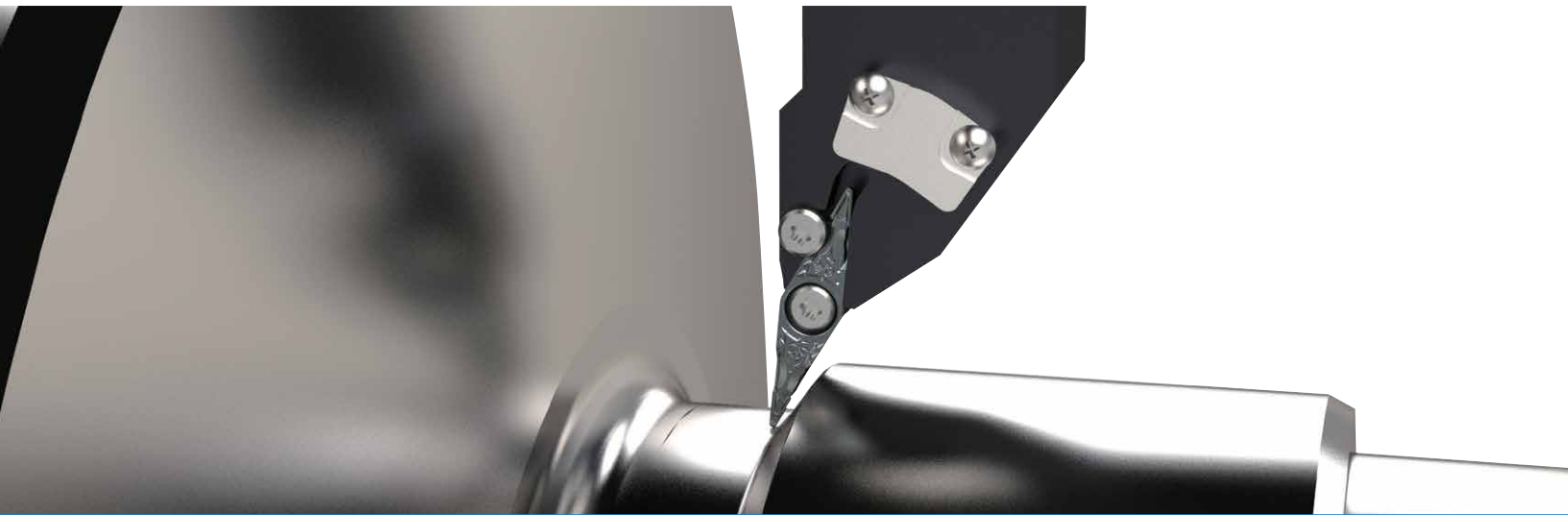




# ZBMT Series

25° Insert Profiling Tools



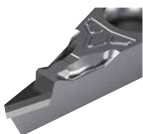
25° Insert Tip with Greater Maneuverability Shortens Machining Processes and Reduces Costs

Large lineup of toolholders from external turning and boring bars that support a wide range of applications, including copying, undercutting, tapering, V slotting, etc.

Improved dimensional accuracy with unique clamp structure and firm insert clamping results in high precision and stable machining

GF chipbreaker for ZBMT inserts reduces chip control issues when machining at minute depths of cut

15° insert tip angle also available



PCD Insert



Cermet Insert



# ZBMT Series

## 25° Insert Profiling Tools

Unique clamping structure and a wide lineup of external toolholders and boring bars.

High precision and stable machining in a wide range of applications including copying, undercutting, tapering, V-slotting, spherical machining, and more.

### New 25° Inserts Achieve Excellent Results with a Wide Variety of Toolholders

#### Challenges

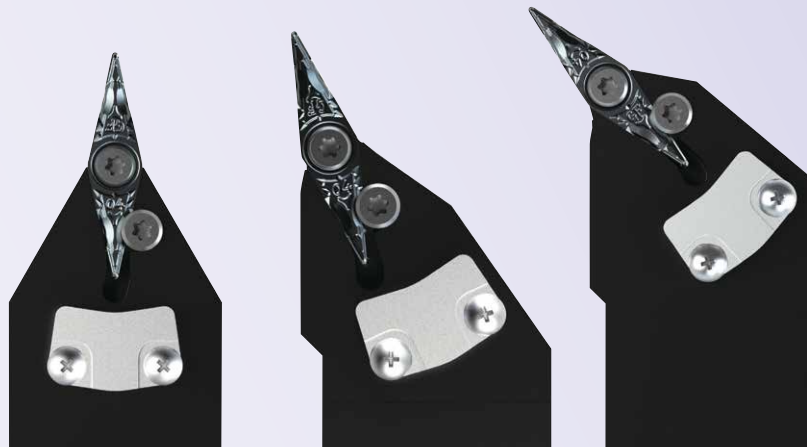
Workpiece geometries are becoming increasingly more complex and can be difficult to machine with typical 35° V-style inserts. Specialized tools focusing on shape often sacrifice rigidity, accuracy, or chip control.

#### Solution

The 25° ZBMT insert adopts a strong and unique clamp mechanism for added rigidity. This rigidity adds precision and stability in a variety of machining applications for shorter cycle times and lower machining costs.



### Large 25° Tooling Lineup



Custom holder cutting angles, polygon taper shanks, etc. are available by request.

Please contact your Kyocera sales representative for details.

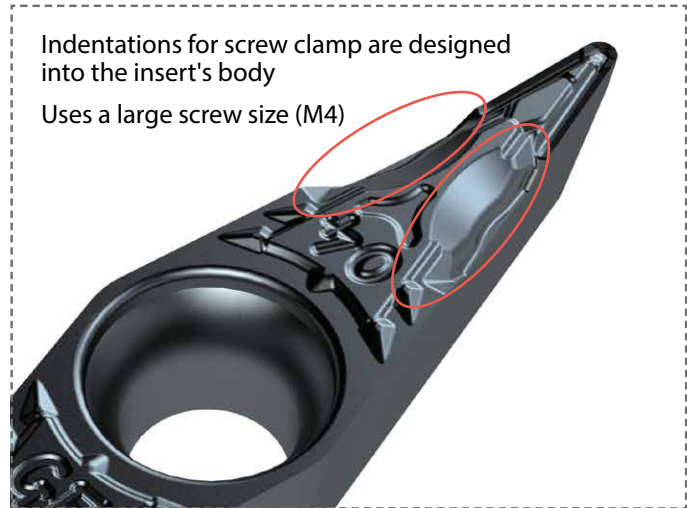
## Side Lock Mechanism

Unique design holds insert at 2 points

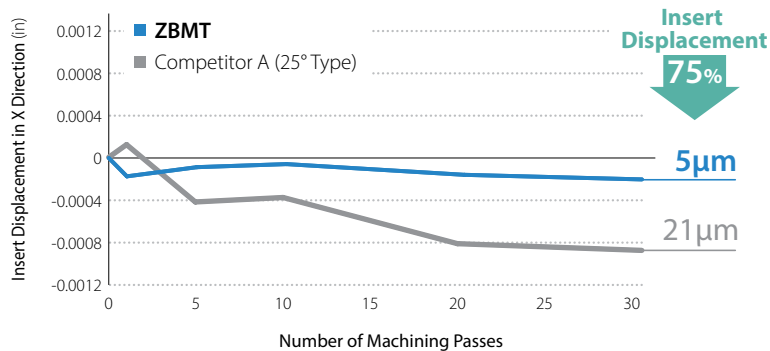
Safe even for insert with small tip angle that is difficult to mount



Indentations for screw clamp are designed into the insert's body  
Uses a large screw size (M4)



Insert Displacement During Facing Comparison (Internal Evaluation)

Cutting Conditions:  $V_c = 750$  sfm, D.O.C. = 0.012",  $f = 0.006$ , Wet Workpiece 4137

\*The above figures are not guaranteed and will depend on cutting conditions.

