Wearless Tool

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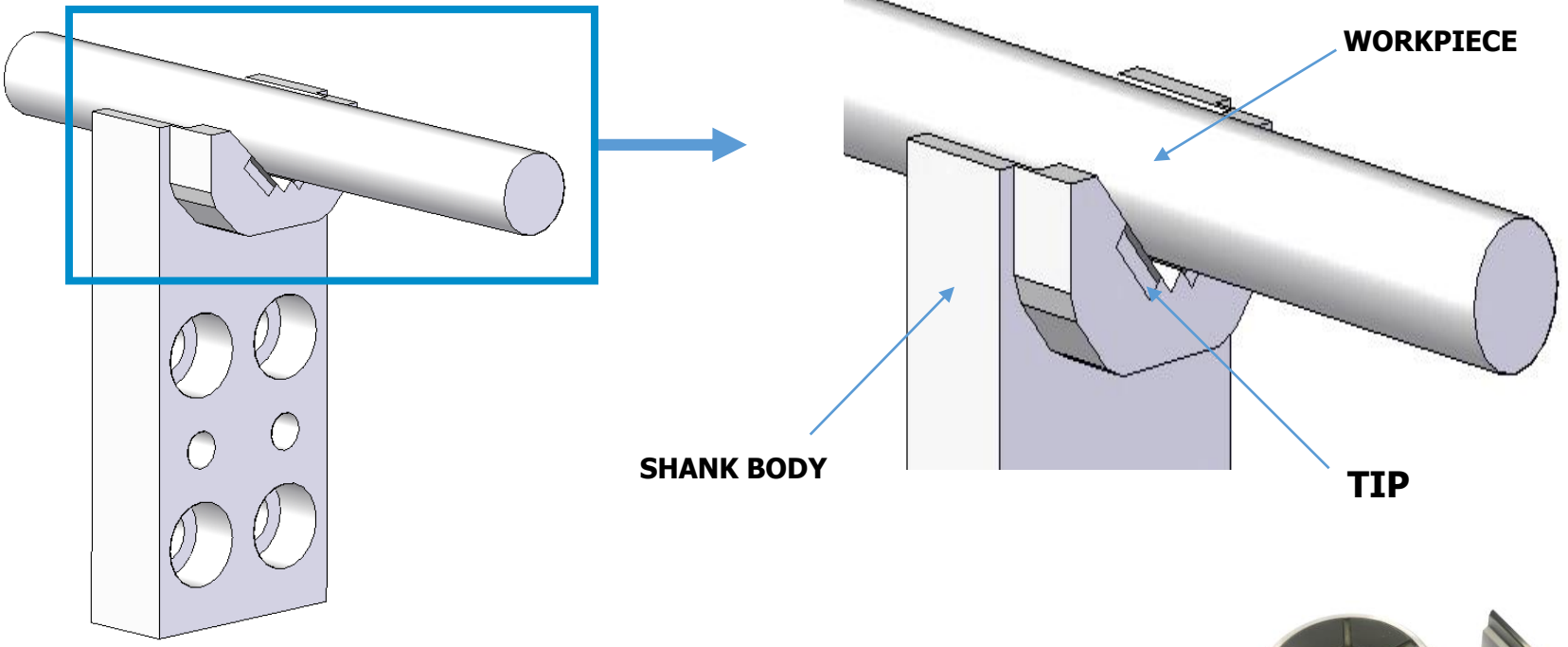
1. Introduction of Wearless Tools

Introduction of Wearless Tools (1)

✓ What is the Wearless Tool?

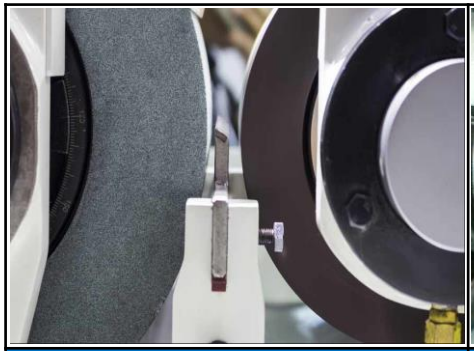
Wearless tool is a precise tool that supports the workpart contacting repetitively in bearing grinding, centerless grinding, and measuring process etc.



