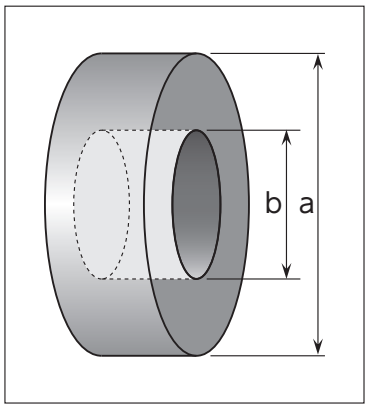
$$n = \frac{12 \times V_c}{\pi \times D_m} \quad (rmp)$$

$V_c$ : Cutting speed (SFM)
$D_m$ : Machining diameter (inch)
$n$ : Spindle speed (rpm)
$\pi$ : Pi (3.14)

Example : Obtaining a cutting speed for machining a work piece of 2" diameter at the spindle speed of 1,000 $min^{-1}$:

$$V_c = \frac{\pi \times 2 \times 1000}{12} = \underline{523\,(SFM)}$$

### Calculating the cutting time




Calculating the cutting time for OD (ID) machining

$$T = \frac{\ell}{f \times n} \quad (min)$$

Calculating the cutting time for facing

$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times V_c \times f} \quad (min)$$

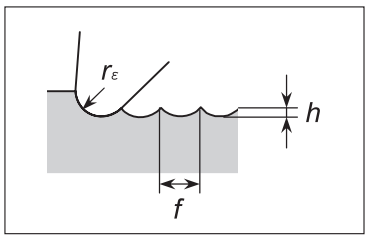
T : Cutting time (min)
$\ell$ : Cutting length (inch)
$f$ : Feed rate (IPR)
$n$ : Spindle speed (rpm)

T : Cutting time (min)
$V_c$ : Cutting speed (m/min)
$f$ : Feed amount (mm/rev)
$\pi$ : 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:

$$T = \frac{4}{.004 \times 1000} = \underline{1\,(min)}$$

### Calculating the theoretical surface roughness




$$h = \frac{f^2}{8\,r_\varepsilon} \times 1000^2 \quad (\mu inch)$$

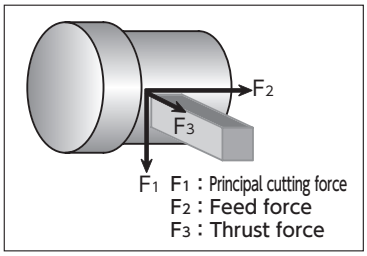
$h$ : Theoretical surface roughness ($\mu$inch)
$f$ : Feed amount (IPR)
$r_\varepsilon$ : Corner radius (inch)

Example : Obtaining the theoretical surface roughness when machining with an insert having .031 corner nose radius at a feed rate of 0.004 IPR:

$$h = \frac{.004^2}{8 \times .031} \times 1000^2 = \underline{64.51\,(\mu inch)}$$

【Guidelines for actually finished surface roughness】
Steel type work: Theoretical surface roughness × 1.5 to 3
Cast iron type work: Theoretical surface roughness × 3 to 5

## Calculating the cutting force




$$F_{(N)} = k_c \times a_p \times f$$

$F$ : Cutting force (N)
$k_c$ : Specific cutting force (N/mm²) *See the table below.
$a_p$ : Depth of cut (mm)
$f$ : Feed amount (mm/rev)

Example : Calculating the cutting force for grey cast iron cut at the feed rate of 0.2 mm/rev and with a depth of cut of 3 mm:

$$F = 1800 \times 3 \times 0.2 = \underline{1080\,(N)}$$

## Calculating the power required

$$P_{c\,(kW)} = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times \eta}$$

$P_c$ : Required power (kW)
$v_c$ : Cutting speed (m/min)
$f$ : Feed amount (mm/rev)
$a_p$ : Depth of cut (mm)
$k_c$ : Specific cutting force (N/mm²) *See the table below.
$\eta$ : Mechanical efficiency (0.7~0.8)

Example : Calculating the cutting power for the machining of grey cast iron at a cutting speed of 700 m/min, feed rate of 0.4 mm/rev, and with a depth of cut of 2 mm (with 0.8 set as the mechanical efficiency):

$$P_c = \frac{700 \times 0.4 \times 2 \times 1400}{60 \times 10^3 \times 0.8} = \underline{16.33\,(kW)}$$

## Specific cutting force

| Work material | | Tensile strength or hardness | Specific cutting force (N/mm²) "$k_c$" to cutting feed rate (mm/rev) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 0.1mm/rev | 0.2mm/rev | 0.3mm/rev | 0.4mm/rev | 0.6mm/rev |
| Soft steel | | 520 | 3,610 | 3,100 | 2,720 | 2,500 | 2,280 |
| Medium steel | | 620 | 3,080 | 2,700 | 2,570 | 2,450 | 2,300 |
| Hard steel | | 720 | 4,500 | 3,600 | 6,250 | 2,950 | 2,640 |
| Tool steel | SKD | 670 | 3,040 | 2,800 | 2,630 | 2,500 | 2,400 |
| | | 770 | 3,150 | 2,850 | 2,620 | 2,450 | 2,340 |
| Cr-Mo steel | SCM | 600 | 3,610 | 3,200 | 2,880 | 2,700 | 2,500 |
| | | 730 | 4,500 | 3,900 | 3,400 | 3,150 | 2,850 |
| Alloy steel | SNCM | 900 | 3,070 | 2,650 | 2,350 | 2,200 | 1,980 |
| | | HB350 | 3,310 | 2,900 | 2,580 | 2,400 | 2,200 |
| Gray cast iron | FC | HB200 | 2,110 | 1,800 | 1,600 | 1,400 | 1,330 |

## Calculating the volume of chips produced

$$Q_{(cm^3/min)} = v_c \times f \times a_p$$

$Q$ : Volume of evacuated chips (cm³/min)
$v_c$ : Cutting speed (m/min)
$a_p$ : Depth of cut (mm)
$f$ : Feed amount (mm/rev)

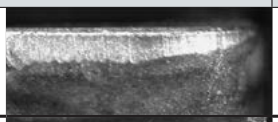
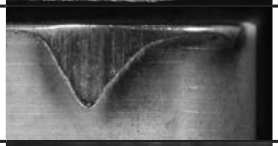
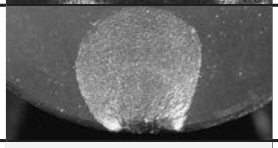
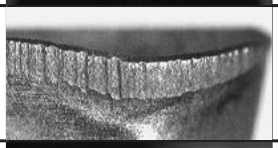
Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed of 0.4 mm/rev, and a depth of cut of 2mm

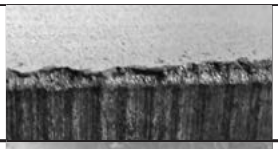
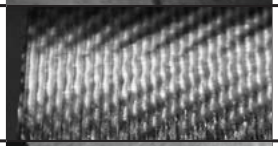
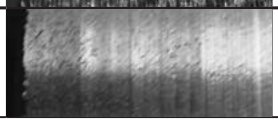
$$Q = 700 \times 0.4 \times 2 = \underline{560\,(cm^3/min)}$$