## Insert Design

By controlling insert displacement,

- Machining precision is stabilized and long tool life is enable
- Reduces defect rate due to sudden dimensional deviation

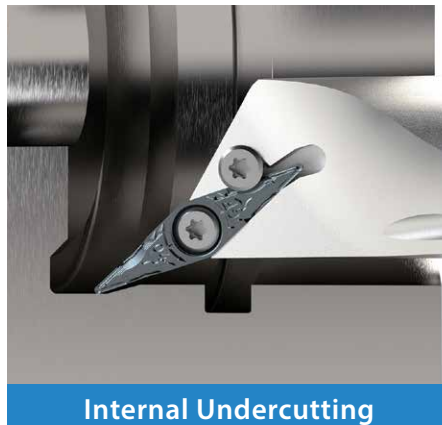
\*Please check **Page 10** for how to attach and detach insert using the new insert clamp

## Provides High Quality and Stable Machining in Various Machining Applications

Excellent Performance in Various Machining Applications including Copying, Undercutting, Tapering, V-Slotting, Spherical Machining, etc.



Shaft Copying



Internal Undercutting



End Face Tapering

## 2

## Unique Holder Design to Meet Customers' Needs

Both boring bars and external toolholders are compatible with internal coolant.

### Unique Double Coolant Hole Design

Supplies coolant directly to the cutting edge and provides improved chip evacuation and long tool life (Coolant discharge direction: Fine adjustment possible)

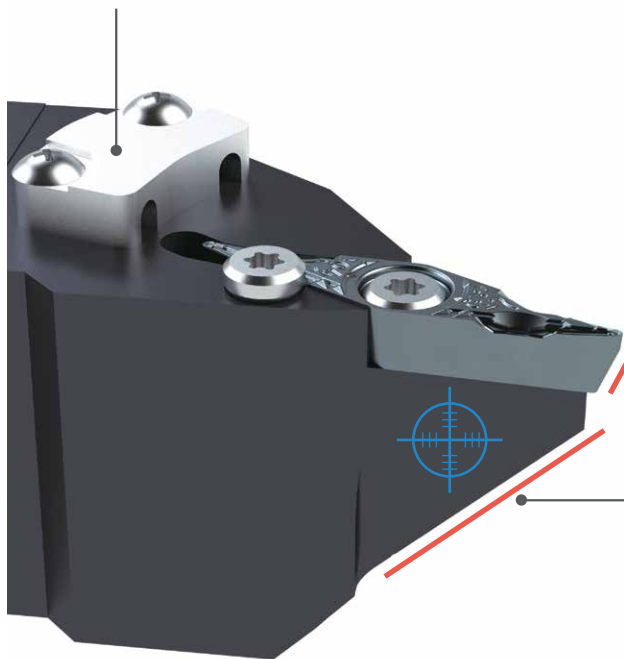
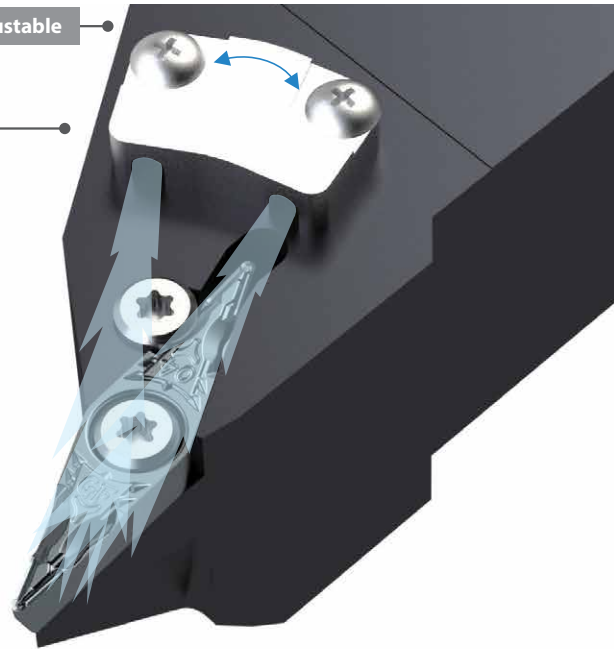
\*Though coolant stream hits side clamp screw, machining performance is not affected

\*Pressure resistance: ~ 3 MPa

Uses a clamp with a small thickness that does not prevent chip flow

### Fine Tuned and Adjustable

± 4° Adjustable Oscillation



### Easy to use for Facing

Insert corner : 2-Step Positive Type (20°)

Holder: Tapered shape

Inserts and toolholders have a unique end shape  
No additional machining is required when trying to avoid interference with workpiece.

Effective for facing applications



## Case Study Significant reduction in quality defect costs

(User Evaluation)

**Suppresses dimensional fluctuations due to insert displacement.  
Reduces defect rates.**



Dimensional defect rate

**GF Chipbreaker**

Competitor B

**100** +/-month

**Defect rate  
Reduction**



Cutting Conditions : Vc = 750 sfm, D.O.C. = 0.012", f = 0.006 ipr, Wet  
Workpiece 4137

GF Chipbreaker chip condition



### Customer Feedback

- Some parts require an insert with a tip angle of 25 ° to allow machining.
- The dimensional error of the GC chipbreaker was drastically improved in comparison with the competitors.
- Greatly reduced the cost of quality defects

## GF Chipbreaker

Solving chip control issues leads to high-quality surface finishes

The thin molded chipbreaker extends near the corner and reliably controls chips even in narrow spaces

Movie



### Two-step dot

Responds to chip fluctuation

### Molded cutting edge

Improved chip control at small D.O.C.

### Circular-shaped chipbreaker

Low resistance and excellent chip control even in ductile workpieces

Chip control comparison (Internal evaluation)



**GF Chipbreaker**



**Competitor A (25° Type)**

Cutting Conditions :  $V_c = 750$  sfm,  $f = 0.006$  ipr, D.O.C. =  $0.008'' - 0.020''$ , Wet Workpiece 4137 Facing

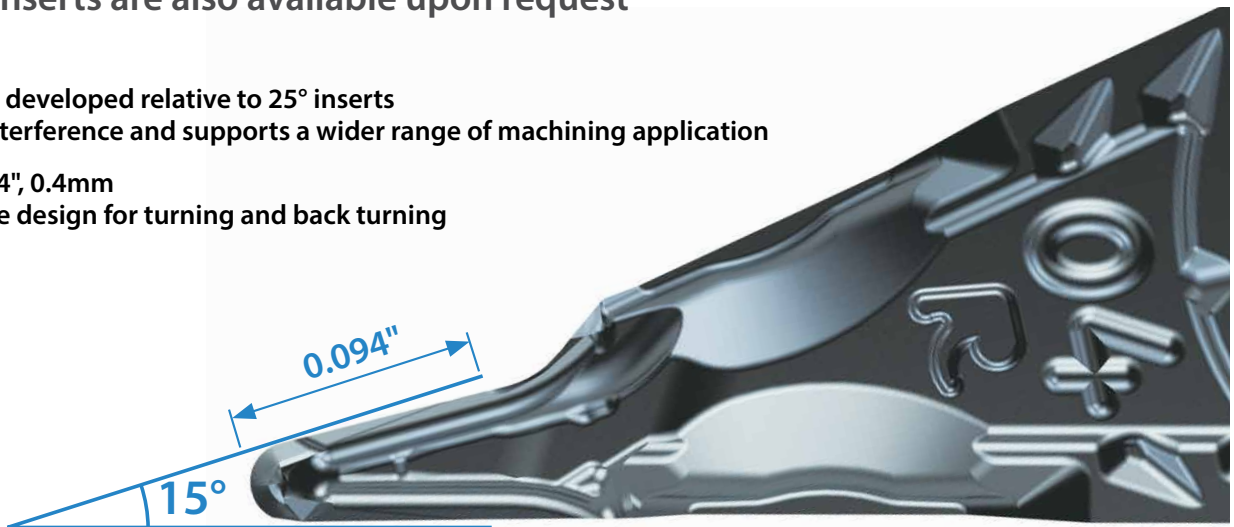
4

## 15° inserts are also available upon request

15° inserts are developed relative to 25° inserts

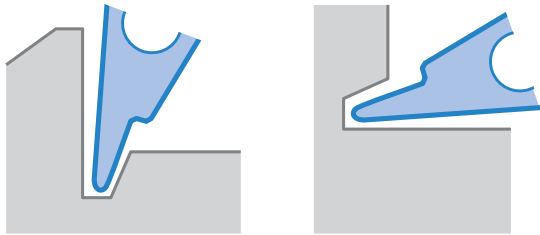
Helps avoid interference and supports a wider range of machining application