Introduction of Wearless Tools (2)

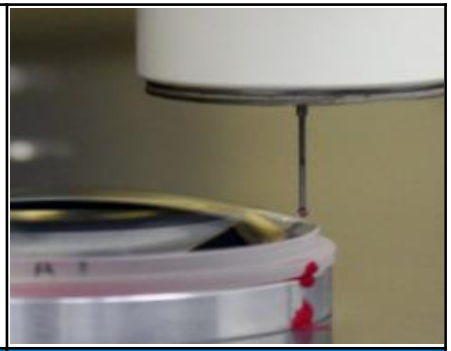
✓ Applications

- Centerless Grinding Machine
- Grinding Machine Sliding Block & Shoe
- Bearing Plate
- Measuring Probe
- Machine Tool



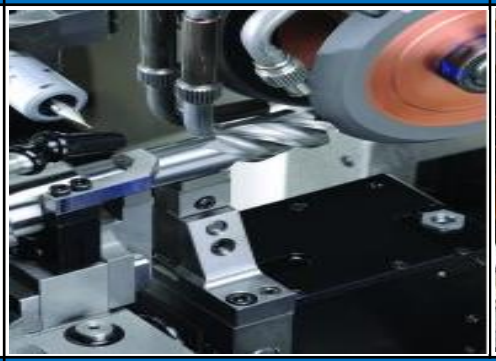
Centerless Grinding Machine

Cylinderical Grinding Machine



Measuring Probe

Bearing



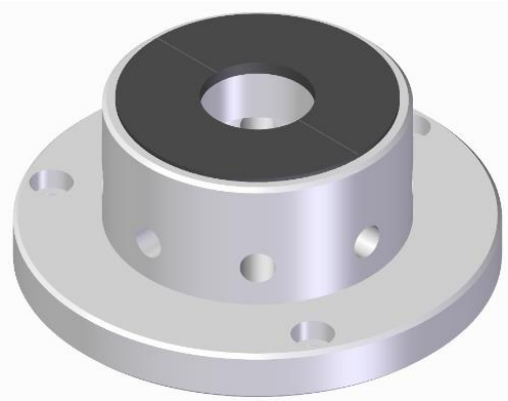
Various Machines

✓ Advantages

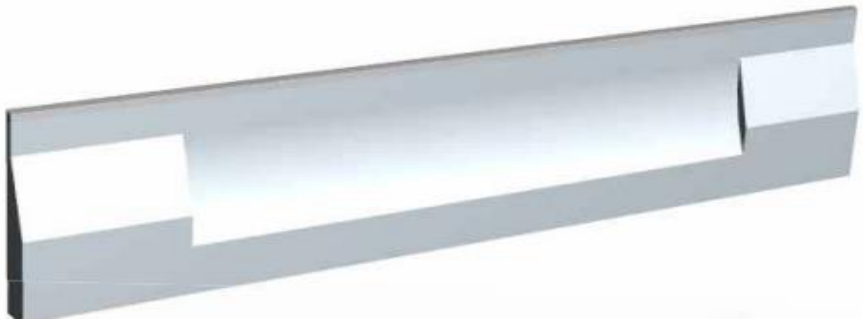
- Highly accurate profile processing is possible
- Long tool Life
- Excellent surface condition that prevents scratches on workpiece
- Various applicable materials : **PCD / PCBN / TC / CERAMIC**

Introduction of Wearless Tools (3)