## Troubleshooting for Turning

| Type of problem | Possible cause | Corrective measures | Material/grade selection: Change to a harder material/grade | Material/grade selection: Change to a tougher material/grade | Material/grade selection: Change to a material/grade more resistant to thermal shock | Material/grade selection: Change to a material/grade more resistant to deposition | Cutting conditions: Cutting speed (Decrease ↘ / Increase ↗) | Cutting conditions: Feed rate (Decrease ↘ / Increase ↗) | Cutting conditions: Depth of cut (Decrease ↘ / Increase ↗) | Cutting conditions: Coolant: Use non-water-soluble type | Cutting conditions: Coolant: Review dry or wet operation | Tool shape: Review the type of chipbreaker | Tool shape: Rake angle (Decrease ↘ / Increase ↗) | Tool shape: Nose radius of the insert | Tool shape: Side cutting edge angle | Tool shape: Cutting edge strength, honing | Tool shape: Improve the accuracy of insert | Tool shape: Improve the rigidity of the holder | Machine/installation: Improve the installation accuracy of the cutting tool | Machine/installation: Review the overhang of the cutting tool | Machine/installation: Prevent vibration of the machine, improve the machine rigidity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Short tool life | Excessive insert wear | Unsuitable tool material/grade | ● | | | | | | | | | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | ● | ↗ | ↗ | ↗ | ↘ | | | | | |
| | | Improper cutting conditions | | | | | ↘ | ↗ | | | Wet | | | | | | | | | | |
| | Fracture/chipping of the cutting edge | Unsuitable tool material/grade | | ● | | | | | | | | | | | | | | | | | |
| | | Improper cutting conditions | | | | | | ↘ | ↘ | | | | | | | | | | | | |
| | | Insufficient cutting edge strength | | | | | | | | | | ● | | ↗ | | ↗ | | | | | |
| | | Thermal shock | | | ● | | ↘ | ↘ | ↘ | ● | Dry | | | | | | | | | | |
| | | Built-up edge | | | | ● | ↗ | ↗ | | ● | Wet | | | | | | | | | | |
| | | Insufficient toughness | | | | | | | | | | | | | | | | ● | ● | ● | ● |
| Poor dimensional accuracy | Variation in dimensions during cutting | Improper accuracy of insert | | | | | | | | | | | | | | | ● | | | | |
| | | Clearance/relief of the work/tool | | | | | | | | | | ● | ↗ | ↘ | ↘ | ↘ | | ● | ● | ● | ● |
| | Need for offsetting during cutting | Increased flank wear | ● | | | | | | | | | | | ↗ | | | | | | | |
| | | Built-up edge | | | | ● | ↗ | | | | | | | | | | | | | | |
| | | Improper cutting conditions | | | | | ↘ | ↗ | | | | | | | | | | | | | |
| Poor surface finish | Poor surface roughness | Deposition | | | | | ↗ | | | ● | Wet | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | ● | | ↗ | | | | | | | |
| | | Chatter | | | | | ↘ | ↘ | ↘ | | | | | | | | | ● | ● | ● | ● |
| Heat | Deterioration in tool life/accuracy due to excessive heat generation | Improper cutting conditions | | | | | ↘ | ↘ | ↘ | | | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | ● | ↗ | | | ↘ | | | | | |
| Burring, chipping, scuffing | Burring | Boundary wear | ● | | | | | | | | | | | | | | | | | | |
| | | Improper cutting conditions | | | | | ↘ | ↓↑ | | | Wet | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | ● | ↗ | ↘ | ↘ | ↘ | | | | | |
| | Chipping | Improper cutting conditions | | | | | | ↘ | ↘ | | | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | ● | ↗ | ↗ | ↗ | ↘ | | | | | |
| | | Vibration | | | | | | | | | | | | | | | | ● | ● | ● | ● |
| | Scuffing | Unsuitable tool material/grade | | | | ● | | | | | | | | | | | | | | | |
| | | Improper cutting conditions | | | | | ↗ | | | ● | Wet | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | ● | ↗ | | | ↘ | | | | | |
| | | Vibration | | | | | | | | | | | | | | | | ● | ● | ● | ● |
| Chip control | Elongated chips | Improper cutting conditions | | | | | ↘ | ↗ | ↗ | | Wet | | | | | | | | | | |
| | | Chipbreaker's effective chip control range | | | | | | | | | | ● | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | | | ↘ | ↘ | | | | | | |

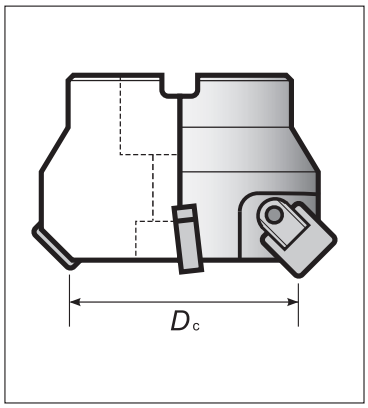
## Troubleshooting Case Studies: Turning

| | Case/Symptom | | Possible causes | Corrective measures |
|---|---|---|---|---|
| Insert | VB wear |  | ●The material / grade is too soft<br>●Cutting speed is too high<br>●Relief angle is too small | ●Use a coated grade<br>●Choose a material/grade highly resistant to wear<br>●Decrease the cutting speed |
| | Wear on face |  | ●High temperature causes chemical reactions between the insert material and chips | ●Use a coated grade<br>●Decrease both of the cutting speed and feed rate<br>●Widen the rake angle |
| | Notching wear |  | ●The work surface is too hard<br>●Boundary area has been oxidized<br>●Burrs, caused by chips in the sheared form, have been cut | ●Widen the side cutting edge angle<br>●Make the nose radius larger so that cutting is performed within the radius<br>●Use a round insert |
| | Chipping/ fracture |  | ●Feed rate is too high<br>●Chips have become trapped<br>●Chatter resulting in vibration | ●Enlarge the honed edge<br>●Make the nose radius larger<br>●Narrow the rake angle to secure the cutting edge strength |
| | Flaking |  | ●This is due to compressive forces being applied to the cutting edge from elastic deformation in the area being cut<br>●This occurs when deposited/adhered material is peeled off | ●Change the cutting conditions by checking the cutting edge<br>●Choose a material/grade highly resistant to fracture<br>●Increase the coolant rate and pressure<br>●Improve the run-out of the main spindle of the machine |
| | Plastic deformation |  | ●High cutting force and excessive heat is applied to the cutting edge | ●Choose a material/grade highly resistant to wear<br>●Decrease both of the cutting speed and feed rate<br>●Make the nose radius larger<br>●Use coolant |
| | Built-up edge |  | ●This occurs because the cutting temperature is lower than the recrystallization temperature of the work material | ●Increase the cutting speed<br>●Use coolant with excellent lubrication performance<br>●Change to a grade with less affinity to the work material |
| | Deposition |  | ●The deposition is caused to the face by a chemical reactions of the work material due to heat generation | ●Increase the cutting speed<br>●Widen the relief angle<br>●Hone the face with a mirror-like-surface finish<br>●Change to a grade with less affinity to the work material |
| | Clamping crack |  | ●The insert was clamped under improper seating conditions | ●Clean the clamping areas and install the insert in the recommended way<br>●Tighten to the specified torque |

| | | | | |
|---|---|---|---|---|
| Work piece | Chipping |  | ●The feed rate is too high<br>●An unsuitable insert was selected | ●Decrease the feed rate<br>●Use a smaller edge preparation<br>●Change to a grade highly resistant to boundary wear<br>●Change the cutting edge angle of the holder |
| | Burring |  | ●The feed rate is incorrect<br>●The shape of insert is not suitable | ●Decrease the feed rate<br>●Use a smaller edge preparation |
| | Chatter mark |  | ●The cutting force is too great<br>●The rigidity of the work piece and cutting tool is insufficient | ●Decrease the feed rate<br>●Use a smaller edge preparation<br>●Ensure tool overhang is minimised<br>●Change the cutting edge angle of the holder |
| | Gouging |  | ●Vibration of the cutting edge due to deposition/built-up edge | ●Increase the cutting speed<br>●Use cutting oil excellent in lubrication performance<br>●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

$$v_c \underset{(SFM)}{=} \frac{\pi \times D_c \times n}{12}$$

Calculating the revolution speed from the cutting speed

$$n \underset{(rpm)}{=} \frac{12 \times v_c}{\pi \times D_c}$$

$v_c$ : Cutting speed (SFM)
$D_c$ : Cutter diameter (inch)
$n$ : Spindle speed (rpm)
$\pi$ : Pi (3.14)

Example : Obtaining the cutting speed for machining with an 8" diameter cutter at the Spindle speed of 1,000 rpm:

$$v_c = \frac{\pi \times 8 \times 1000}{12} = \underline{2093\,(SFM)}$$

### Calculating the feeding speed and feed rate

Calculating the feed rate per blade

$$f_z \underset{(IPT)}{=} \frac{v_f}{z \times n}$$

Calculating the feeding speed per minute

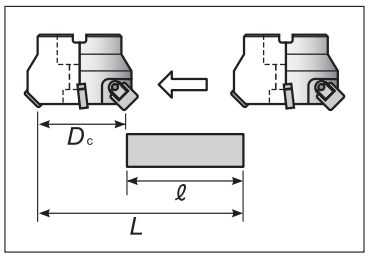
$$v_f \underset{(inch/min)}{=} f_z \times z \times n$$

$f_z$ : Inch amount per tooth (IPT)
$v_f$ : Table feed (inch/min)
$z$ : Number of tooth
$n$ : Spindle speed (rpm)

Example : Obtaining the feed rate for milling with a 10-teeth cutter at the .008IPT and the revolution speed of 1,000 rpm

$$v_f = .008 \times 10 \times 1000 = \underline{80\,(inch/min)}$$

### Calculating the machining time




$$T \underset{(min)}{=} \frac{L}{v_f}$$

T : Cutting time (min)
L : Total length of table feed ($\ell + D_c$)
$v_f$ : Table feed (inch/min)