- Corner-R 1/64", 0.4mm
- Double-blade design for turning and back turning

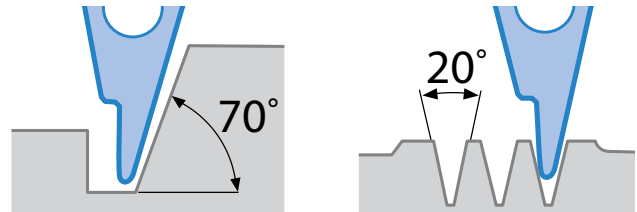


### Examples

When using the toolholder in reverse mounting position



When using the toolholder in normal mounting position \*Holder: Special order specification



To avoid holder interference, additional modifications are required as shown in the figure below.

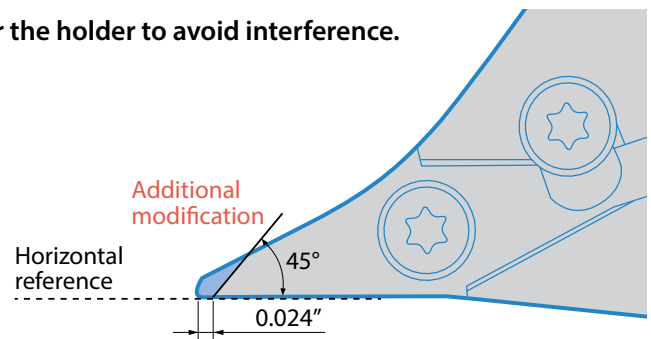
Also, as shown in the figure below, special order for holders may be required depending on machining application.

## How to Modify Toolholder when Using 15° Insert

When using 15° insert, additional modification are required for the holder to avoid interference.

### Recommended Additional Modification

- Set the edge of insert bearing surface at the end of the holder at horizontal reference shown below.
- Modify the holder to 0.024" from the tip at an angle no less than 45° from the horizontal.



# Kyocera's high-performance insert grades

## PVD Coated Carbide

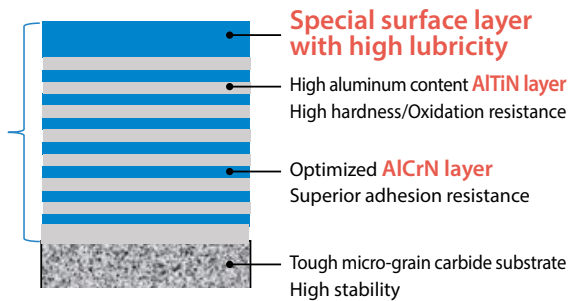
# PR1725

First recommendation for steel machining  
Excellent surface finish and long tool life

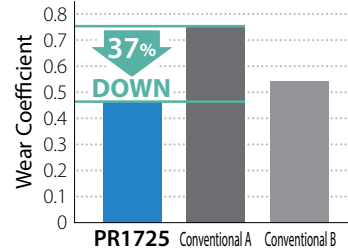
**MEGACOAT  
NANO PLUS**

AlTiN/AlCrN Nano laminated film with superior wear resistance and adhesion resistance

<Reduces cracking>  
Reduces abnormal damages such as chipping because of increased lamination layer with a thinner gap than conventional coatings.



### Wear Coefficient Comparison (Internal evaluation)



### Superior Wear and Chipping Resistance

High hardness with nano laminated film layer.  
Internal stress optimization reduces chipping

### Excellent Surface Finish

Special surface layer with great lubricity reduces adhesion

### Applicable to various workpiece materials

Excellent oxidation resistance. Superior high temperature properties maintains good performance in steel, stainless steel and free-cutting steel

### High machining stability

Tough micro-grain carbide substrate provides stable machining

## PVD Coated Carbide

# PR1535

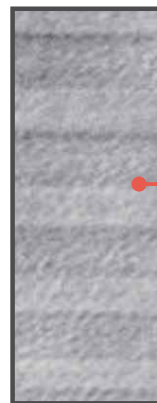
The combination of a tough substrate and a special nano coating layer creates long tool life and stable machining in stainless steel machining

**MEGACOAT  
NANO**

- 1 An increase in cobalt content yields a substrate with greater toughness  
\*In comparison to our conventional material grade
- 2 Improved stability by optimization and homogenization of grains in the base material
- 3 MEGACOAT NANO coating technology for long tool life and stable machining

↑ 23%  
**Fracture Toughness \***

### Cracking Comparison by Diamond Indenter (Internal evaluation)



MEGACOAT Base Layer Structure

### Point

PR1535 also shows superior performance in steel machining under unstable conditions

Enlarged view



Hybrid Cermet for Steel Machining

# PV720 / PV730

New cermet for high quality surface finish machining



Uncoated CERMET

# TN620

Three attributes of the hybrid technology contributes to excellent fracture and wear resistance

## 1 Kyocera's Leading Cermet Technology

### General Use PV720

1st Recommendation  
Excellent wear resistance

### Stability Oriented PV730

Tough Cermet  
High stability

Fracture resistance: 2X more than competitors  
(Internal evaluation)

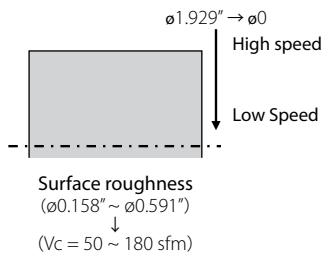
### TN620

Non-coated  
Cost-efficient

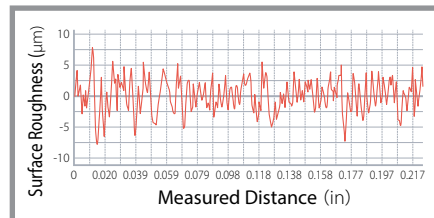
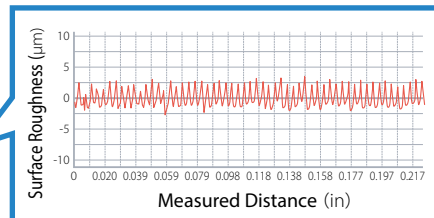
## 2 High Quality Surface Finish

Surface finish comparison (Internal evaluation)

Cutting Conditions:  $V_c=590 \sim 0$  sfm (Constant rate)  
D.O.C. = 0.020",  $f = 0.004$  ipr, Wet  
CNMG431 type Workpiece: 1010



Excellent Surface Finish



Clouded Surface Finish

## Case Studies (ZBMT)

### Shaft 1045

$V_c = 380$  sfm  
D.O.C. = 0.002"  
 $f = 0.003$  ipr  
Wet  
ZBMT13T304GF  
SZLBR16-3D-C



Number of products

ZBMT  
(PV720)

135 pcs/edge

Competitor D

55 pcs/edge

x2.4  
Tool Life

Side Lock Mechanism in ZMBT reduces the displacement in the Z-direction. Improves work efficiency with no dimension correction. Excellent surface finish with PV720.