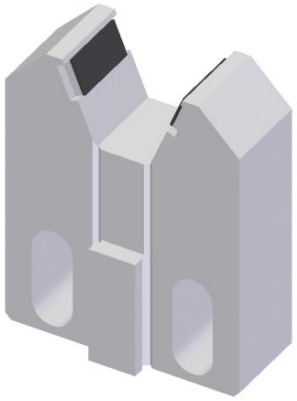
✓ Types of Wearless Tools



Backing Plate

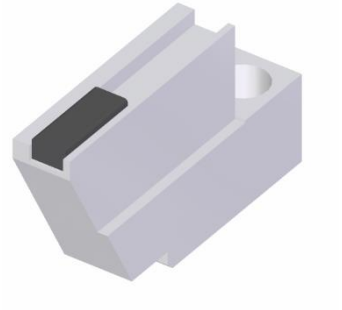


Centerless Guide



Sliding V-Block

Honing Gauge



Shoe

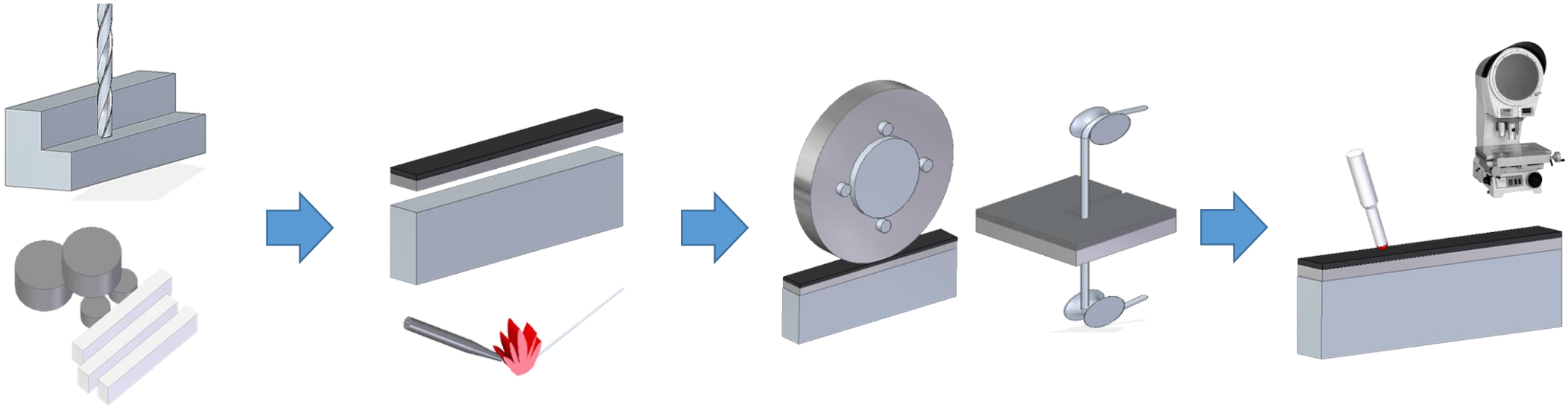
Measuring Gauge

Dead center for lathe

Introduction of Wearless Tools (4)

✓ How to manufacture the wearless tool?

After proper designing considering the workpart, the wearless tool is manufactured with suitable materials and EHWA's excellent grinding techniques



1. **Prepare suitable body and tips**
   - **Body : carbide , steel**
   - **Tips : PCD, TC, CERAMIC**

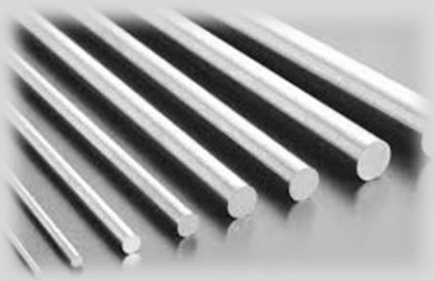
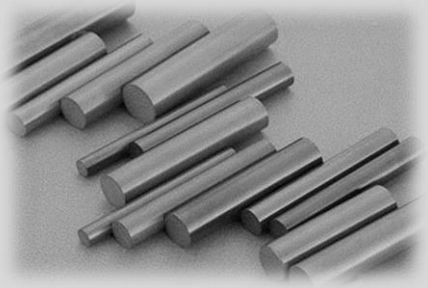
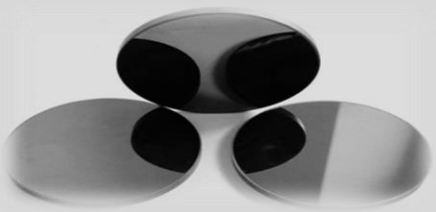
2. Braze tip on the body