Example : Obtaining the machining time for milling 8" on a work piece fed at the rate of 40 inch/min:

$$T = \frac{8}{40} = \underline{0.2\,(min)}$$

## ● Calculating the cutting power

$$P_{c\,(kW)} = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times \eta}$$

$P_c$ : Required power (kW)
$a_e$ : Cutting length (mm)
$a_p$ : Depth of cut (mm)
$v_f$ : Feed rate (mm/min)
$k_c$ : Specific cutting force (N/mm²) *See the table below.
$\eta$ : Mechanical efficiency (0.7~0.8)

Example : Calculating the power required to machine gray cast iron for a length of 150 mm, at a feed rate of 1,100 mm/min, and with a depth of cut of 3 mm (with 0.8 set as the mechanical efficiency and 0.2 mm as the feed par tooth/blade)

$$P_c = \frac{150 \times 3 \times 1100 \times 1400}{60 \times 10^6 \times 0.8} = \underline{14.44\,(kW)}$$

## ● Specific cutting force

| Work material | | Tensile strength or hardness | Specific cutting force (N/mm²) "$k_c$" to cutting feed amount (mm/rev) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 0.1mm/t | 0.2mm/t | 0.3mm/t | 0.4mm/t | 0.6mm/t |
| Soft steel | | 520 | 2,200 | 1,950 | 1,820 | 1,700 | 1,580 |
| Medium steel | | 620 | 1,980 | 1,800 | 1,730 | 1,600 | 1,570 |
| Hard steel | | 720 | 2,520 | 2,200 | 2,040 | 1,850 | 1,740 |
| Tool steel | SKD | 670 | 1,980 | 1,800 | 1,730 | 1,700 | 1,600 |
| | | 770 | 2,030 | 2,030 | 1,800 | 1,750 | 1,700 |
| Cr-Mo steel | SCM | 600 | 2,180 | 2,000 | 1,860 | 1,800 | 1,670 |
| | | 730 | 2,540 | 2,250 | 2,140 | 2,000 | 1,800 |
| Alloy steel | SNCM | 900 | 2,000 | 1,800 | 1,680 | 1,600 | 1,500 |
| | | HB350 | 2,100 | 1,900 | 1,760 | 1,700 | 1,530 |
| Gray cast iron | FC | HB200 | 1,750 | 1,400 | 1,240 | 1,050 | 970 |
| Aluminum alloy | AC, ADC | 160 | 580 | 480 | 400 | 350 | 320 |

※For power required for NTK HCC, please refer to page P31.

## ● Calculating the volume of evacuated chips

$$Q_{(cm^3/min)} = a_e \times a_p \times v_f$$

$Q$ : Volume of evacuated chips (cm³/min)
$a_e$ : Cutting length (mm)
$a_p$ : Depth of cut (mm)
$v_f$ : Feed rate (mm/min)

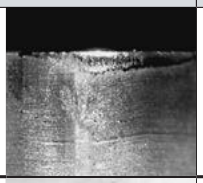
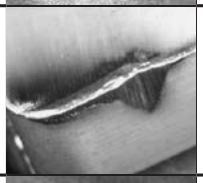
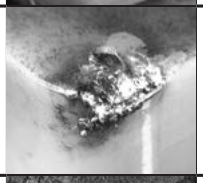
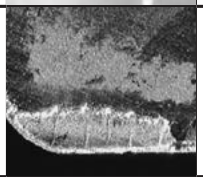
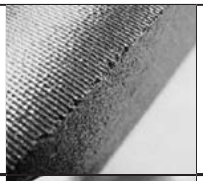
Example : Obtaining the volume of chips evacuated per minute for machining at a cutting speed of 700 m/min, feed rate of 0.4 mm/rev, and with a 2 mm depth of cut:

$$Q = 150 \times 3 \times 1100 = \underline{495\,(cm^3/min)}$$

## Troubleshooting for Milling

| Type of problem | | Possible cause / Corrective measures | Material/grade selection: Change to a harder material/grade | Material/grade selection: Change to a tougher material/grade | Material/grade selection: Change to a material/grade more resistant to thermal shock | Material/grade selection: Change to a material/grade more resistant to deposition | Cutting conditions: Cutting speed (Decrease ↘ / Increase ↗) | Cutting conditions: Feed rate (Decrease ↘ / Increase ↗) | Cutting conditions: Depth of cut (Decrease ↘ / Increase ↗) | Cutting conditions: Review cutter diameter and cutting width | Cutting conditions: Review tool path | Cutting conditions: Coolant: Wet | Cutting conditions: Coolant: Dry | Tool shape: Relief angle of insert (Decrease ↘ / Increase ↗) | Tool shape: Nose radius of cutting edge | Tool shape: Cutting edge strength, honing | Tool shape: Number of teeth/blades | Tool shape: Enlarge the chip pocket | Tool shape: Check the wiper shape | Tool shape: Improve accuracy of cutting edge run-out | Tool shape: Improve rigidity of tool |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Damaged or broken cutting edge of the insert | Increased flank wear | Improper cutting conditions | | | | | ↘ | | | | | ● | | | | | | | | | |
| | | Unsuitable cutting edge shape | ● | | | | | | | | | | | ↗ | | ↘ | | | ● | | |
| | Increased wear on face | Improper cutting conditions | | | | | ↘ | ↘ | ↘ | | | ● | | | | | | | | | |
| | | Unsuitable cutting edge shape | ● | | | | | | | | | | | ↗ | ↗ | ↘ | | | | | |
| | Fracture/ chipping on cutting edge | Improper cutting conditions | | | | | | ↘ | ↘ | | ● | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | ● | | | | | | | | | | ↘ | ↗ | ↗ | | | ● | ● | ● |
| | Thermal shock | Improper cutting conditions | | | | | ↘ | ↘ | ↘ | | | | ● | | | | | | | | |
| | | Unsuitable cutting edge shape | | | ● | | | | | | | | | ↗ | | ↘ | | | | | |
| | Built-up edge | Improper cutting conditions | | | | | ↗ | ↗ | | | | ● | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | ● | | | | | | | | ↗ | | ↘ | | | | | |
| Machining accuracy | Poor surface finish | Improper cutting conditions | | | | | ↗ | ↘ | ↘ | | | ● | | | | | | | | | |
| | | Unsuitable cutting edge shape | ● | | | ● | | | | | | | | | | ↘ | ↘ | | ● | ● | |
| | Burring | Improper cutting conditions | | | | | | ↓↑ | ↘ | ● | ● | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | | | ↗ | ↘ | ↘ | | | ● | | |
| | Chipping | Improper cutting conditions | | | | | | ↘ | ↘ | | ● | | | | | | | | | | |
| | | Unsuitable cutting edge shape | | | | | | | | | | | | ↗ | ↗ | ↘ | ↗ | | ● | | |
| | Poor flatness and parallelism | Improper cutting conditions | | | | | | ↘ | ↘ | | | ● | | ↗ | ↘ | ↘ | ↘ | | ● | ● | ● |
| Others | Increased chatter/ vibration | Improper cutting conditions | | | | | ↘ | ↘ | ↘ | ● | ● | | | ↗ | ↘ | ↘ | ↘ | | | | |
| | Poor chip evacuation | Improper cutting conditions | | | | | ↗ | ↘ | | ● | | ● | ● | | | | | | | | |
| | | Unsuitable tool/blade edge shape | | | | | | | | | | | | ↗ | | | ↘ | ● | | | |

## Troubleshooting Case Studies: Milling

| | Case/Symptom | | Possible causes | Corrective measures |
|---|---|---|---|---|
| Insert | VB wear |  | ●Cutting speed is too high.<br>●Feed rate is too low.<br>●The shape of the insert is not suitable.<br>●The material / grade of the insert is not suitable. | ●Decrease the cutting speed.<br>●Increase the feed rate.<br>●Make the nose radius larger.<br>●Change to a grade highly resistant to boundary wear. |
| | Notching wear |  | ●The material / grade of the inserts is not suitable.<br>●The shape of the cutter is not suitable<br>●The shape of insert is not suitable. | ●Change to a grade highly resistant to boundary wear.<br>●Widen the rake angle.<br>●Change the Insert shape to a different one. |
| | Chipping / fracture |  | ●The cutting speed is incorrect.<br>●The shape of the cutter is not suitable<br>●The shape of insert is not suitable. | ●Decrease the feed rate and depth of cut in order to reduce the cutting force.<br>●Use a smaller edge preparation.<br>●Prepare the cutting edge to give it a round honing.<br>●Change to a grade highly resistant to fracture. |
| | Thermal crack |  | ●The cutting conditions are incorrect<br>●The material / grade of insert is not suitable | ●Decrease the cutting speed.<br>●Change to dry cutting from wet cutting.<br>●Use a material / grade highly resistant to thermal shock |
| Work piece | Chipping |  | ●The feed rate is too high.<br>●An unsuitable insert is selected.<br>●The shape of the cutter is not suitable. | ●Decrease the feed rate.<br>●Use a smaller edge preparation<br>●Change to a grade highly resistant to boundary wear.<br>●Set the lead angle at 45 degrees. |
| | Burring |  | ●The feed rate is incorrect.<br>●The shape of insert is not suitable.<br>●The shape of the cutter is not suitable. | ●Adjust the feed rate.<br>●Use a smaller edge preparation.<br>●Make the lead angle narrower. |