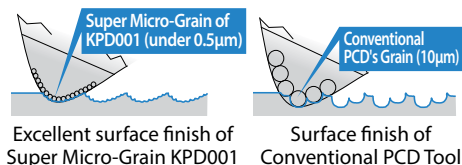
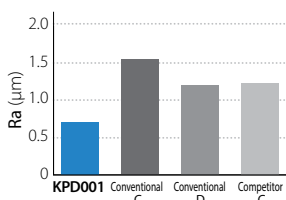
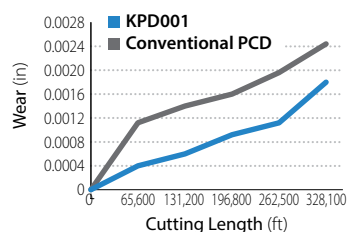
(User evaluation)



PCD (Polycrystalline Diamond)

**KPD001**

Excellent Aluminum Alloy Surface Finish with Micro-Grain PCD

**1** Good Surface Finish (image)Surface Finish Comparison  
(Internal evaluation)**2** Improved Wear ResistanceWear Resistance Comparison  
(Internal evaluation)

Cutting conditions :  
Vc = 1,770 sfm,  
D.O.C. = 0.006",  
f = 0.009 ipr, Wet  
Workpiece 413.0

\*Cutting Length = Cutting  
Length that cutting edge  
runs on Workpiece  
Periphery

**Case Studies (ZBMT)****Spacer 5052/7175**

Vc = 1,770 sfm  
ap = 0.004" (Facing) / 0.008" (Internal)  
f = 0.002 ipr,  
Wet  
ZBMT13T304NE  
A25S-SZQBR13-32AE



## Number of products

**ZBMT**  
(KPD001)**200 pcs/edge**Dimensional accuracy,  
Stable

**Good**  
Dimensional  
accuracy,  
Cutting Edge

Competitor F

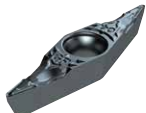
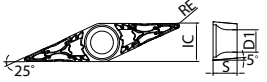
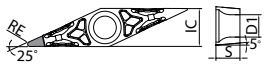
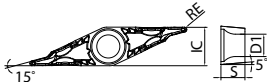
**200 pcs/edge**Dimensional accuracy,  
Unstable

Competitor's products had dimensional fluctuations, but ZBMT has excellent stability even with more than 200 pcs. Good cutting edge condition and high dimensional accuracy with H6 tolerance.

(User evaluation)

**Insert Description**

Carbide, Cermet, PCD

| Shape                                                                                                                   |                                                                                     | Description         | Dimensions (in) |       |       |       | MEGACOAT<br>NANO PLUS | MEGACOAT<br>NANO | PVD Coated<br>Cermet |       | Uncoated<br>Cermet | PCD                 |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------|-----------------|-------|-------|-------|-----------------------|------------------|----------------------|-------|--------------------|---------------------|
|                                                                                                                         |                                                                                     |                     | IC              | S     | D1    | RE    | PR1725                | PR1535           | PV720                | PV730 | TN620              | KPD001 <sup>1</sup> |
| <br>Tip Angle 25 °                   |  | ZBMT 13T302GF       | 1/4             | 0.156 | 0.209 | 0.008 | ●                     | ●                |                      |       |                    |                     |
|                                                                                                                         |                                                                                     | 13T304GF            |                 |       |       | 1/64  | ●                     | ●                | ●                    | ●     | ●                  |                     |
|                                                                                                                         |                                                                                     | 13T308GF            |                 |       |       | 1/32  | ●                     | ●                | ●                    | ●     | ●                  |                     |
| <br>Tip Angle 25 °<br>1-edge         |  | ZBMT 13T301NE       | 1/4             | 0.156 | 0.209 | 0.004 |                       |                  |                      |       |                    | ●                   |
|                                                                                                                         |                                                                                     | 13T302NE            |                 |       |       | 0.008 |                       |                  |                      |       |                    | ●                   |
|                                                                                                                         |                                                                                     | 13T304NE            |                 |       |       | 1/64  |                       |                  |                      |       |                    | ●                   |
| <br>Tip Angle 15 °<br>(Right-Hand R) |  | ZBMT 13T304R-GF-15D | 1/4             | 0.156 | 0.209 | 1/64  | ●                     | ●                |                      |       |                    |                     |

●: Standard Stock

\*1. PCD insert (KPD001) cannot be reground.

When a PCD insert (KPD001) enters a workpiece or contacts a wall, keep the feed rate below 50% of normal use to prevent damage to the insert. If feed is not reduced, the edge may defect.

Inserts are sold in 10 piece boxes

\*1. PCD Insert (KPD001) is sold in 1 piece boxes

## Recommended Cutting Conditions

| Workpiece                            | Insert Tip Angle | Corner-R (RE) (in)   | Insert Grade | Vc (sfm)                   | D.O.C. (in)                  | f (ipr)                      |
|--------------------------------------|------------------|----------------------|--------------|----------------------------|------------------------------|------------------------------|
| Carbon Steel / Alloy Steel           | 25°              | 0.008                | PR1725       | 200 - <b>490</b> - 660     | 0.008 - <b>0.012</b> - 0.059 | 0.002 - <b>0.004</b> - 0.006 |
|                                      |                  |                      | PR1535       | 200 - <b>390</b> - 590     | 0.008 - <b>0.012</b> - 0.059 | 0.002 - <b>0.004</b> - 0.006 |
|                                      |                  | 1/64   1/32          | PR1725       | 200 - <b>490</b> - 660     | 0.008 - <b>0.012</b> - 0.079 | 0.002 - <b>0.006</b> - 0.010 |
|                                      |                  |                      | PR1535       | 200 - <b>390</b> - 590     | 0.008 - <b>0.012</b> - 0.079 | 0.002 - <b>0.006</b> - 0.010 |
|                                      |                  |                      | PV720        | 460 - <b>590</b> - 790     | 0.008 - <b>0.012</b> - 0.059 | 0.002 - <b>0.005</b> - 0.008 |
|                                      |                  |                      | PV730        | 460 - <b>590</b> - 790     | 0.008 - <b>0.012</b> - 0.059 | 0.002 - <b>0.005</b> - 0.008 |
|                                      |                  |                      | TN620        | 460 - <b>590</b> - 790     | 0.008 - <b>0.012</b> - 0.059 | 0.002 - <b>0.005</b> - 0.008 |
|                                      | 15°              | 1/64                 | PR1725       | 200 - <b>490</b> - 660     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.004</b> - 0.006 |
|                                      |                  |                      | PR1535       | 200 - <b>390</b> - 590     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.004</b> - 0.006 |
| Stainless Steel                      | 25°              | 0.008                | PR1725       | 200 - <b>490</b> - 590     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.004</b> - 0.006 |
|                                      |                  |                      | PR1535       | 200 - <b>390</b> - 490     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.004</b> - 0.006 |
|                                      |                  | 1/64   1/32          | PR1725       | 200 - <b>490</b> - 590     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.006</b> - 0.010 |
|                                      |                  |                      | PR1535       | 200 - <b>390</b> - 490     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.006</b> - 0.010 |
|                                      | 15°              | 1/64                 | PR1725       | 200 - <b>490</b> - 590     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.004</b> - 0.006 |
|                                      |                  |                      | PR1535       | 200 - <b>390</b> - 490     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.004</b> - 0.006 |
| Cast Iron                            | 25°              | 0.008                | PR1725       | 200 - <b>490</b> - 590     | 0.008 - <b>0.012</b> - 0.059 | 0.002 - <b>0.004</b> - 0.006 |
|                                      |                  | 1/64 / 1/32          | PR1725       | 200 - <b>490</b> - 590     | 0.008 - <b>0.012</b> - 0.079 | 0.002 - <b>0.006</b> - 0.010 |
|                                      | 15°              | 1/64                 | PR1725       | 200 - <b>490</b> - 590     | 0.008 - <b>0.012</b> - 0.039 | 0.002 - <b>0.004</b> - 0.006 |
| Non-ferrous Metals (Aluminum alloys) | 25°              | 0.004   0.008   1/64 | KPD001       | 660 - <b>1,640</b> - 2,620 | 0.004 - <b>0.008</b> - 0.020 | 0.001 - <b>0.002</b> - 0.003 |

When machining at D.O.C. 0.059" or more, reduce the feed by about 50%.