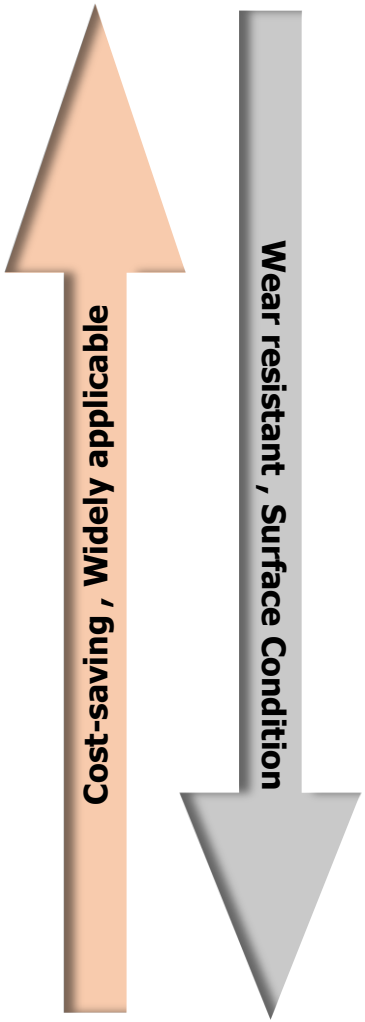
3. Grinding, EDM / EDG

4. Inspection

Introduction of Wearless Tools (5)

✓ Materials of the Wearless Tool

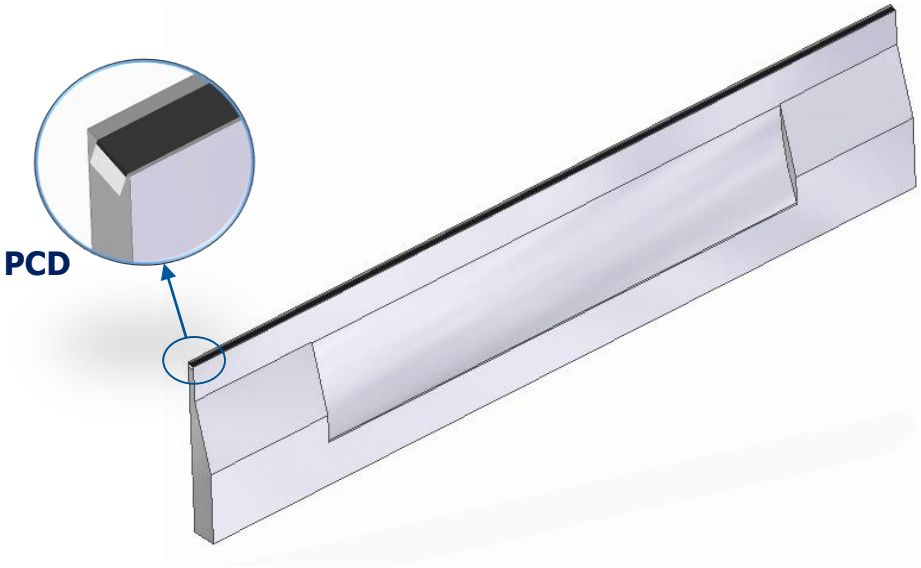
Materials		Grain Size	Characteristic
 TC	K01	Extra Fine	• Can make with various profile such as convex or concave shape • Cost-saving • Better toughness • Longer tool life than steel tools
	K05	Fine	
 Ceramic	Ceramic	Extra Fine	• Can make with various profile such as convex or concave shape • Better thermal resistance • Better chemical resistance • Good wear resistance
 PCD	EP51	4μm	• Can make with various profile such as convex or concave shape • Excellent wear resistance • Excellent surface condition
	EPW60	10μm	

