



# PCD REAMERS

|                                      |     |   |     |
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## PCD Reamer Manufacturer

PCD Reamer is a cutting tool for Precision Machining whose tip is covered with polycrystalline diamond blades. with extremely high hardness and wear resistance. Which is usually used for precision machining and trimming holes to meet high precision and high surface quality requirements.

Common applications and adaptations include:

High-hardness material processing: Due to the very high hardness of polycrystalline diamond, PCD Reamer is suitable for processing high-hardness materials such as cemented carbide, ceramics, quartz, and composite materials.

High-precision hole machining: PCD Reamer performs well when machining holes with high precision requirements. For example, PCD Reamer can provide highly consistent bore diameter and surface quality when manufacturing automotive engine cylinder bores or precision bores for aircraft engines.

Composite material processing: In aerospace, automobile manufacturing, and other fields, it is often necessary to process composite materials. PCD Reamer is able to process these composites efficiently while maintaining high-quality hole surfaces.

Non-metal material processing: PCD Reamer is also suitable for processing non-metal materials, such as plastic, glass fiber, etc., to obtain flat, precise, and high-quality holes.

✓ High Accuracy And Efficiency

✓ Fewer Process Steps Low Cycle Time

✓ High-Speed Cutting Feed Rate

✓ Maximum Tool Life

✓ Excellent Roughness

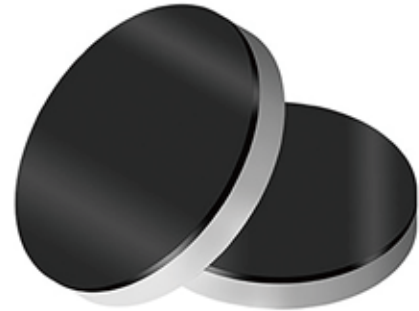
✓ Re-Grinding To Reduce The Cost

## Introduce of Material

Polycrystalline diamond (PCD) is a synthetic material produced by sintering together diamond particles under high temperature and high-pressure conditions.

PCD is second only to single-crystal diamonds in terms of hardness and is known for its exceptional wear resistance and compressive strength.

These properties make PCD an ideal material for cutting tools for high-speed machining and precision applications and an attractive choice for industrial and manufacturing applications.



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## Production and Process

Our types of equipment comprised the finest name brands in the world, including WALTER EDM devices, COBORN CNC grinders, Vollmer wire erosion machines, ZOLLER measurement machines, and Schiitte grinding devices. With these tools, we can perform even the most complex jobs with exceptional quality and performance.

Our cutting-edge equipment allows us to achieve a surface roughness of  $RA \leq 0.2$  and a tolerance of  $\leq \pm 0.002\text{mm}$ , ensuring the highest level of precision for our client's projects.

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## The Most Typical Six Types Of PCD Reamer

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### Straight Shank

Straight Shank  
PCD Reamer



### HSK System

PCD Reamer  
With HSK Shank



### BT System

PCD Reamer  
With BT Shank



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### Combination

Tooling System  
With Replaced Head



### Drill Reamer

The Reamer  
With Drill Head



### Flange Shank

The Tooling System  
With Flange Shank



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## Coolant

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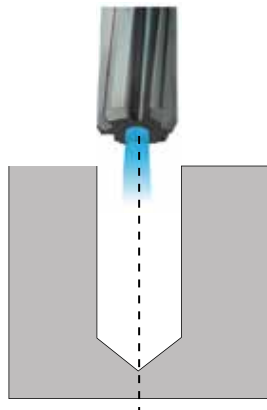
Coolant provide effective cooling and lubrication in high-speed, high-precision reaming applications. They help reduce cutting temperatures, improve cutting performance, extend tool life, and maintain a clean and stable cutting zone.