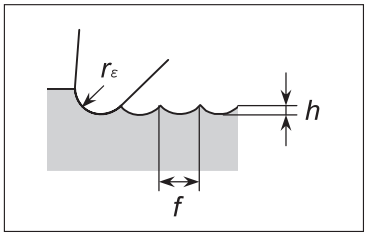
## Surface Roughness Standards

| | | | JIS B0601 (2001) ISO 4287 (1997) / ISO 1302 (2002) | JIS B0601 (1994) JIS B0031 (1982) |
|---|---|---|---|---|
| Cross-section curve | | | No filter, digital signal | No filter, digital signal |
| | Evaluation length | | Shape length | — |
| | Maximum height | | Pt | — |
| | 10-point average roughness | | — | — |
| Roughness curve | | | Phase correction, band λs-λc | Phase correction, short wavelength λc |
| | Evaluation length | | Determine individually for each standard length λc. | Average for ℓn, calculated for each standard length λc |
| | Maximum height | | Maximum height **Rz** | Maximum height Ry |
| | Set standard length based on height parameters Rz, Rmax, and Ry. | 0.25mm | 0.1~0.5μm | 0.1~0.5μm |
| | | 0.8mm | 0.5~10μm | 0.5~10μm |
| | | 2.5mm | 10~50μm | 10~50μm |
| | Dimension indicated in drawing | | U 0.008 − 2.5/Rz 1.5<br>L − 2.5/Rz 0.7 | Ry = 1.6~0.8<br>λc 0.25 |
| | 10-point average roughness | | **$Rz_{JIS}$** | Rz |
| | Center line average roughness | | $Ra_{75}$ | Ra75 |
| | Arithmetic average roughness | | Arithmetic average roughness **Ra** | Arithmetic average roughness Ra |
| | Set standard length based on height parameters Rz, Rmax, and Ry. | 0.25mm | 0.1~0.5μm | 0.1~0.5μm |
| | | 0.8mm | 0.5~10μm | 0.5~10μm |
| | | 2.5mm | 10~50μm | 10~50μm |
| | Dimension indicated in drawing | | U "2RC" − 0.8/Ra75 3.1<br>L "2RC" − 0.8/Ra75 1.5 | 1.6~3.2 |

### Theoretical surface roughness

The theoretical surface roughness for lathe machining is the minimum value which can be obtained under the set machining conditions, and can be expressed by the following formula.

$$h_{(\mu m)} = \frac{f^2}{8\,r_\varepsilon} \times 1000$$




$h$ : Theoretical surface roughness (μm)
$f$ : Feed amount (mm/rev)
$r_\varepsilon$ : Nose radius (mm)

### Actual surface roughness

- When machining steel: Theoretical surface roughness x 1.5-3
- When machining cast iron: Theoretical surface roughness x 3-5

### Surface finish improvement measures

- Increase the nose radius.
- Adjust the cutting speed and/or feed amount.
- Use a wiper insert.
- Change the material and/or shape of the insert

### Relationship with triangle symbols

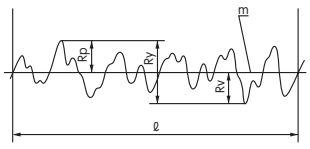
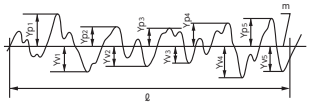
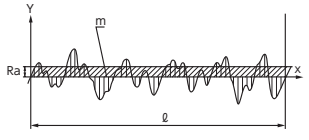
| Arithmetic average roughness Ra (μm) | Maximum height Rz (μm) | 10-point average roughness $Rz_{JIS}$ (μm) | ※ (Triangle symbol) |
|---|---|---|---|
| 0.025 | 0.1 | 0.1 | ▽▽▽▽ |
| 0.05 | 0.2 | 0.2 | |
| 0.1 | 0.4 | 0.4 | |
| 0.2 | 0.8 | 0.8 | |
| 0.4 | 1.6 | 1.6 | ▽▽▽ |
| 0.8 | 3.2 | 3.2 | |
| 1.6 | 6.3 | 6.3 | |
| 3.2 | 12.5 | 12.5 | ▽▽ |
| 6.3 | 25 | 25 | |
| 12.5 | 50 | 50 | ▽ |
| 25 | 100 | 100 | |

- Examples of reading
  (i) When Ra = 1.6μm ➡ 1.6μm Ra
  (ii) When Rz = 6.3μm ➡ 6.3μm Rz
  (iii) When $Rz_{JIS}$ = 6.3μm ➡ 6.3μm $Rz_{JIS}$

※The finishing symbols (triangle symbol ▽ and symbol ~) are no longer used in JIS pursuant to the 1994 revision.

| JIS B0601 (1982)<br>JIS B0031 (1982) | JIS B0601 (1970)<br>JIS B0031 (1970) | JIS B0601 (1970) |
|---|---|---|
| No filter, analog signal | No filter, analog signal | No filter, analog signal |
| One standard length | One standard length | One standard length |
| Rmax | Rmax (S indication) | Hmax (S) |
| Rz | Rz (Z indication) | — |
| 2RC, short wavelength cut-off λc | 2RC, short wavelength cut-off λc | — |
| One measured length ≧ 3λc | One measured length ≧ 3λc | — |
| — | — | — |
| 0.8μm or less | 0.8μm or less | Select from 0.3, 1, 3, 5 and 10mm |
| 0.8~6.3μm | 0.8~6.3μm | Select from 0.3, 1, 3, 5 and 10mm |
| 6.3~25μm | 6.3~25μm | Select from 0.3, 1, 3, 5 and 10mm |
| Rmax = 1.6<br>Rmax = 0.8 | Surface symbol or triangle symbol<br>1.6S 0.25 Upper limit<br>0.8S 0.25 Lower limit | Triangle symbol<br>0.8S or less ▽▽▽▽<br>1.5S~6S ▽▽▽<br>12S~25S ▽▽<br>35S or higher ▽ |
| — | — | — |
| Ra | Ra ("a" indication) | — |
| — | — | — |
| — | — | — |
| Ra shall be 12.5μm or less. | λc shall be 0.8 mm. | — |
| 12.5~100μm | — | — |
| 3.2<br>1.6 | Surface symbol or triangle symbol<br>0.2a or less ▽▽▽▽<br>0.4a~1.6a ▽▽▽<br>3.2a~6.3a ▽▽<br>12.5a to 25a or more ▽ | — |

## Obtaining the surface roughness

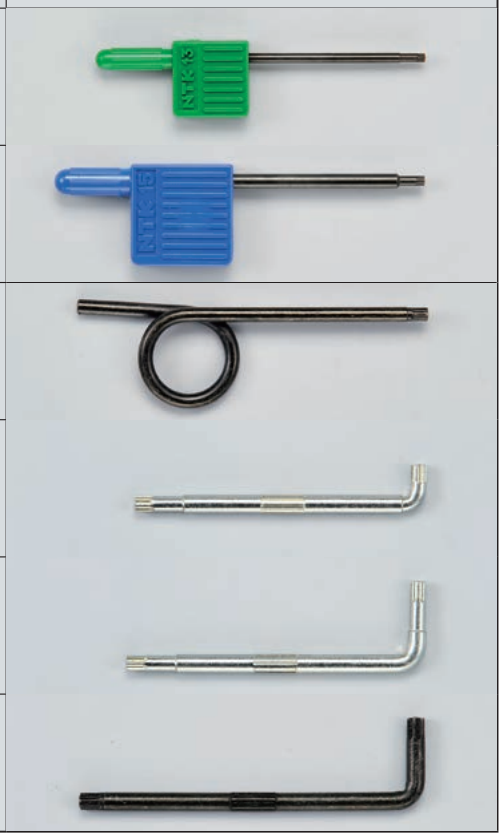
| Type | New symbol<br>JIS B0601:'01 | Old symbol<br>JIS B0601:'94 | Calculation | Obtaining method (example) |
|---|---|---|---|---|
| Max. height (Peak) | Rz | Ry | The addition of the max. value for the depth Rv and the max. height Rp on the roughness curve for the reference length:<br>$Rz = Rp + Rv$ |  |
| Average roughness of 10 points | $Rz_{JIS}$ | Rz | The addition of the average of the maximum to fifth highest vales and the average of the deepest to the fifth deepest values on the roughness curve for the reference length:<br>$Rz_{JIS} = \frac{(Yp1+Yp2+Yp3+Yp4+Yp5)+(Yv1+Yv2+Yv3+Yv4+Yv5)}{5}$ |  |
| Arithmetic average of roughness | Ra | Ra | The average of absolute values on the roughness curve f (x) for the reference length:<br>$Ra = \frac{1}{\ell}\int_0^{\ell}\{f(x)\}$ |  |