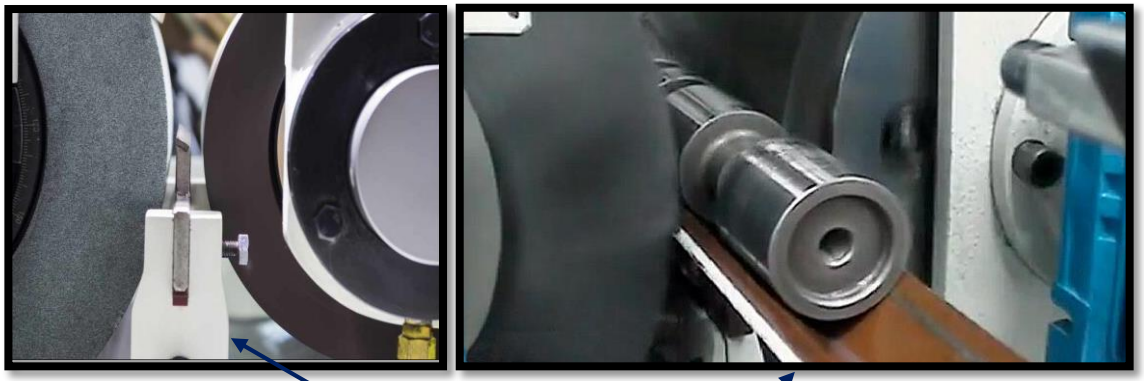


2. Types of Wearless Tool

Types of Wearless Tool (1)

✓ Centerless Guide

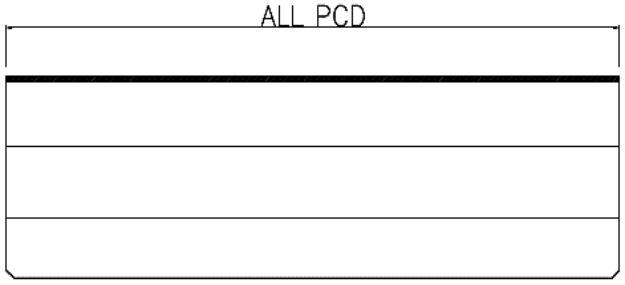




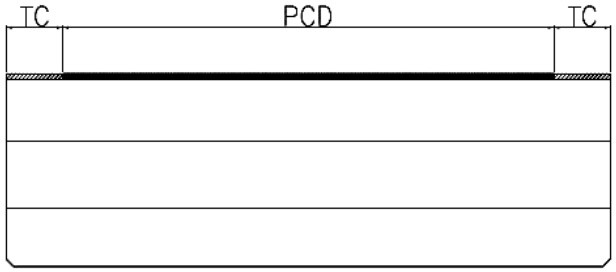
Centerless Guide

|Types of Tool|

1) ONE TIP
   - PCD
   - TC
   - Ceramic



2) Combination TIP
   - PCD + TC



|Types of Tip|

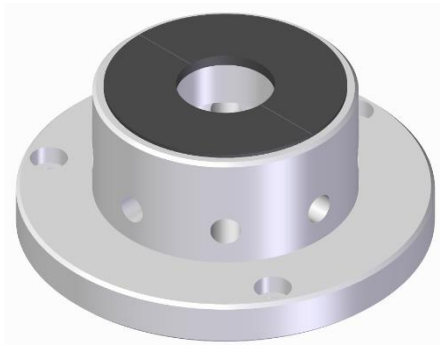
- PCD / PCBN
- Tungsten Carbide
- Ceramic

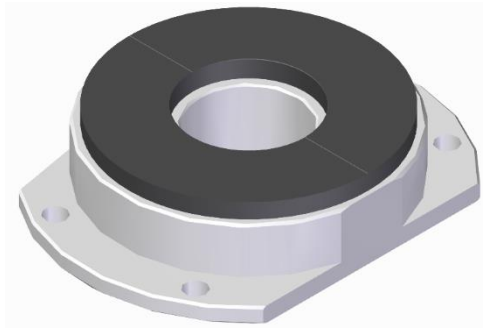
|Advantages|

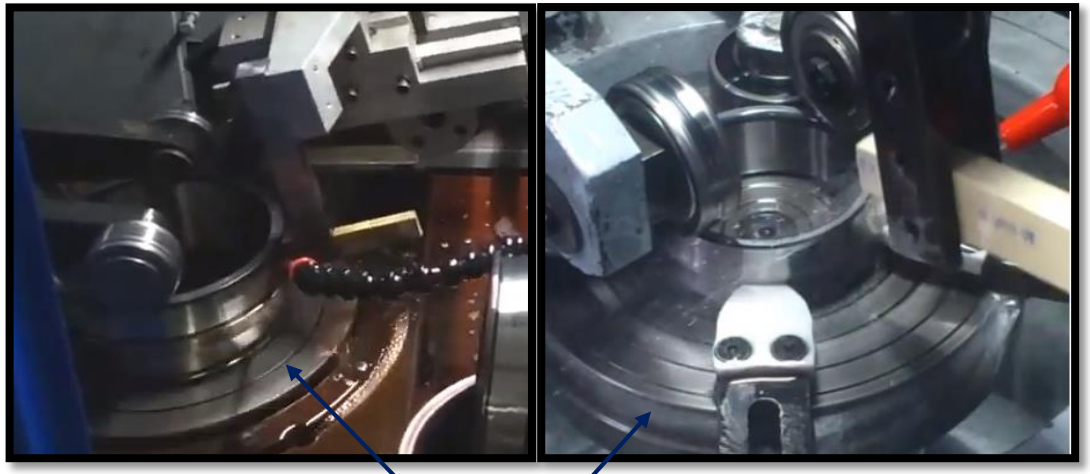
- Excellent surface condition prevents scratches on workpart
- Longer tool life than Tungsten Carbide
- Various designs: Solid tip, PCD and TC combination tip, Modified angle, radius, or profile.