A PCD insert (KPD001) can not be reground.

When a PCD insert (KPD001) enters a workpiece or contacts a wall, keep the feed rate below 50% of normal use to prevent damage to the insert.

## Insert Mounting Instructions

**When mounting the insert (Tightening torque: 1.2 Nm)**

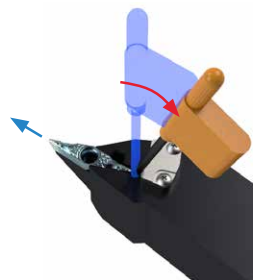


1. Tighten the main screw with the insert pressed against the contact surface with fingertips.



2. Tighten the side screw to complete the installation.

**When removing the insert**

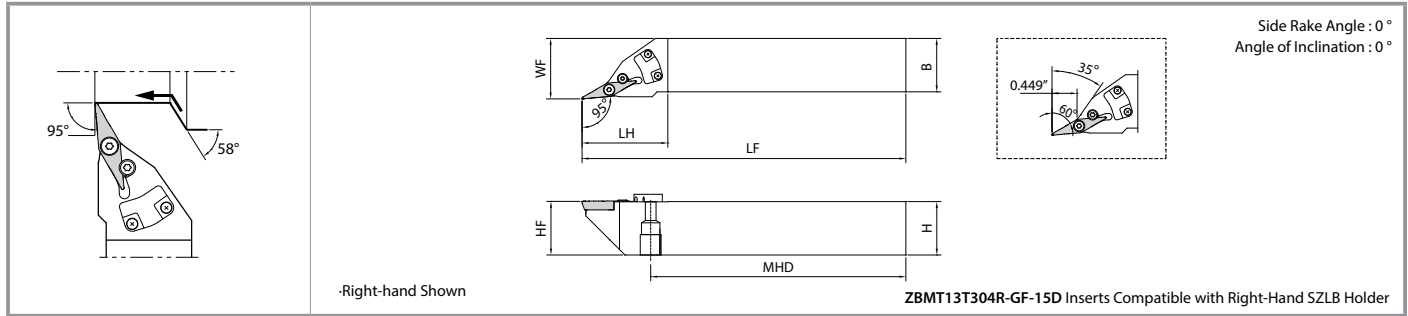


Remove the two screws and put the wrench into the gap at the back end of the insert. It can be easily removed by pushing out the insert as shown above.

# External Turning

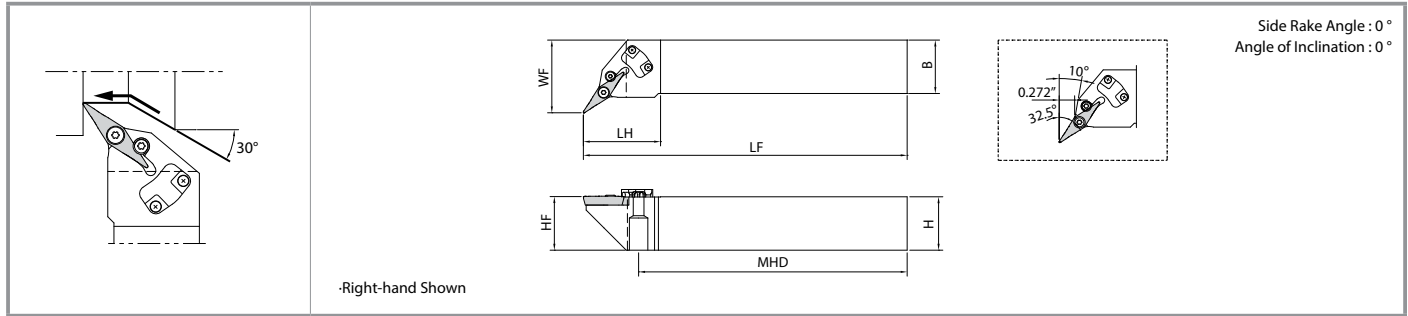
## SZLB (External/Copying)

Pressure Resistance : ~ 435 psi



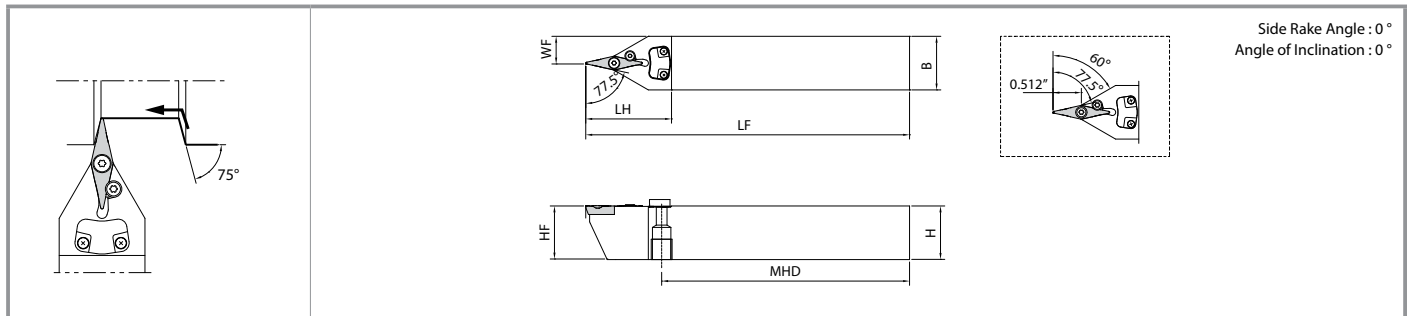
## SZPB (External/Facing/Copying/Undercutting)

Pressure Resistance : ~ 435 psi

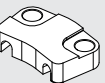
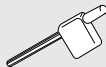


## SZVBN (External/Copying)

Pressure Resistance : ~ 435 psi

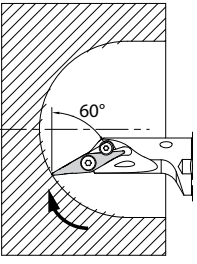


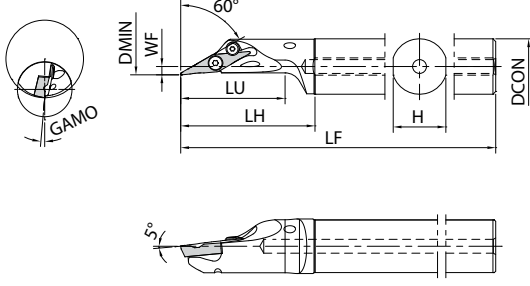
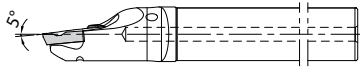
## Toolholder Dimensions