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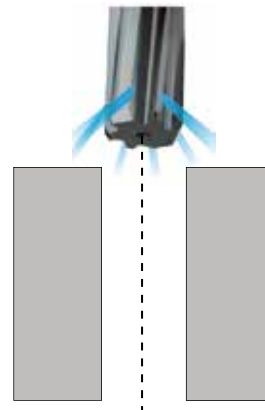
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### Coolant Mechanism by Application

For Blind Holes (Center Coolant)



For Through Holes



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## Applicable materials

PCD (Polycrystalline Diamond) reamers can be used to machine a variety of materials, including but not limited to:

**Aluminum :** pure aluminum, aluminum alloys, sheets, profiles, sialic aluminum, and alloy parts.

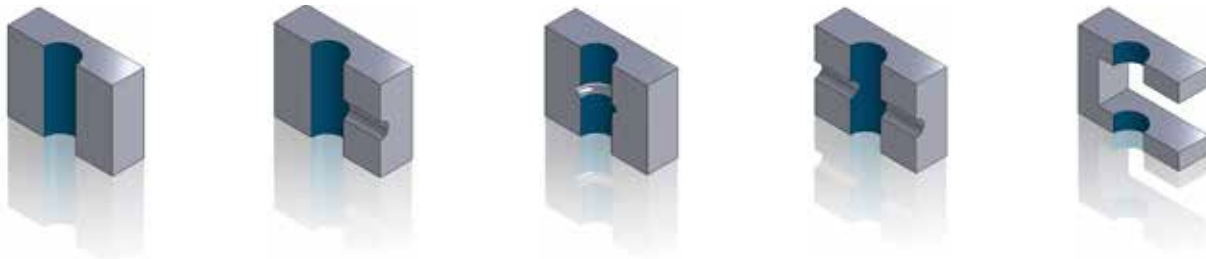
**Copper:** copper alloys, brass, bronze.

**Composite materials:** GFRP, CFRP, polymer-based composites.

**Engineering Plastics:** NYLON, PC, PPS.

PCD reamers are the ideal choice for processing these materials due to their excellent hardness, wear resistance, and thermal stability. Please select the appropriate type and parameters of PCD reamers based on your specific application and workpiece requirements.

## Applicable Hole Shapes



Through Hole



Blind Hole

\* Bottom finishing is not possible due to the absence of a bottom cutting edge.

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### Straight Shank

#### Straight Shank PCD Reamer

- Easy to use and install.
- High rigidity and stability
- Versatile for machining various materials.

### HSK System

#### PCD Reamer With HSK Shank

- Enhanced rigidity and stability.
- Efficient tool changing.
- Improved machining accuracy.



### BT System

#### PCD Reamer With BT Shank

- Enhanced rigidity and stability.
- Efficient tool changing.
- Improved machining accuracy.





## Combination

### Tooling System With Replaced Head

- Enhanced rigidity and stability.
- Efficient tool changing.
- Improved machining accuracy.

## Drill Reamer

### The Reamer With Drill Head

- Efficient drilling and reaming in one step, saving time.
- High precision and accuracy in creating step holes.
- PCD material provides excellent wear resistance for longer tool life.



## Flange Shank

### The Tooling System With Flange Shank

- Enhanced rigidity and stability.
- Efficient tool changing.
- Improved machining accuracy.

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## Sundi's Total Solution

SUNDI has a strong technical team that provides comprehensive solutions to customers. Our services include process design and optimization, tool design systems, and more. We offer products for various applications such as turning, milling, drilling, and reaming. With just product samples, drawings, and machine specifications, customers can enjoy a hassle-free "turnkey" service.

### Process

Designing and optimizing machining solutions to achieve high precision and efficiency with minimal operations and tooling.

### Tool Holders

We offer a wide range of tool holders compatible with various machine interfaces and different types of tooling, including collets.

### Cutting Tools

We provide custom-made reamers in different specifications and types to meet the specific requirements of our customers.

### Experience

With over 20 years of experience in the cutting tool industry, we have accumulated valuable expertise and knowledge to deliver exceptional solutions and services.

## Quality Control

Depending on the quality first, We control the quality from the raw material to the final process.

### — Material selection

The diamond reamers' tool bits are made of PCD blanks sourced from world-renowned companies such as E6/GE.

