The Product Catalogue

---- From Nina

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---ZY Tools Tech International Department

Zhengzhou Zhongyuan Super Hard Tools Co.,Ltd
Primary PCD Markets

- **Automotive: Transmission** Housings and Valve Bodies; Manifolds; Cylinder Heads; Wheels; Pistons; Oil, Water, Power Steering and Fuel Pumps; Brake Cylinders; Carburetors; Engine Blocks; Alternator, Starter and Air Conditioning Housings

- **Pumps/Valves**: Housings, Moving Parts

- **Home Appliances**: Housings/Compressor Pistons

- **Aircraft/Aerospace**: Cowling, Wing Tips, Ducts, Floor Posts, Structural Components, Trim Panels

- **Electrical Machinery**: Commutator Shafts/Housings

- **Computer and Electronic**: Moving Discs; Mirrors/Lenses
PCD cutting tools classification

1. Pcd wheel hub turning tools
2. Pcd external threading tools
3. Pcd Acrylic Window Bit
4. Pcd Reamer
5. Pcd Fine Boring Tools
6. Pcd Milling Cutters
7. Pcd Drilling Tools
8. Pcd Dressing Tools
9. Pcd Wood Cutting Tools
10. Adaptors Etc
11. Usually we do as the drawing by customers offered.
12. Introducing some pcd tools as follows:
In recent years, Chinese automotive parts industry develops fast. Besides, more and more multinational automotive companies set up new factories in China, now 73% of the top one hundred automotive industries in the world have business in China. Facing no potential and competitive marketing, all automotive industries pay more attention to efficiency and cost of the component while improving quality and function of component. PCDOB1 cutting tools become the key-point of the machining. Our company is specialised in PCDOB1 tools for 16 years, and we have gained rich experience in automotive application, now we have covered 90.5% automotive industry in domestic market, what’s more, we got the indispensable position in tool market.
孔加工用刀具 / Tools for Bore Machining

聚晶金刚石（PCD）刀具材料高硬度、优良的耐磨性等特点特别适合有色金属加工，发动机行业中的缸盖、气门导管、凸轮轴轴承孔、火花塞孔的加工，保证了精度、同心度，表面粗糙度和光洁度非常关键，我公司推出的PCD刀具性能，指标稳定，可完全满足客户的各种需求。同时能为客户提供全面、优质的技术。

At present, almost all cylinder heads are made of aluminum. That is why PCD tool is the best choice for machining cylinder heads and its application amount is also going up. However, when machining valve seat and valve shaft guide, it is very strict on spark plug hole, high precision camshaft bearing hole. As we all know, the roundness, concentricity, surface accuracy and smoothness are very crucial to the function of valve seat and engine. Fortunately, PCD tools produced by Zhengshou Diamond not only can meet such exact demands, but superior technology service is also provided for clients.

产品系列 Products series
HKRTS系列长杆铰刀 HKRTS Connecting Reamer
PCD复合刀具 PCD Compound Form Tool
PCD可调式铰刀 PCD Adjustable Boring & Reamer Tool
PCD插入/组合钻头 PCD Brazed Drill / Cartridge Drill
PCD端铰刀 PCD Gun Reamer

RTS系列刀具 / RTS cutting tool

RTS（Replaceable Tapered System）可换式小锥度刀具系统，主要是针对小孔系列、异形孔、小尺寸孔的加工，解决了汽车零部件行业小件部件加工难的问题。RTS刀具系统主要有三个部分组成：小锥度PDC/CBN铰刀/刀具、带有切削液通道的锥形刀具，切成柄，RTS加强系统有切割液通道，操作简单，使用可靠、夹持精度高，可夹持PDC、FCBN、涂层等高精度刀具。我们已获得了可换式小锥度刀具系统的实用新型专利。在生产线上已经开始批量生产，赢得了广大客户的好评。

RTS (Replaceable Tapered System) is designed for small bore, complex part and small dimension face machining, and it solved the difficult machining problem for some special component. RTS system is formed by small tapered PDC/CBN reamer & milling tool, double-threaded screw with coolant fluid channel and connection holder. RTS system can be operated easily and conveniently, and it can clamp PDC/CBN and cutting tools with high precision. Now we have got national utility model patent and produce RTS tools in batch, more importantly, we get more and more high praise from our clients.