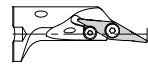
| Description     | Stock |   |   | Unit | Dimensions |       |       |       |       |       | Standard Corner-R (RE) | Coolant Hole | Parts |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
|-----------------|-------|---|---|------|------------|-------|-------|-------|-------|-------|------------------------|--------------|-------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|------|
|                 | R     | N | L |      | H          | HF    | B     | LF    | LH    | WF    |                        |              | MHD   | Coolant Block                                                                         | Clamp Screw                                                                           | Insert Screw                                                                          | Wrench                                                                                |           |      |
|                 |       |   |   |      |            |       |       |       |       |       |                        |              |       |  |  |  |  |           |      |
| SZLB® 12-3C-C   | ●     |   | ● | inch | 0.750      | 0.750 | 0.750 | 5.039 | 1.378 | 0.905 | 3.760                  | 1/64         | Yes   | ZCP-13                                                                                | BH2X6                                                                                 | SB-3079TR                                                                             | FT-8                                                                                  |           |      |
| 16-3D-C         | ●     |   | ● |      | 1.000      | 1.000 | 1.000 | 6.039 | 1.575 | 1.110 | 4.779                  |              |       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
| SZPB® 12-3C-C   | ●     |   | ● |      | 0.750      | 0.750 | 0.750 | 5.039 | 1.378 | 1.071 | 3.858                  | 1/64         | Yes   |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
| 16-3D-C         | ●     |   | ● |      | 1.000      | 1.000 | 1.000 | 6.039 | 1.378 | 1.334 | 5.023                  |              |       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
| SZVBN 12-3C-C   |       | ● |   | mm   | 0.750      | 0.750 | 0.750 | 5.039 | 1.574 | 0.373 | 3.645                  | 1/64         | Yes   | ZCP-13                                                                                | BH2X6                                                                                 | Recommended tightening torque<br>1.2 Nm                                               |                                                                                       |           |      |
| 16-3D-C         |       | ● |   |      | 1.000      | 1.000 | 1.000 | 6.039 | 1.574 | 0.498 | 4.645                  |              |       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
| SZLB® 2020K-13C | ●     |   | ● |      | 20         | 20    | 20    | 125   | 40    | 23    | 92.6                   | 0.4          | Yes   |                                                                                       |                                                                                       | ZCP-13                                                                                | BH2X6                                                                                 | SB-3079TR | FT-8 |
| 2525M-13C       | ●     |   | ● |      | 25         | 25    | 25    | 150   | 40    | 28.2  | 118                    |              |       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
| SZPB® 2020K-13C | ●     |   | ● | 20   | 20         | 20    | 125   | 37    | 27.2  | 95    | 0.4                    | Yes          |       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
| 2525M-13C       | ●     |   | ● | 25   | 25         | 25    | 150   | 36    | 33.9  | 124.2 |                        |              |       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |
| SZVBN 2020K-13C |       | ● |   | mm   | 20         | 20    | 20    | 125   | 40    | 10    | 89.6                   | 0.4          | Yes   | ZCP-13                                                                                | BH2X6                                                                                 | Recommended tightening torque<br>1.2 Nm                                               |                                                                                       |           |      |
| 2525M-13C       |       | ● |   |      | 25         | 25    | 25    | 150   | 40    | 12.5  | 114.6                  |              |       |                                                                                       |                                                                                       |                                                                                       |                                                                                       |           |      |

● : Standard Item

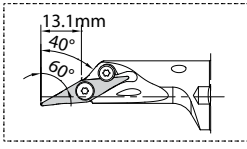
## A-SZJB-AE Excellent Bar (Internal Spherical Machining/Internal Facing/Copying)





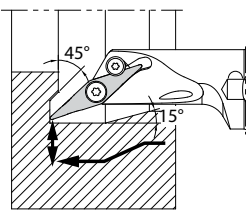
Left-Hand (L) shown above

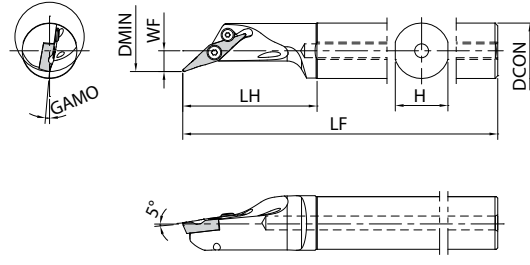
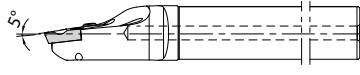


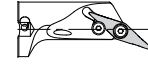
| Shank Diameter | Coolan Hole Diameter |
|----------------|----------------------|
| Ø20mm          | Ø5mm                 |
| Ø25mm          |                      |
| Ø32mm          |                      |

ZBMT13T304R-GF-15D Inserts Compatible with Right-Hand A-SZJB-AE Holder

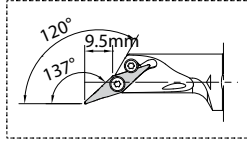
## A-SZXB-AE Excellent Bar (Internal Facing/Copying/Undercutting)





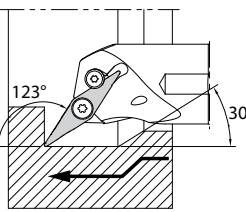
Left-Hand (L) shown above

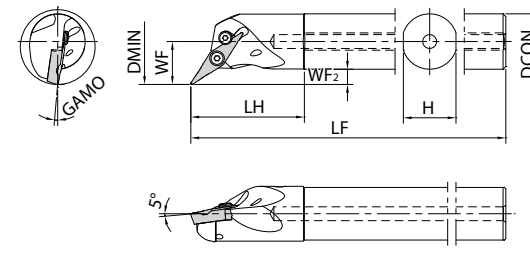
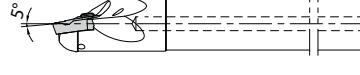


| Shank Diameter | Coolan Hole Diameter |
|----------------|----------------------|
| Ø20mm          | Ø5mm                 |
| Ø25mm          |                      |
| Ø32mm          |                      |

ZBMT13T304R-GF-15D Inserts Compatible with Right-Hand A-SZXB-AE Holder

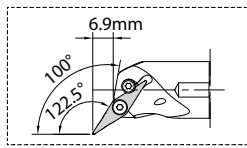
## A-SZQB-AE Excellent Bar (Copying/Undercutting)





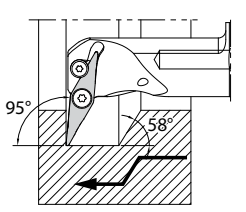
Left-Hand (L) shown above

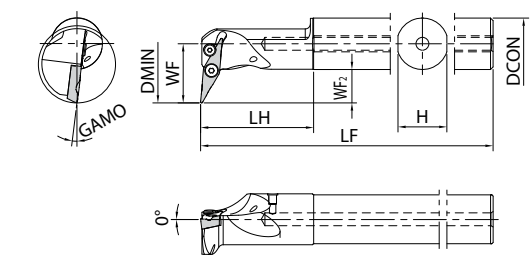
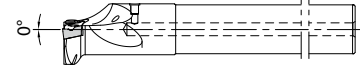


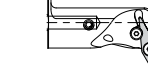
| Shank Diameter | Coolan Hole Diameter |
|----------------|----------------------|
| Ø20mm          | Ø5mm                 |
| Ø25mm          |                      |
| Ø32mm          |                      |

ZBMT13T304R-GF-15D Inserts Compatible with Right-Hand A-SZQB-AE Holder

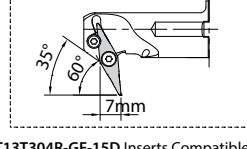
## A-SZLB-AE Excellent Bar (Copying)





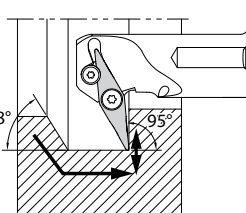
Left-Hand (L) shown above

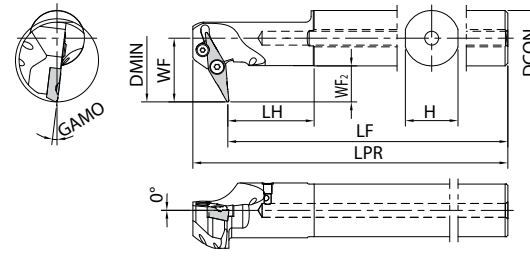
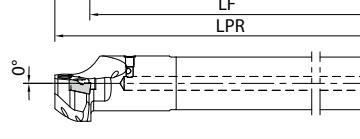