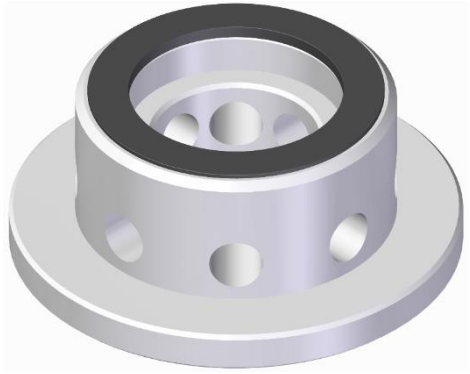
Types of Wearless Tool (2)

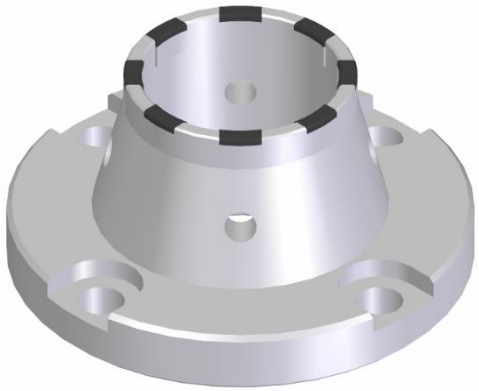
✓ Backing Plate for Bearing machining











|Types of Tip|

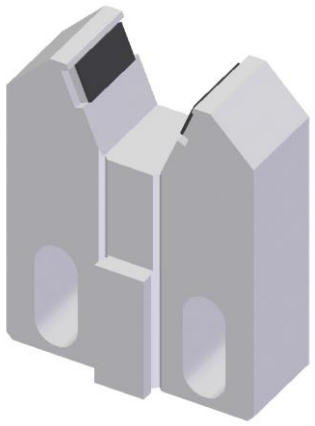
- PCD / PCBN
- Tungsten Carbide
- Ceramic

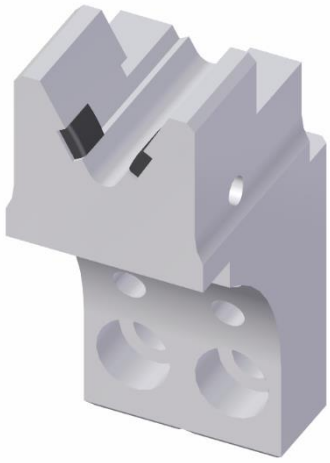
|Advantages|

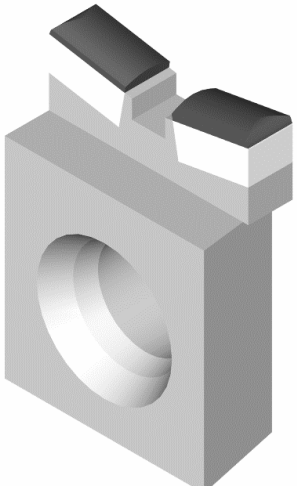
- Long and consistent tool life by excellent wear resistance of PCD
- Can design various customized tools