## Conditions for measuring R parameters

| Non-cyclic wave form (random wave form) | | Settings for measuring | |
|---|---|---|---|
| Range of Ra (μm) | Range of Rz (μm) | Reference length ℓr (mm) = cut-off λc (mm) | Evaluated length ℓn (mm) = ℓr × 5 |
| 0.006 < Ra ≦ 0.2 | 0.025 < Rz ≦ 0.1 | 0.08 | 0.4 |
| 0.02 < Ra ≦ 0.1 | 0.1 < Rz ≦ 0.5 | 0.25 | 1.25 |
| 0.1 < Ra ≦ 2 | 0.5 < Rz ≦ 10 | 0.8 | 4 |
| 2 < Ra ≦ 10 | 10 < Rz ≦ 50 | 2.5 | 12.5 |
| 10 < Ra ≦ 80 | 50 < Rz ≦ 200 | 8 | 40 |

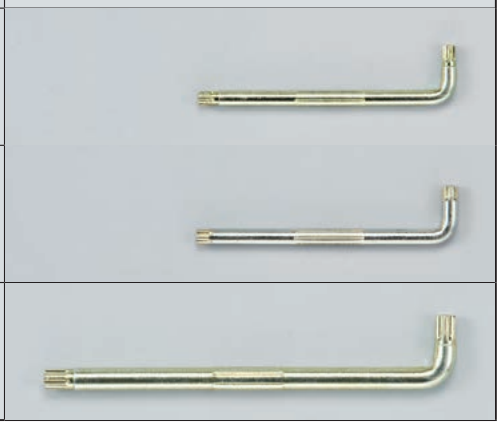
## Spare Parts - Wrenches

### Standard Items

| Item Number | Appearance |
|---|---|
| **CLR-13S** (Formerly RLR-13S) |  |
| **CLR-15S** (Formerly RLR-15S) | |
| **RLR-20S** | |
| **LLR-25S** | |
| **LLR-25S-20＊65** | |
| **LLR-28S** | |

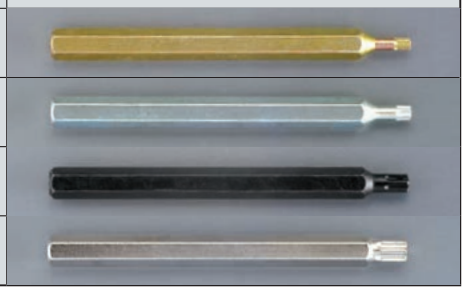
### Optional Items

〈LLR Type〉

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

〈Driver type wrench for increased adaptability〉

| Item Number | Magnetic Driver Handle |
|---|---|
| **XX2815-04** |   |

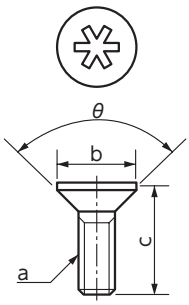
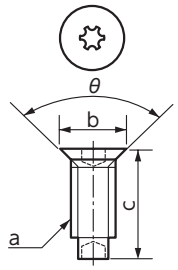
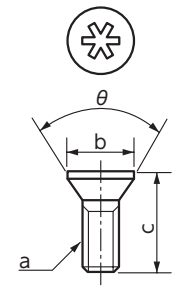
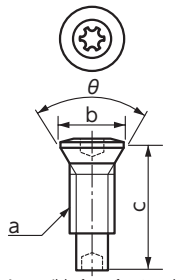
| Item Number | Replaceable Bits |
|---|---|
| **HLR-13S** |  |
| **HLR-15S** | |
| **HLR-20S** | |
| **HLR-25S** | |

〈Driver type wrench kits〉

| Item Number | Contents |
|---|---|
| **XX2815-04-13S** | XX2815-04 with HLR-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) |

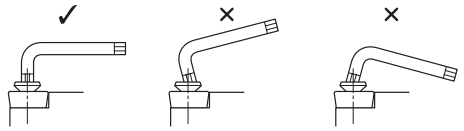


## Clamp Screws and Wrenches

| 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 | 5681978 | **CLR-15S** |
| | 5704747 | **LR-S-2.5×5.5** | M2.5×P0.45 | 3.6 | 5.5 | 82 | | |
| | 5907746 | **LR-S-2.5×6** | M2.5×P0.45 | 3.5 | 6.0 | 90 | | |
| | 5907753 | **LR-S-2.5×6.8** | M2.5×P0.45 | 3.5 | 6.8 | 90 | | |
|  Accessible from front and back | 5773619 | **LR-S-3×5.8** | M3×P0.5 | 4.1 | 5.8 | 90 | 5485164 | **RLR-20S** |
| | 5907761 | **LR-S-3×6.2** | M3×P0.5 | 5.2 | 6.2 | 82 | | |
| | 5907779 | **LR-S-3×7.8** | M3×P0.5 | 4.0 | 7.8 | 90 | | |
| | 5907787 | **LR-S-4×5.8** | M4×P0.7 | 5.8 | 6.0 | 82 | | |
| | 5907795 | **LR-S-4×9** | M4×P0.7 | 5.8 | 9.0 | 82 | | |
| | 5116991 | **LR-S-4×10PW** | M4×P0.7 | 5.8 | 10.0 | 90 | 5681978 | **CLR-15S** |
|  | 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<br>5794698 | **LLR-25S**<br>**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 | | |
|  Accessible from front and back | 5907852 | **LRIS-5×10** | M5×P0.8 | 7.0 | 9.5 | 60 | 5364948 | **LLR-28S** |
| | 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 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) |
|---|---|
| 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 |
|---|---|---|---|---|
| | Standard | AISI / SAE | JIS | DIN |
| Stainless steel M | | **Stainless Steel (Ferrite/Martensitic)** | | |
| | | 403 | SUS403 | X6Cr13 |
| | | | | X7Cr14 |
| | | 416 | SUS416 | X12CrS13 |
| | | 430 | SUS430 | X6Cr17 |
| | | 410 | SUS410 | X10Cr13 |
| | | | SUS420J2 | X46Cr13 |
| | | 405 | | X6CrAL13 |
| | | 420 | | X20Cr13 |
| | | 431 | SUS431 | X19CrNi17-2 |
| | | 430F | SUS430F | X14CrMoS17 |
| | | 434 | SUS434 | X6CrMoS17-2 |
| | | CA6- | SCS5 | X3CrNiMo13-4 |
| | | 405 | SUS405 | X10CrAL13 |
| | | HNV6 | SUH4 | X85CrMoV18-2 |
| | | 446 | SUH446 | X10CrAL2-4 |
| | | EV8 | SUH35,SUH36 | X53CrMnNiN21-9 |
| | | S44400 | | X1CrMoTi18-2 |
| | | | | X20CrMoV12-1 |
| | | 630 | | X5CrNiCuNb16-4 |
| | | **Stainless Steel (Austenitic)** | | |
| | | 304L | | X2CrNi19-11 |
| | | 304 | SUS304 | X5CrNi18-10 |
| | | 303 | SUS303 | X8CrNiS18-9 |
| | | | SUS304L | |
| | | 304L | SCS19 | X2CrNi19-11 |
| | | 301 | SUS301 | X9CrNi18-8 |
| | | 304LN | SUS304LN | X2CrNi18-10 |
| | | 316 | SUS316 | X5CrNiMo17-2-2 |
| | | 316LN | SUS316LN | X2CrNiMoN17-13-3 |
| | | 316L | | X2CrNiMoN17-12-2 |
| | | 316L | SCS16 | X2CrNiMo18-14-3 |
| | | | SUS316L | |
| | | 317L | SUS317L | X2CrNiMo18-15-4 |
| | | UNS | | X1NiCrMoCu25-20-5 |
| | | V 0890A | | |
| | | 321 | SUS321 | X6CrNiTi18-10 |
| | | 347 | SUS347 | X10CrNiNb18-10 |
| | | 316Ti | | X6CrNiMoTi17-12-2 |
| | | 318 | | X10CrNiMoNb 18-12 |
| | | 309 | SUH309 | X15CrNiSi20-12 |
| | | 310S | SUH310 | X8CrNi25-21 |
| | | 308 | SCS17 | X2CrNiMoN17-11-2 |
| | | 17-7PH | | X7CrNiAL 17-7 |
| | | N08028 | | X1NiCrMoCu31-27-4 |
| | | **Stainless Steel (Austenitic/Ferrite)** | | |
| | | S31500 | | X2CrNiN23-4 |
| | | S32900 | | X8CrNiMo27-5 |
| | | S32304 | | X2CrNiN23-4 |
| | | S31803 | | X2CrNiMoN22-53 |
| Hardened material H | | 5130H | SCr430H | 34Cr4 |
| | | 5135H | SCr435H | 37Cr4 |
| | | 4135H | SCM435H | 34CrMo4 |
| | | 4140H | SCM440H | 42CrMo4 |