The body portion is crafted from top-quality tungsten carbide or tool steel. If required, we can provide material reports.

### — Tool body inspection

The hardness, dimensions, and performance of the tool body will be thoroughly checked using a tooling micrometer and a hardness testing machine prior to welding.

### — Automatic inspection

Our ZOLLER measuring machine ensures precise measurements of all PCD reamers, whether simple or complex.

Optical projection and automatic programs eliminate the possibility of human error that can occur with traditional manual inspection methods. This ensures accurate analysis and high-quality results.

### — Quality tracking and records

All finished PCD reamers will be numbered by our QC before shipment, and we'll offer detailed testing reports for better tracking of every product.



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## Use Case

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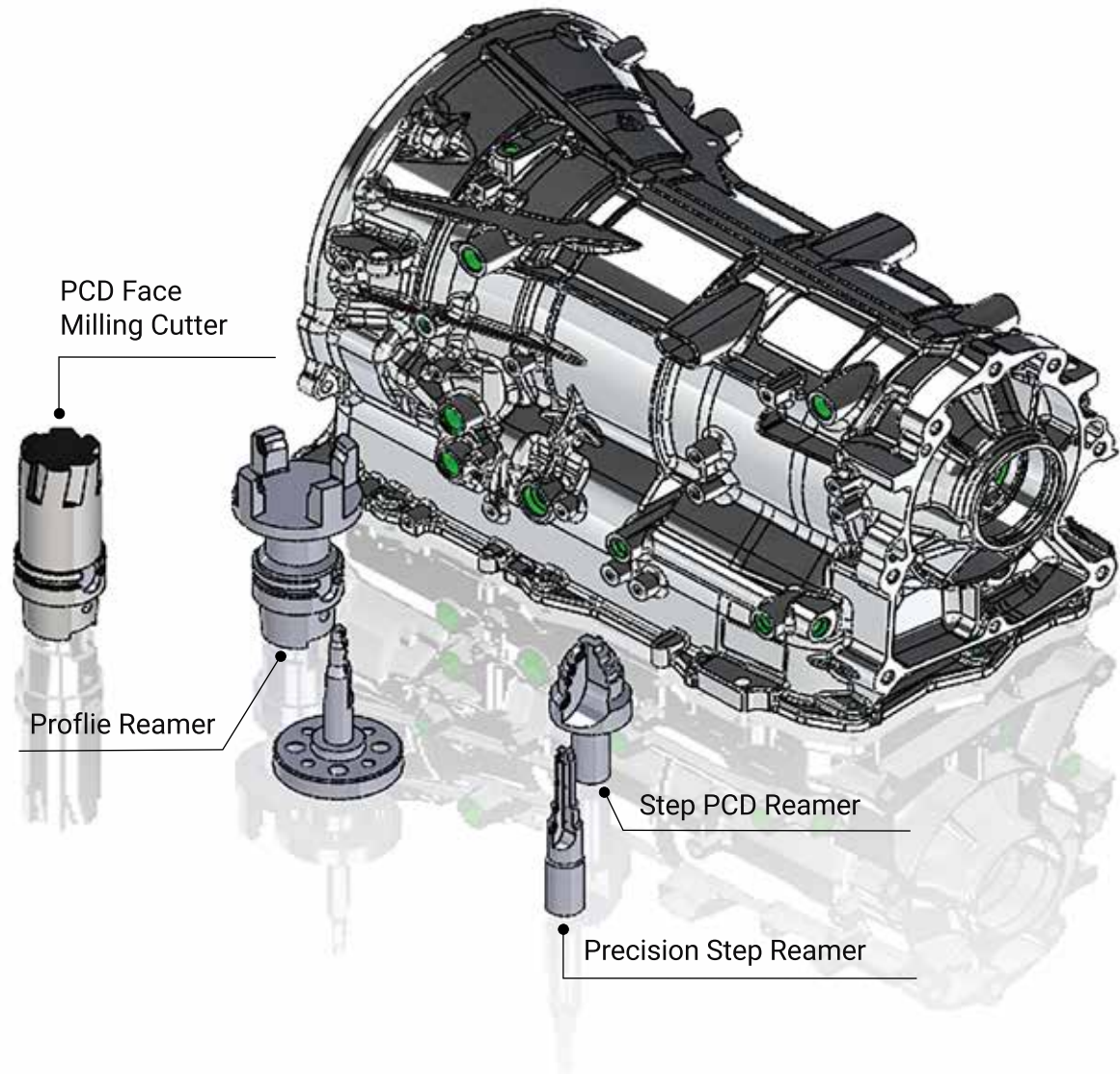
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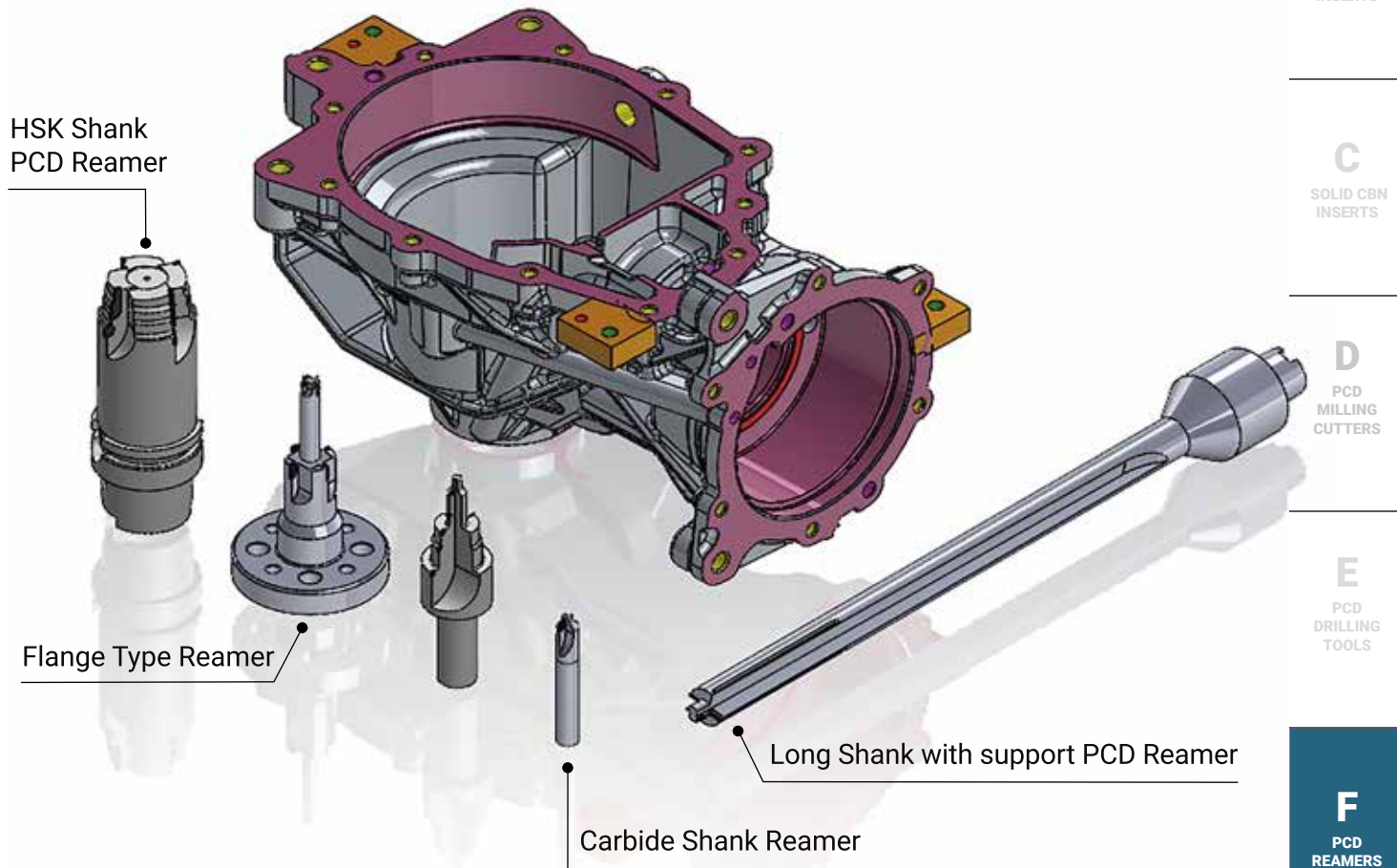
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| Description Of Workpieces | GearBox             | Name Of Tools                  | PCD Reamer Milling Cutter |
|---------------------------|---------------------|--------------------------------|---------------------------|
| Material Workpieces       | ADC12               | PCD Grade                      | CTB010                    |
| Usage Area                | Automobile Industry | Tolerance                      | 0.005mm                   |
| Machining Equipment       | VMC                 | Number Of Workpieces Processed | ≥10000                    |
| Coolant                   | Emulsifier          | Surface Roughness              | Ra0.4                     |