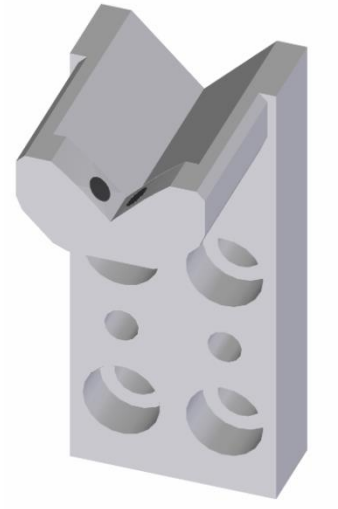
Types of Wearless Tool (3)

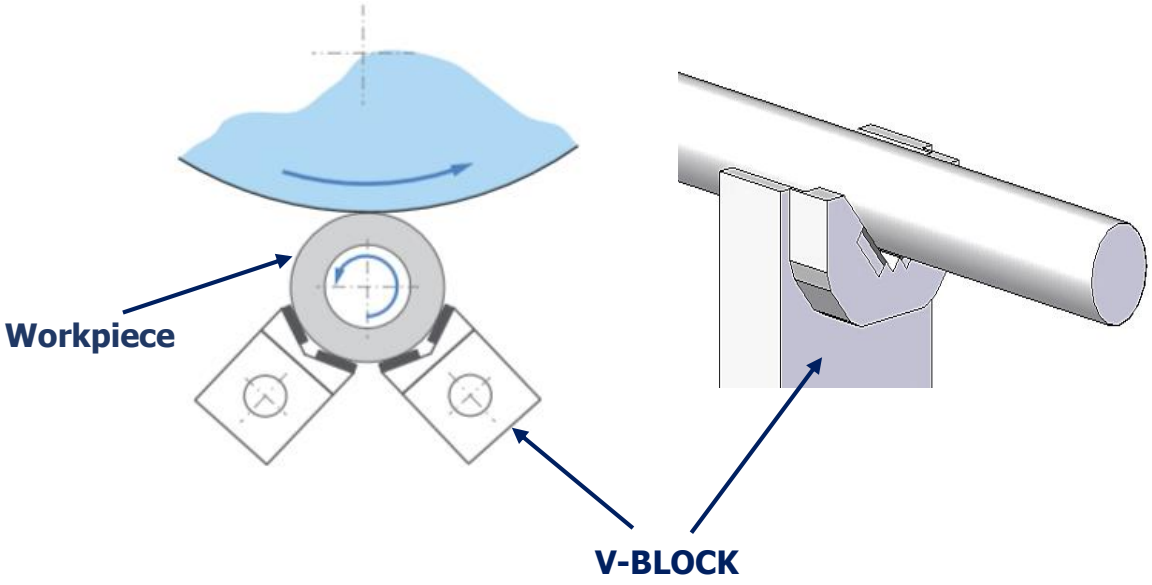
✓ Sliding V-Block











|Types of Tip|

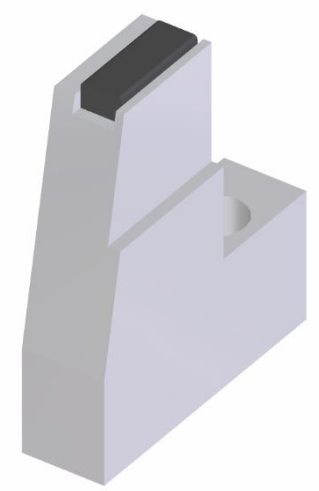
- PCD / PCBN
- Tungsten Carbide
- Ceramic

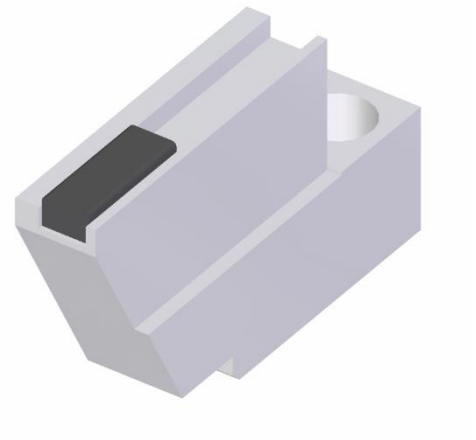
|Advantages|

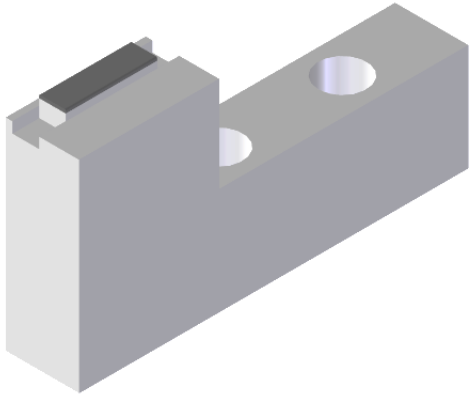
- Various designs considering workpart
- Excellent wear resistance