设计因素
- 紧密配合以达到定位精准。
- 要求非常高精度，以达到精度和一致性。
- 外冷却液通道呈垂直状，以满足客户冷却和清洁需求。
- Design factors
  - Taper connecting is helpful to fix position
  - High connecting strength contributes to the accuracy and rigidity.
  - The coolant is sprayed onto the cutting edge exactly which meets the cooling & chip removal requirements.

优点
1. RTS连接方式精度高，可批量生产，为客户提供经济可行的选择。
2. 稳定性好，抗振性好，提高了加工件精度和表面质量。
3. 刀具可调，精度和同轴度小于3μ。

Advantages
1. RTS connecting tool has high accuracy and can be produced in batch which can help client save time on making-stock.
2. High rigidity and strong vibration resistance improve the accuracy of workpiece.
3. Tool is adjustable, thus accuracy and roundness can be less than 3μ.
新型气门座复合刃具 / Valve seat compound tool

气门座和导管座的加工精度直接影响发动机的功率和燃油经济性指标。若能实现一把刃具解决两个复杂结构工件的复合加工，将可降低加工成本，提高生产率。针对这一特点，我们推出新型气门座复合刃具。其具有以下优点：

1. 高精度加工，位置精度高，保证加工质量。
2. 刀具更换方便，可快速更换，提高生产效率。
3. 针对气门座和导管座的特殊设计，提高加工效率。
4. 刀具耐用性好，提高工具寿命。
5. 易于操作，可以快速完成加工。
6. 刀具的旋转和进给系统设计合理，提高加工精度。

PM气门座排气 / PM Valve Seat: Exhaust

PM气门座进气 / PM Valve Seat: Intake

优点
- 设计合理，刀具刃径大，提高加工效率。
- 可靠性高，刀具更换方便，提高生产率。
- 针对气门座和导管座的特殊设计，提高加工效率。
- 刀具耐用性好，提高工具寿命。
- 刀具旋转和进给系统设计合理，提高加工精度。
- 刀具的重复性好，可以快速完成加工。
- 刀具的旋转和进给系统设计合理，提高加工精度。
汽车制造行业

珩磨杆/Honing rod

加工精度、精度、表面质量检测

加工件精度、精度、表面质量检测

与竞争对手加工件表面质量和性能进行对比，我们的珩磨产品显示出超高的稳定性。

加工件精度高，表面质量优，性能稳定。

加工件精度高，表面质量优，性能稳定。
汽车制造行业

PCD铰刀 / PCD end mill

PCD铰刀，在现代制造行业中，PCD铰刀还没有引起足够的关注。主要原因是目前大量使用硬质合金铰刀，但是硬质合金铰刀只能加工铁床，而其它材料如钢、铸铁等则难以加工。因此，对铰刀的材料选择、性能优化等需要改进。目前，我们公司的PCD铰刀已在汽车制造行业中得到应用，以其高精度和性能获得了更多用户的认可。

Currently, PCD tipped end mill are still attracting little attention in modern machining equipments; the main reason is that there are too much solid carbide end mills on the market, but nobody knows that wear resistance of solid carbide end mill is not good, and precision in geometry happened on the form, bevels radius and corner cannot be made on solid carbide end mill. So PCD end mill is very potential in our modern machining marketing. Now our company can make PCD end mill in large quantity, of course, it is the quality, not quantity that makes us win.

优点
1. 可靠性：降低生产成本。
2. 耐热性好，刀具寿命长。
3. 标准化生产，减少客户的选择难度。

Advantages
1. PCD end mill can be regarded as the best to help customers reduce cost.
2. Good wear resistance and long tool life.