## Use Case



| Description Of Workpieces | Pump Hosing         | Name Of Tools                  | PCD Reamer Milling Cutter |
|---------------------------|---------------------|--------------------------------|---------------------------|
| Material Workpieces       | ADC12               | PCD Grade                      | CTB010                    |
| Usage Area                | Electrical Industry | Tolerance                      | 0.005mm                   |
| Machining Equipment       | VMC                 | Number Of Workpieces Processed | ≥15000                    |
| Coolant                   | Emulsifier          | Surface Roughness              | Ra0.4                     |



## Failure Analysis and Countermeasures

| Phenomenon   | Cause   | Countermeasure   |
|--|---|--|
| <b>Poor Surface Finish Of The Product</b>                    | <ol style="list-style-type: none"> <li>1. Inappropriate machining parameters</li> <li>2. Chip-breaking entanglement</li> </ol>  | <ul style="list-style-type: none"> <li>• Change the cutting parameters within the machining range</li> <li>• Product design</li> <li>• Increase the chip breaking groove</li> </ul>  |
| <b>Obvious Vibration Lines On The Surface Of The Product</b> | <ol style="list-style-type: none"> <li>1. Vibration or loosening of the tool during machining</li> <li>2. Check whether the clamping is appropriate</li> <li>3. The edge is too sharp</li> </ol>  | <ul style="list-style-type: none"> <li>• Ensure that the tool is mounted securely</li> <li>• Use a stronger clamping device</li> <li>• Passivate the cutting edge</li> <li>• Increased support for structural design</li> </ul>  |
| <b>Workpiece Hole Concentricity Not Up To Standard</b>       | <ol style="list-style-type: none"> <li>1. Poor clamping</li> <li>2. Too fast speed</li> <li>3. Tool runout in the process of machining</li> </ol>   | <ul style="list-style-type: none"> <li>• Regular cleaning, use a stronger clamping device</li> <li>• Adjust cutting parameters, reduce speed</li> <li>• Test the tool setting ring</li> <li>• Optimize coolant supply</li> </ul> |
| <b>Reamer Diameter Too Large</b>                             | <ol style="list-style-type: none"> <li>1. Tool wear</li> <li>2. Tool off-center</li> <li>3. Cutting speed too high</li> <li>4. Improperly set machining parameters</li> </ol>                     | <ul style="list-style-type: none"> <li>• Replace the tool regularly</li> <li>• Ensure that the tool is correctly installed</li> <li>• Adjust the cutting speed</li> <li>• Adjust the machining parameters</li> </ul>             |
| <b>Burn Marks Appear On The Surface</b>                      | <ol style="list-style-type: none"> <li>1. Cutting speed is too fast</li> <li>2. Cutting fluid is not suitable for reamer material</li> <li>3. Too many impurities in the cutting fluid</li> </ol> | <ul style="list-style-type: none"> <li>• Reduce the cutting speed</li> <li>• Replace the cutting fluid suitable for PCD material</li> <li>• Regularly clean the impurities in the cutting fluid</li> </ul>                       |

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