| ISO | Country | U.S.A. | Japan | Germany |
|---|---|---|---|---|
| | Standard | AISI / SAE | JIS | DIN |
| Cast iron K | | **Malleable cast iron** | | |
| | | – | FCMB310 | – |
| | | 32510 | FCMW330 | EN-GJMB350-10 |
| | | 40010 | FCMW370 | EN-GJMB450-6 |
| | | 50005 | FCMW490 | EN-GJMB550-4 |
| | | 70003 | FCMP540 | |
| | | A220-70003 | FCMP590 | EN-GJMB650-2 |
| | | A220-80002 | FCMP690 | EN-GJMB700-2 |
| | | **Gray cast iron** | | |
| | | No 20 B | FC100 | EN-GJL-100 |
| | | No 25 B | FC150 | EN-GJL-150 |
| | | No 30 B | FC200 | EN-GJL-200 |
| | | No 35 B | FD250 | EN-GJL-250 |
| | | No 40 B | – | – |
| | | No 45 B | FC300 | EN-GJL-300 |
| | | No 50 B | FC350 | EN-GJL-350 |
| | | No 55 B | – | EN-JLZ |
| | | A436 Type 2 | – | GGL-NiCr20-2 |
| | | **Ductile cast iron** | | |
| | | 60-40-18 | FCD400 | EN-GJL-400-15 |
| | | – | – | EN-GJL-400-18-LT |
| | | 80-55-06 | FCD500 | EN-GJL-500-7 |
| | | A43D2 | – | EN-GJSA-500 |
| | | – | FCD600 | EN-GJS-600-3 |
| | | 100-70-03 | FCD700 | EN-GJS-700-2 |
| Nonferrous material N | | SC64D | C4BS | G-AlSi9MGWA |
| | | GD-AlSI12 | AC4A | G-ALMG5 |
| | | 356.1 | A5052 | |
| | | A413.0 | A6061 | GD-AlSi12 |
| | | A380.1 | A7075 | GD-AlSi8Cu3 |
| | | A413.1 | ADC12 | G-AlSi12(Cu) |
| | | A413.2 | | G-AlSi12 |
| | | A360.2 | | G-AlSi10Mg(Cu) |
| Heat-resistant alloy S | | **Heat-resistant alloy** | | |
| | | 330 | SUH330 | X12NiCrSi36 16 |
| | | | SCH15 | G-X40NiCrSi36-18 |
| | | 5390A | | |
| | | 5666 | | NiCr22Mo9Nb |
| | | | | NiCr20Ti |
| | | 5660 | | NiFe35Cr14MoTi |
| | | 5391 | | S-NiCr13A16MoNb |
| | | 5383 | | NiCr19Fe19NbMo |
| | | 4676 | | NiCu30AL3Ti |
| | | | | NiCr20TiAk |
| | | AMS 5399 | | NiCr19Co11MoTi |
| | | AMS 5544 | | NiCr19Fe19NbMo |
| | | AMS 5397 | | NiCo15Cr10MoAl |
| | | 5537C | | CoCr20W15Ni |
| | | AMS 5772 | | CoCr22W14Ni |
| | | **Titanium alloy** | | |
| | | AMS R54520 | | TiAl5Sn2.5 |
| | | AMS R56400 | | TiAl6V4 |
| | | AMS R56401 | | TiAl6V4ELl |
| | | | | TiAl4Mo4Sn4Si0.5 |

Heat resistant alloys for Aerospace ⇒ L20-L25

| ISO | Country | U.S.A. | Japan | Germany |
|---|---|---|---|---|
| | Standard | AISI/SAE | JIS | DIN |
| Steel P | | **Carbon steel** | | |
| | | A570.36 | STKM12A;C | S235JRG2 |
| | | 1115 | | GC16E |
| | | A573-8165 | | S235J2G3 |
| | | 1015 | | C15 |
| | | 1020 | | C22 |
| | | 1213 | SUM22 | 11SMn30 |
| | | 12L13 | SUM22L | 11SMnPb30 |
| | | | | 10SPb20 |
| | | 1215 | | 11SMn37 |
| | | 12L14 | | 11SMnPb37 |
| | | 1015 | S15C | Ck15E |
| | | 1025 | S25C | Ck25E |
| | | A572-60 | | S380N |
| | | A572-60 | | 17MnV7 |
| | | 1035 | | C35 |
| | | 1045 | | C45 |
| | | 1040 | | 35S20 |
| | | 1039 | | 40Mn4 |
| | | 1335 | SMn438(H) | 36Mn5 |
| | | 1330 | SCMn1 | 28Mn6 |
| | | 1035 | S35C | C35G |
| | | 1045 | S45C | C45E |
| | | 1050 | S50C | C53G |
| | | 1055 | | C55 |
| | | 1060 | | C60E |
| | | 1055 | S55C | C55E |
| | | 1060 | S58C | C60E |
| | | 1095 | | C101E |
| | | W1 | SK3 | C101u |
| | | W210 | SUP4 | C105W1 |
| | | **Alloy steel** | | |
| | | ASTMA353 | | X8Ni9 |
| | | 2515 | | 12Ni19 |
| | | | | 14NiCrMo13 |
| | | D3 | SKD1 | X210Cr12 |
| | | H13 | SKD61 | X40CrMo134 |
| | | A2 | SKD12 | X100CrMoV51 |
| | | | SKD2 | X210CrW12 |
| | | S1 | | 45WCrV7 |
| | | H21 | SKD5 | X30WCrV93 |
| | | | | X30WCrV9 |
| | | | | X165CrMoV12 |
| | | HW3 | SUH1 | X45GrSi93 |
| | | D3 | SUH3 | S6-5-2 |
| | | M2 | SKH51 | S6-5-2 |
| | | M35 | SKH55 | S6-5-2-5 |
| | | M7 | | S6-9-2 |
| | | HNV3 | | X210Cr12G |

| ISO | Country | U.S.A. | Japan | Germany |
|---|---|---|---|---|
| | Standard | AISI/SAE | JIS | DIN |
| Steel P | | A573-81 | SM400A;B;C | S275J2G3 |
| | | | SM490A;B;C;YA;YB | S355J2G3+C2 |
| | | 5120 | | DS355J2G3 |
| | | 9255 | | 55Si7 |
| | | 9262 | | S340MGC |
| | | 52100 | SUJ2 | 100Cr6 |
| | | ASTM | | 16Mo3 |
| | | 4520 | | 16Mo5 |
| | | ASTM | | 14Ni6 |
| | | 8620 | SNCM220(H) | 21NiCrMo2 |
| | | 8740 | SNCM240 | 40NiCrMo22 |
| | | | | 17CrNiMo6 |
| | | 5015 | SCr415(H) | 15Cr3 |
| | | 5140 | SCr440 | 42Cr4 |
| | | 5155 | SUP9(A) | 55Cr3 |
| | | | SCM415(H) | 15CrMo5 |
| | | 8740 | SNCM240 | 40NiCrMo8-4 |
| | | 5015 | SCr415(H) | 15Cr3 |
| | | ASTMA182 | | 13CrMo5 |
| | | ASTMA182 | | 13CrMo4-5 |
| | | | | 14MoV63 |
| | | | | 31CrMo12 |
| | | | | 39CrMoV13 |
| | | L1 | | 41CrS4 |
| | | 8620 | | 22Mo4 |
| | | | | 50CoMo4 |
| | | | | 16MnCr5 |
| | | | | 31NiCrMo14 |
| | | L6 | | 50NiCr13 |
| | | 3135 | SNC236 | 36NiCr6 |
| | | 3415 | SNC415(H) | 14NiCr10 |
| | | 3415;3310 | SNC815(H) | 14NiCr14 |
| | | 9255 | | |
| | | 9840 | | 36CrNiMo4 |
| | | 4340 | | 34CrNiMo6 |
| | | 5132 | SCr430(H) | 34Cr4 |
| | | 5140 | SCr440(H) | 41Cr4 |
| | | 5115 | | 16MnCr5 |
| | | 4130 | SCM420;SCM430 | 25CrMo4 |
| | | 4137;4135 | SCM432;SCCRM3 | 34CrMo4 |
| | | 4140;4142 | SCM440 | 41CrMo4 |
| | | 4140 | SCM440(H) | 42CrMo4 |
| | | | | 32CrMo12 |
| | | 6150 | SUP10 | 51CrV4 |
| | | | | 41CrMo7 |
| | | L3 | | 100Cr6 |
| | | | SKS31 | 105WCr6 |
| | | | SKS2,SKS3 | |
| | | L6 | SKT4 | 55NiCrMoV6 |
| | | **Cast steel** | | |
| | | | SEMnH1 | |
| | | | SCMnH/1 | G-X120Mn12 |