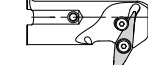
| Shank Diameter | Coolan Hole Diameter |
|----------------|----------------------|
| Ø20mm          | Ø5mm                 |
| Ø25mm          |                      |
| Ø32mm          |                      |

ZBMT13T304R-GF-15D Inserts Compatible with Left-Hand A-SZLB-AE Holder

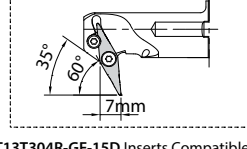
## A-SZZB-AE Excellent Bar (Back Boring)





Left-Hand (L) shown above



| Shank Diameter | Coolan Hole Diameter |
|----------------|----------------------|
| Ø20mm          | Ø5mm                 |
| Ø25mm          |                      |
| Ø32mm          |                      |

ZBMT13T304R-GF-15D Inserts Compatible with Right-Hand A-SZZB-AE Holder

# Boring Bars

## Toolholder Dimensions

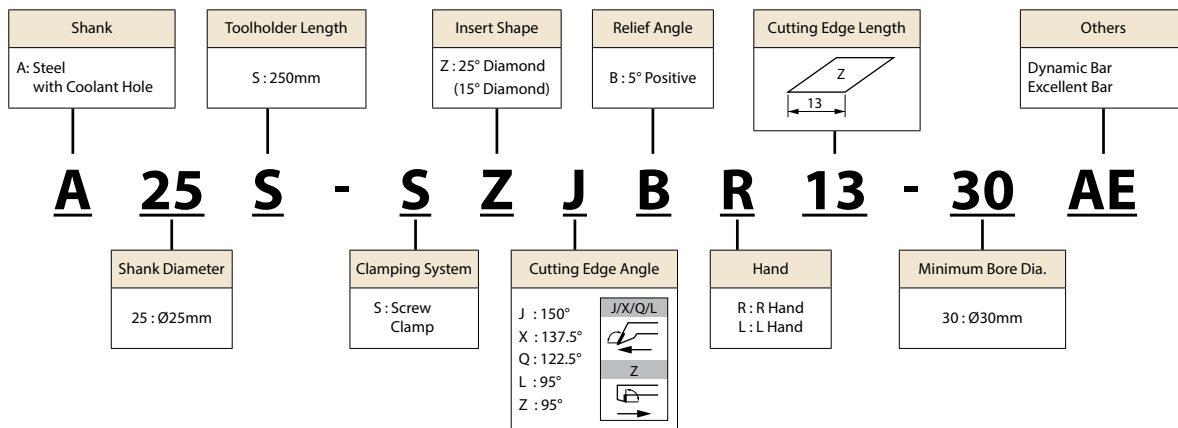
| Part Number   |                   | Stock |   | Min. Bore Dia. | Dimensions (mm) |      |     |     |      |    |      | GAMO | Standard Corner-R (RE) | Coolant Hole | Parts |                                      |                                                                                     |                                                                                     |                                                                                     |
|---------------|-------------------|-------|---|----------------|-----------------|------|-----|-----|------|----|------|------|------------------------|--------------|-------|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|               |                   | R     | L |                | DMIN            | DCON | H   | LPR | LF   | LU | LH   |      |                        |              | WF    | WF2                                  | Clamp Screw                                                                         | Wrench                                                                              | Plug                                                                                |
|               |                   |       |   |                |                 |      |     |     |      |    |      |      |                        |              |       |                                      |  |  |  |
| Excellent Bar | A20R-SZJB 13-28AE | ●     | ● | 28             | 20              | 19   | -   | 200 | 37.5 | 48 | 3.0  | -    | 5°                     | 0.4          | Yes   | SB-3079TR                            | FT-8                                                                                | HS3X3                                                                               |                                                                                     |
|               | A25S-SZJB 13-30AE | ●     | ● | 30             | 25              | 24   |     | 250 | 47   | 58 | 3.5  | -    |                        |              |       | Recommended tightening torque 1.2 Nm |                                                                                     | HS4X4                                                                               |                                                                                     |
|               | A32S-SZJB 13-40AE | ●     | ● | 40             | 32              | 31   |     | 250 | 61.5 | 72 | 3.5  | -    |                        |              |       |                                      |                                                                                     |                                                                                     |                                                                                     |
|               | A20R-SZXB 13-25AE | ●     | ● | 25             | 20              | 19   | -   | 200 | 37.5 | 48 | 7.5  | -    | 5°                     | 0.4          | Yes   | SB-3079TR                            | FT-8                                                                                | HS3X3                                                                               |                                                                                     |
|               | A25S-SZXB 13-30AE | ●     | ● | 30             | 25              | 24   |     | 250 | 45.2 | 58 | 7    | -    |                        |              |       | Recommended tightening torque 1.2 Nm |                                                                                     | HS4X4                                                                               |                                                                                     |
|               | A32S-SZXB 13-40AE | ●     | ● | 40             | 32              | 31   |     | 250 | 60.2 | 74 | 7    | -    |                        |              |       |                                      |                                                                                     |                                                                                     |                                                                                     |
|               | A20R-SZQB 13-27AE | ●     | ● | 27             | 20              | 19   | -   | 200 | -    | 41 | 15.5 | 5.5  | 5°                     | 0.4          | Yes   | SB-3079TR                            | FT-8                                                                                | HS3X3                                                                               |                                                                                     |
|               | A25S-SZQB 13-32AE | ●     | ● | 32             | 25              | 24   |     | 250 | -    | 51 | 18   | 5.5  |                        |              |       | Recommended tightening torque 1.2 Nm |                                                                                     | HS4X4                                                                               |                                                                                     |
|               | A32S-SZQB 13-40AE | ●     | ● | 40             | 32              | 31   |     | 250 | -    | 54 | 22.5 | 6.5  |                        |              |       |                                      |                                                                                     |                                                                                     |                                                                                     |
|               | A20R-SZLB 13-30AE | ●     | ● | 30             | 20              | 19   | -   | 200 | -    | 42 | 23   | 13   | 7°                     | 0.4          | Yes   | SB-3079TR                            | FT-8                                                                                | HS3X3                                                                               |                                                                                     |
|               | A25S-SZLB 13-34AE | ●     | ● | 34             | 25              | 24   |     | 250 | -    | 64 | 25.5 | 13   |                        |              |       | Recommended tightening torque 1.2 Nm |                                                                                     | HS4X4                                                                               |                                                                                     |
|               | A32S-SZLB 13-40AE | ●     | ● | 40             | 32              | 31   |     | 250 | -    | 86 | 29   | 13   |                        |              |       |                                      |                                                                                     |                                                                                     |                                                                                     |
|               | A20R-SZZB 13-30AE | ●     | ● | 30             | 20              | 19   | 200 | 187 | -    | 42 | 23   | 13   | 7°                     | 0.4          | Yes   | SB-3079TR                            | FT-8                                                                                | HS3X3                                                                               |                                                                                     |
|               | A25S-SZZB 13-34AE | ●     | ● | 34             | 25              | 24   | 250 | 237 | -    | 58 | 25.5 | 13   |                        |              |       | Recommended tightening torque 1.2 Nm |                                                                                     | HS4X4                                                                               |                                                                                     |
|               | A32S-SZZB 13-40AE | ●     | ● | 40             | 32              | 31   | 250 | 237 | -    | 74 | 29   | 13   |                        |              |       |                                      |                                                                                     |                                                                                     |                                                                                     |

Minimum bore dia. is when installing with standard corner-R (RE) insert

When machining with an insert other than the standard corner-R (RE), check for interference.

● : Standard Item

## Identification System



## Unique Cutting Angle A-SZXB-AE (Internal Facing/Copying/Undercutting)

### Features

#### • Chatter-resistant shape

The insert is placed near the center of the shank to ensure the thickness of the lower jaw of the insert.

#### • User-friendly design

The holder width (WF + Neck radius) is small, and it is easy to apply to the narrow gap of the workpiece (Minimum cutting dia. DMIN: Determined by R near the holder edge).