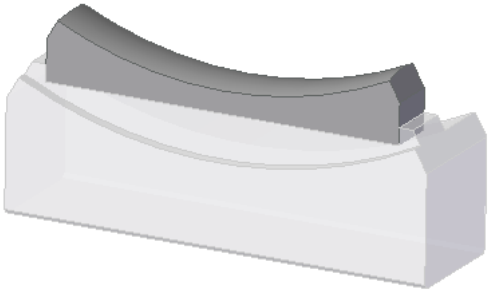
Types of Wearless Tool (4)

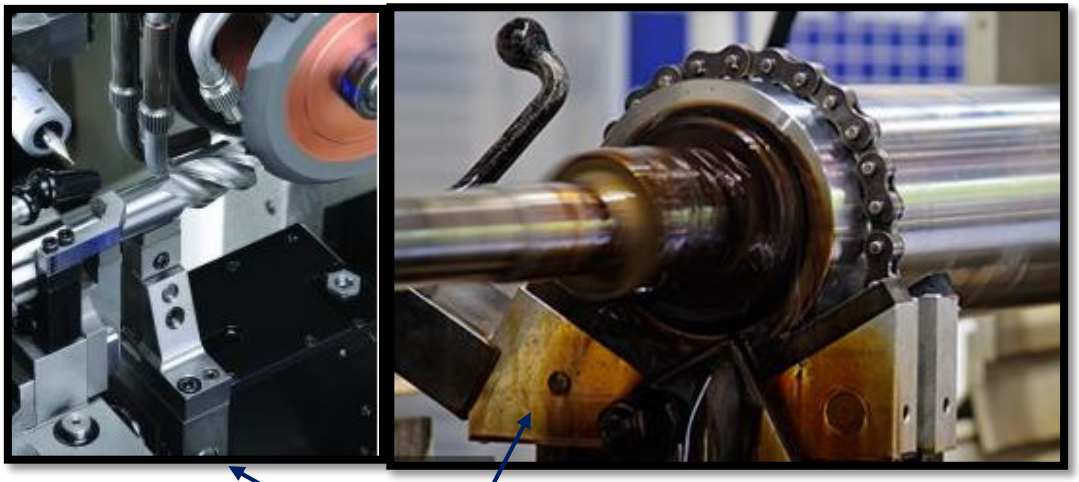
✓ Shoe











|Types of Tip|

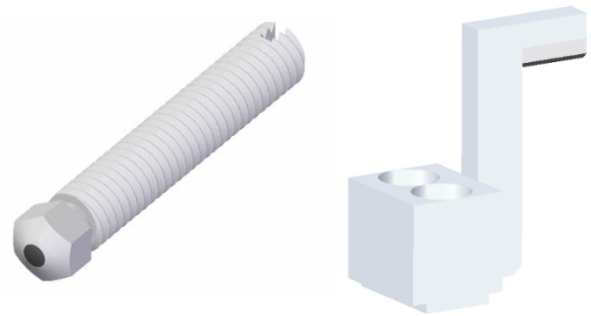
- PCD / PCBN
- Tungsten Carbide
- Ceramic

|Advantages|

- Long, stable tool life
- Various designs considering workpart
- Excellent wear resistance

Types of Wearless Tool (5)

✓ Special Tools

Application	Tools	References
Measuring gauge		• **Available with PCD, CVD or Tungsten Carbide** • The measuring system has to be accurate and reliable over a long period of time. Therefore, it demands robust and wear-resistant sensing devices. • As an expertise, EHWA can provide various kinds of measuring gauges.
Honing gauge		• **Available with PCD or Tungsten Carbide** • Measure the inner diameter using PCD honing gauge. • It has longer tool life than carbide.
Dead center for lathe		• **Available with PCD or Tungsten Carbide** • Longer tool life due to excellent wear resistance.

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