## Ni-based Heat Resistant Alloys

● Material Specifications Cross-Reference List-Aerospace Material Designation

| Commercial designation | Hardness Brinell HB | | Nominal composition Approximate content in % | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ann. | Aged | Ni | Cr | Co | Fe | Mo | C | Mn | Si | Al | Ti | Others |
| **Astroloy*** | — | — | 56.9 | 15.0 | 15.0 | — | 5.25 | 0.06 | — | — | 4.0 | 3.5 | 0.05 |
| **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 |
| **Udimel 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 | — |
| — | — | — | — | — | — | — |
| — | — | — | Z6NKCDT38 | — | — | — |
| — | 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 | — | ϕ20 |
| ECAS-32T | | | □16 | 80-120 | 4 | | | □16 | 60-78 | 2 | 10/Turret | | ϕ22/32 | R | SS-DSU-SK | ϕ32 |
| JNC-10 | | | | | | | | □8 | 65 | 1 | 6 | | - | L | — | ϕ10 |
| JNC-16 | | | | | | | | □10 | 80 | 1 | 6 | | - | L | — | ϕ16 |
| JNC-25/32 | | | | | | | | □16 | 78-120 | 1 | 10 | | ϕ22 | R | — | ϕ25/ϕ32 |
| KJR-16B/25B | | | | | | | | □16 | 78 | 1 | 12/16 | | ϕ22 | R | — | ϕ16/ϕ25 |
| KNC-16/20 | | | | | | | | □16 | 68 | 1 | 16 | | ϕ22 | R | — | ϕ16/ϕ20 |
| KNC-25II/32II | | | | | | | | □16 | 78 | 1 | 20 | | ϕ22/32 | R | — | ϕ25/ϕ32 |
| RNC-10/16 | | | □10 | 80-120 | 5 | | | | | | | | ϕ22 | R | — | ϕ10/ϕ16 |
| RNC-16II/16BII | | | □10 | 80-120 | 5 | | | | | | | | ϕ22 | R | — | ϕ16 |
| SA-16R | | | □10 | 95-120 | 6 | | | | | | | | ϕ22 | R | — | ϕ16 |
| SB-12II/12R/16II | | | □12(10) | 95-130 | 6(7) | | | | | | | | ϕ22 | R | SS-DSU-L23 SS-DSU-SK | ϕ12/ϕ13/ϕ16 |
| SB-16/16R | | | □12(10) | 95-130 | 6(7) | | | | | | | | ϕ22 | R | SS-DSU-L23 SS-DSU-SK | ϕ16 |
| SB-20/20R | | | □12(10) | 95-130 | 6(7) | | | | | | | | ϕ22 | R | SS-DSU-L23 SS-DSU-SK | ϕ20 |
| SC-20 | | | □12 | 95-130 | 6 | | | | | | | | ϕ22 | R | — | ϕ20 |
| SE-12/12B, 16/16B | | | □10 | 95-120 | 5 | | | | | | | | ϕ22 | R | — | ϕ13/ϕ16 |
| SF-25 | | | | | | | | □16 | 73-98 | 1 | 10 | | ϕ22/32 | R | — | ϕ25 |
| SG-42 | | | | | | | | □16(20) | 84-88 | 1 | 10 | | ϕ22/32 | R | — | ϕ42 |
| SH-12/16 | | | □10 | 95-120 | 5 | | | | | | | | ϕ22 | R | — | ϕ13/ϕ16 |
| SH-7 | | | □8 | 95-120 | 5 | | | | | | | | ϕ22 | R | — | ϕ7 |
| SI-12/12C | | | □10 | 80-130 | 6 | | | | | | | | ϕ22 | R | — | ϕ13 |
| SR-10J | | | □8 | 67-110 | 6 | | | | | | | | ϕ22 | R | SS-DSU-L23 SS-DSU-SK | ϕ10 |
| SR-16/20 | | | □12 | 95-120 | 5 | | | | | | | | ϕ22 | R | — | ϕ16/ϕ20 |
| SR-20J | | | □12 | 100-135 | 6 | | | | | | | | ϕ22 | R | SS-DSU-L23 SS-DSU-SK | ϕ20 |
| SR-20R/20RII/20RIII | | | □12 | 100-135 | 6 | | | | | | | | ϕ22 | R | SS-DSU-L23 SS-DSU-SK | ϕ20 |
| SR-20RIV | | | □12 | 100-130 | 7 | | | | | | | | ϕ22 | R | SS-DSU-B8L23 | ϕ20 |
| SR-25J/32J | | | □16 | 95-155 | 6 | | | | | | | | ϕ22/32 | R | SS-DSU-L23 SS-DSU-SK | ϕ25/ϕ32 |
| SR-32 | | | □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 | 85 | 3 | 10/Turret | | ϕ22/32 | R | — | ϕ38 |
| SV-12/20 | | | □12 | 95-135 | 4 | | | □12 | 70-78 | 1 | 8 | | ϕ22 | R | — | ϕ13/ϕ20 |
| | | | □16 | 95-135 | 5 | | | □16 | 65-70 | 1 | 8 | | | R | — | |
| SV-32 | | | □16 | 95-135 | 4 | | | □16 | 80-88 | 1 | 10 | | ϕ22/32 | R | — | ϕ32 |
| SV-32J/32JII | | | □16 | 95-135 | 4 | | | □16 | 65-70 | 1 | 8 | | ϕ22/32 | R | — | ϕ32 |
| SV-38R | | | □16+□20 (Cut off) | 95-135 | 5 | | | □16(20) | 84-88 | 1 | 10 | | ϕ22/32 | R | SS-DSU-B8L23 | ϕ38 |
| SW-12RII | | | □10 | 80-115 | 6 | | | | | | | | ϕ16 | R | SS-DSU-B8L23 | ϕ13 |
| SW-20 | | | □12(16) | 80-144 | 6 | | | | | | | | ϕ22 | R | — | ϕ20 |
| SW-7 | | | □8 | 80-120 | 4 | | | | | | | | — | R | — | ϕ7 |

## TSUGAMI

| 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 | Metric | | | | Number of tools | Sleeve Station | | Hand | Max cutting dia |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Inch | Metric | | |
| | h×b | L | h×b | L | | " | mm | | mm |
| EvoDECO 10/10 | □5/16 | | □8 | | 8 | | ϕ20/ϕ25 | R | ϕ10 |
| EvoDECO 10/8 | □5/16 | | □8 | | 8 | | ϕ20/ϕ25 | R | ϕ10 |
| EvoDECO 16/10 | □1/2 | | □12 | | 10 | | ϕ20/ϕ25 | R | ϕ16 |
| EvoDECO 16/8 | □1/2 | | □12 | | 10 | | ϕ20/ϕ25 | R | ϕ16 |
| EvoDECO 20 | □5/8 | | □16 | | 10 | | ϕ20/ϕ25 | R | ϕ25.4 |
| EvoDECO 32 | □5/8 | | □16 | | 10 | | ϕ20/ϕ25 | R | ϕ32 |
| Swiss ST 26 | □1/2 | | □12 | | 17 | | ϕ20/ϕ22/ϕ25 | R | ϕ25.4 |
| Sigma 20/6 | □5/8 | | □16 | | 14 | ϕ1 | ϕ20 | R | ϕ25.4 |
| Sigma 32/6 | □5/8 | | □16 | | 14 | ϕ1.26 | ϕ32 | R | ϕ32 |
| SwissNano | □5/16 | | □8 | | 7 | | ϕ12/ϕ16 | R | ϕ4 |
| Delta 12/4 | □1/2* | | □12 | 85 | 5 | | ϕ20 | R | ϕ12 |
| Delta 12/5 | □1/2* | | □12 | 85 | 5 | | ϕ20 | R | ϕ12 |
| Delta 20/4 | □1/2* | | □12 | 85 | 5 | | ϕ20 | R | ϕ20 |
| Delta 20/5 | □1/2* | | □12 | 85 | 5 | | ϕ20 | R | ϕ20 |
| Delta 38/5B | | | □20 | 125 | 8 | | ϕ25/ϕ32 | R | ϕ38 |
| Delta 38/5BL | | | □20 | 125 | 8 | | ϕ25/ϕ32 | R | ϕ38 |
| Gamma 20/5 | | | □16 | 100 | 8 | | ϕ20/ϕ22 | R | ϕ20 |
| Gamma 20/6 | | | □16 | 100 | 8 | | ϕ20/ϕ22 | R | ϕ20 |
| CT20 | □1/2 | | □12 | 100 | 5 | | | R | ϕ20 |