PCBN立铣刀 / PCBN end mill

随着时代的变迁，越来越多的非金属材料不断涌现，因此我公司不断开发和创新，成功地制造出了PCBN立铣刀。PCBN刀具具有很高的硬度、耐磨性和良好的热稳定性等，而且符合高速切削，干式切削，绿色切削的行业趋势要求。

Now machining equipments are developed very quickly and more and more hard-machined material come up, so our R&D work very hard, and we produce PCBN end mills successfully. PCBN end mills have many advantages, such as high hardness, good wear resistance and stable thermal stability, etc., which are good for high cutting speed, dry cutting, and so on.

对比参数
<table>
<thead>
<tr>
<th>技术参数</th>
<th>PCD刀具</th>
<th>PCBN刀具</th>
</tr>
</thead>
<tbody>
<tr>
<td>转速（rpm）</td>
<td>5,500</td>
<td>10,000</td>
</tr>
<tr>
<td>切削速度（mm/min）</td>
<td>1,100</td>
<td>5,000</td>
</tr>
<tr>
<td>精度（μm）</td>
<td>1.6</td>
<td>0.4</td>
</tr>
<tr>
<td>底部平行度（mm）</td>
<td>0.01</td>
<td>0.005</td>
</tr>
<tr>
<td>打磨平度（mm）</td>
<td>0.012</td>
<td>0.005</td>
</tr>
<tr>
<td>刀具耐用度（件）</td>
<td>&lt;80</td>
<td>&gt;120</td>
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</tbody>
</table>
With the development of science and technology, prosthetics also have rapid development in the medical industry. The application of PCD tools in the medical industry improves processing efficiency and reduces the cost. We export our medical cutters to Japan for many years and have won the trust of the clients with our high quality.

Design factors
1. Reduce the cutting heat.
2. Postage the life of machining titanium material.
3. Increase the cutting depth and improve the machining efficiency.

Our Advantages
1. The precision <3μ, which improves the accuracy of the prosthetic workpiece and solves the installation problems.
2. The PCD tools life is 4 to 5 times longer than the carbide tools or cemented cutting tools.
3. PCD tools are the best choice to machine titanium material.

循环经济 (Cycle time)

- Others
- Ours

刀具寿命 (Tool life)

- Others
- Ours
**Application Example**

<table>
<thead>
<tr>
<th>Workpiece</th>
<th>Electric motor housing</th>
</tr>
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<tbody>
<tr>
<td>Material</td>
<td>Grey cast iron</td>
</tr>
<tr>
<td>Cutting speed</td>
<td>10000m/min</td>
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<tr>
<td>Cutting depth</td>
<td>0.7mm</td>
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</tbody>
</table>

**Results**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting life</td>
<td>1000 pcs</td>
</tr>
<tr>
<td>Tool life</td>
<td>1000 pcs</td>
</tr>
</tbody>
</table>

**Diagram**

- Tool life comparison between our tool and another tool.
Aerospace Cutting Tool Series

In the field of aerospace manufacturing, the materials of aircraft accessories must be stable and weight-reduced. Thus, to process such light-weight materials turns out to be a problem. The alloy tool wear faster and the office is prone to burr which cannot meet the processing needs. While the application of PCD tool happens to be able to solve those processing problems. Therefore, PCD tool in the aerospace manufacturing industry is a challenge but will also be a trend.

PCD刀具应用的优点

1. 寿命长，降低客户加工成本。
2. 打孔无毛刺，提高加工工件的表面质量。
3. PCD中心钻头，排屑更顺畅。
4. PCD钻头集切削、加工于一体，钻削，铣削配合使用，节省加工时间，提高加工效率。
5. 产品可根据客户需求量身定制。

Advantages of PCD tool applications.

1. Long life reduces the processing cost of clients.
2. No burr improves workpiece surface accuracy.
3. PCD center drill is good for chip removal.
4. PCD drill can be applied to both roughing and finishing. With drilling and milling used together, it can improve work efficiency & reduce machining time.
5. Products can be customized.