137.5°



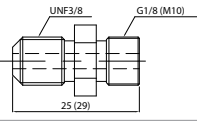
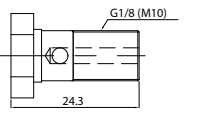
## Piping Parts for External Toolholders

JCT series piping parts can be used for machining with internal coolant (sold separately).

For details, please refer to **the Kyocera General Catalog**.

### Joint/Banjo Bolt

Pressure Resistance : ~ 4,350 psi

| Shape                                                                             |                                                                                   | Part Number      | Stock | Thread Standard<br>Toolholder Machine<br>Connection Side |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|-------|----------------------------------------------------------|
|  |  | J-G1/8-UNF3/8    | ●     | G1/8                                                     |
|                                                                                   |                                                                                   | J-M10X1.5-UNF3/8 | ●     | M10X1.5                                                  |
|  |  | BB-G1/8          | ●     | G1/8                                                     |
|                                                                                   |                                                                                   | BB-M10X1.5       | ●     | M10X1.5                                                  |

● : Standard Item

### Washer

Pressure Resistance : ~ 4,350 psi

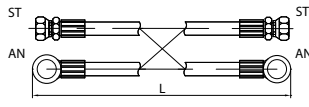
| Shape                                                                               | Part Number | Stock |
|-------------------------------------------------------------------------------------|-------------|-------|
|  | WS-10       | ●     |

\*When using banjo bolts, two washers are required.

● : Standard Item

### Hose

Pressure Resistance : ~ 4,350 psi

| Shape                                                                             |                                                                                   | Part Number  | Stock | Thread Standard |                   | Dimensions (mm) |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------|-------|-----------------|-------------------|-----------------|
|                                                                                   |                                                                                   |              |       |                 |                   | L               |
|  |  | HS-ST-ST-200 | ●     | UNF3/8          | UNF3/8            | 200             |
|                                                                                   |                                                                                   | HS-ST-ST-250 | ●     |                 |                   | 250             |
|  |                                                                                   | HS-ST-AN-200 | ●     | UNF3/8          | –<br>(Banjo Bolt) | 200             |
|                                                                                   |                                                                                   | HS-ST-AN-250 | ●     |                 |                   | 250             |
|  |                                                                                   | HS-AN-AN-200 | ●     | –               | –                 | 200             |
|                                                                                   |                                                                                   | HS-AN-AN-250 | ●     | (Banjo Bolt)    | (Banjo Bolt)      | 250             |

● : Standard Item

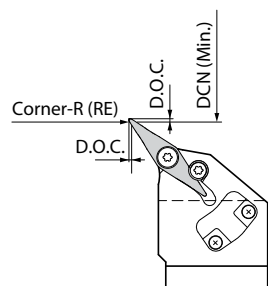
## Boring/Facing Available Cutting Dia. and Max. D.O.C.

## SZPB Type Cutting Diameter for Undercutting



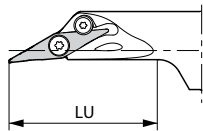
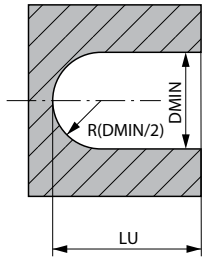
### Standard Corner-R 1/64" (RE)

| Cutting Dia. | Depth (in) |
|--------------|------------|
| Ø1.181       | 0.020      |
| Ø1.969       | 0.059      |
| Ø2.559       | 0.118      |
| Ø3.150       | 0.236      |
| Ø3.937       | 0.394      |
| Ø5.906       | 0.551      |



| Corner-R (RE) | D.O.C. (in) | DCN (Min) |
|---------------|-------------|-----------|
| 0.008"        | 0.020       | Ø1.181    |
|               | 0.039       | Ø1.378    |
| 1/64"         | 0.020       | Ø1.181    |
|               | 0.039       | Ø1.378    |
| 1/32"         | 0.020       | Ø4.331    |
|               | 0.039       | Ø5.906    |

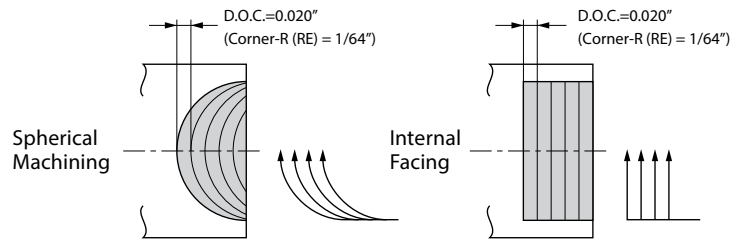
## Application Range



DMIN : Ø28mm - Ø40mm

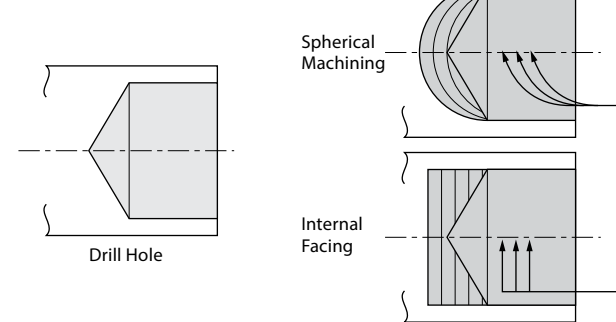
## Applications

Without pre-drilled hole



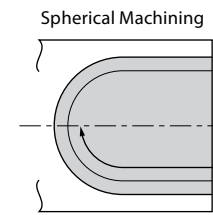
\* f should be 0.002 ipr or less during internal facing.

Machining from drilled hole

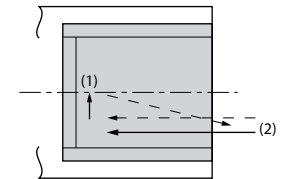


\* f should be 0.002 ipr or less during internal facing.

Finishing



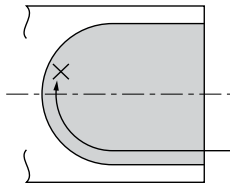
Internal Facing



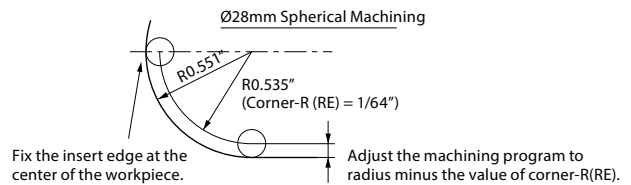
Machining Process

1. Finish the internal face first.
2. Next, finish the internal surface.

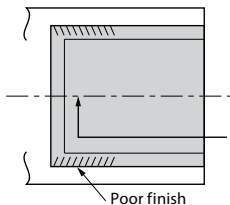
## Caution



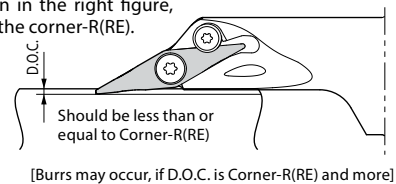
Internal spherical machining and internal facing  
(Especially internal spherical machining)  
When machining past the center of the workpiece,  
insert may break.



When internal copying as shown in the right figure,  
keep D.O.C. less than or equal to the corner-R(RE).



This type of machining is possible,  
but the chips might scratch the surface.



[Burs may occur, if D.O.C. is Corner-R(RE) and more]



**KYOCERA Precision Tools**

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Cuyahoga Falls, OH 44223

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Technical Support | 800.823.7284 - Option 2



Official Website | [www.kyoceraprecisiontools.com](http://www.kyoceraprecisiontools.com)

Distributor Website | [portal.kyoceraprecisiontools.com](http://portal.kyoceraprecisiontools.com)

Email | [cuttingtools@kyocerapti.com](mailto:cuttingtools@kyocerapti.com)