*Except cut off must be 12mm

## NOMURA

| Machine Model | Gang Station | | | | Number of tools | Sleeve Station | | Hand | Max cutting dia |
|---|---|---|---|---|---|---|---|---|---|
| | Inch | | Metric | | | Inch | Metric | | |
| | h×b | L | h×b | L | | " | mm | | mm |
| NS-P1053A | | | □9.5 | 130 | 5 | — | — | R | ϕ10 |
| NN-10C | | | □10 | 130 | 6 | | ϕ17 | R | ϕ10 |
| NN-10E | | | □10 | 130 | 6 | | ϕ16 | R | ϕ10 |
| NN-10C2 | | | □10 | 130 | 6 | | ϕ17 | R | ϕ10 |
| NN-10CS | | | □10 | 130 | 6 | | ϕ17 | R | ϕ10 |
| NN-10CS(No live tools) | | | □10 | 130 | 5 | | ϕ17 | R | ϕ10 |
| NN-10SII | | | □10 | 130 | 5 | | ϕ23 | R | ϕ10 |
| NN-10T | | | □10 | 130 | 7 | | ϕ23 | R | ϕ10 |
| NN-10SB5 | | | □10 | 130 | 5 | | ϕ23 | R | ϕ16 |
| NN-16SB5 | | | □10 | 130 | 5 | | ϕ23 | R | ϕ16 |
| NN-16SB6 Type1 | □1/2 | 5.12 | □12.7 | 130 | 5 | | ϕ17(ϕ22) | R | ϕ16 |
| NN-16SB6 Type2 | □1/2 | 5.12 | □12.7 | 130 | 5 | | ϕ17(ϕ22) | R | ϕ16 |
| NN-16SB6 Type2.5 | □1/2 | 5.12 | □12.7 | 130 | 5 | | ϕ17(ϕ22) | R | ϕ16 |
| NN-16SB6 Type3 | □1/2 | 5.12 | □12.7 | 130 | 5 | | ϕ17(ϕ22) | R | ϕ16 |
| NN-16HIII | | | □12 | 130 | 6 | | ϕ23 | R | ϕ16 |
| NN-20HIII | | | □12 | 130 | 6 | | ϕ23 | R | ϕ20 |
| NN-16UIII | | | □12 | 130 | 5 | | ϕ23 | R | ϕ16 |
| NN-20UIII | | | □12 | 130 | 5 | | ϕ23 | R | ϕ20 |
| NN-20CS | □1/2 | 5.12 | □12.7 | 130 | 5(6) | | ϕ22 | R | ϕ20(ϕ25) |
| NN-20U5 | □1/2 | 5.12 | □12.7 | 130 | 5(6) | | ϕ22 | R | ϕ20(ϕ25) |
| NN-16UB5 | | | □12 | 130 | 5 | | ϕ23 | R | ϕ16 |
| NN-20UB5 | | | □12 | 130 | 5 | | ϕ23 | R | ϕ20 |
| NN-20UB7 | | | □12 | 130 | 6 | | ϕ23 | R | ϕ20 |
| NN-20UB8 | □1/2 | 5.12 | □12.7 | 130 | 5(6) | | ϕ22 | R | ϕ20(ϕ25) |
| NN-20YB | | | □12 | 130 | 8 | | ϕ23 | R | ϕ20 |
| NN-25YB/32YB | | | □16 | 130 | 8 | | ϕ23/ϕ32 | R | ϕ25 |
| NN-32YB2 | | | □16 | 130 | 5 | | ϕ22/ϕ32 | R | ϕ32 |
| NN-16J | □1/2 | 5.12 | □12.7 | 130 | 6 | | ϕ23 | R | ϕ16 |
| NN-20J | □1/2 | 5.12 | □12.7 | 130 | 6 | | ϕ23 | R | ϕ20 |
| NN-20J2 | □1/2 | 5.12 | □12.7 | 130 | 6 | | ϕ22 | R | ϕ20 |

## Hardness Comparison Chart

| Vickers Hardness (HV) | Rockwell hardness | | | Brinell hardness, 10 mm balls, 3000 kgf load | Shore hardness | Tensile strength Kgf/mm² [N/m²] 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) | Tungsten carbide ball | | |
| 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 | Shore hardness | Tensile strength Kgf/mm² [N/m²] 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) | Tungsten carbide ball | | |
| 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

M

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## Metalcutting Safety

| Applicable Products | Possible Risks | Safety Measures |
|---|---|---|
| General Cutting Tools | ◎Contact with a sharp cutting edge with bare hands may result in injury. | ＊Use protective gear such as protective gloves when taking the tool out of packaging and installing into the machine. |
| | ◎Misuse or using under inappropriate conditions may cause the cutting tool to break and/or shatter into pieces, resulting in personal injury. | ＊Use protective equipment, machine guarding and/or protective glasses.<br>＊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.<br>＊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.<br>＊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.<br>＊Perform a trial-run beforehand to make sure the setup is stable, free of chatter, vibration and abnormal noise. |
| | ◎Touching burrs and flashes on machined work may result in personal injury. | ＊Use adequate hand protection. |
| Throw-Away Type Tools (With indexable insert) | ◎Inappropriately clamped inserts and/or components may become detached from the machine during cutting, resulting in injury. | ＊Before installing the insert, clean the seating surface and clamping components so that they are free of debris.<br>＊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.<br>＊To prevent excessive rotation and vibration due to worn bearings, regularly check the machine rotor/rotating parts for the accuracy and balance and adjust as required. |
| Brazed Inserts / Tools | ◎Inserts may break or become, detached due to incorrect brazing. | ＊Use protective equipment such as machine guards and/or protective glasses. Additional guarding around the chuck and drill may be advisable. |
| Others | ◎It is not advisable to use brazed inserts repeatedly as the braze may progressively weaken. | ＊Do not use brazed inserts repeatedly as the strength of such inserts is lowered. |
| | ◎Use only for the original and intended purpose. Using outside recommended parameters is very dangerous, causing damages to machines and/or tools. | ＊Always use and operate as specified, observing the required safety rules and conditions. |

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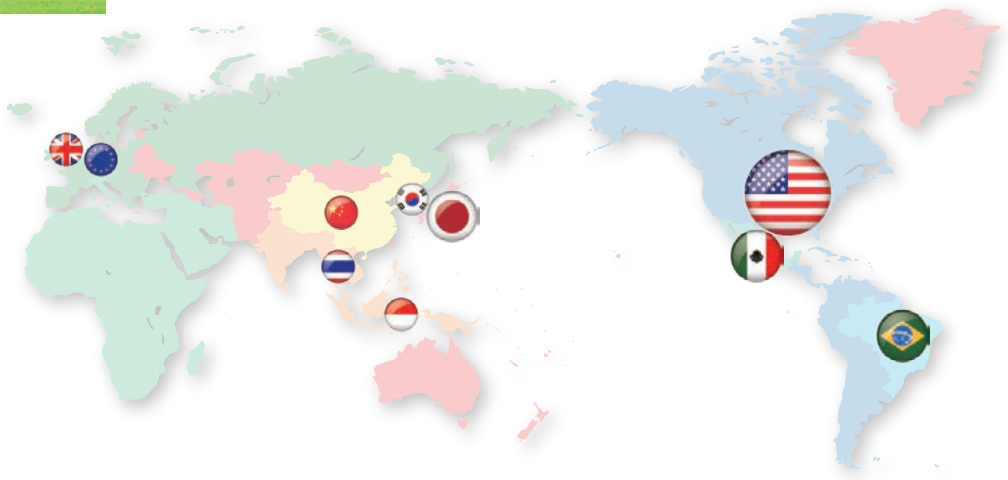


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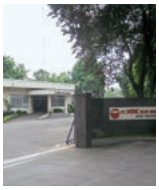
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