

- Cutting tools for machining valve guide & valve seat ring.
- Cutting tools for complicated bore processing .
- Cutting tools for machining joint surface.
- Cutting tools for machining high precision and large length-diameter ratio hole.
- Cutting tools for machining cylinder bore.

Cutting tools for machining automotive engine parts



Cutting tools

for machining valve guide & valve seat ring

The machining precision of valve seat ring and guide hole directly affects the power and exhaust emission index of the engine. Zhengzuan cutting tools can easily achieve precise combined before and after the valve seat and the value guide ring assembling, accurately assured clearance of valve and valve seat ring, ensure valve heat dissipation and sealing performance. At the same time solve the processing engineering of the tool setting repeatedly, deformation and wear fast, low machining efficiency.

Bottom hole finish machining tools

- The thermal shrinkage process realizes two kinds of materials composed with high precision and higher machining reliability.
- Accurate concentricity ensured tools' super long durability and dimensional precision.
- Flange connection can achieve radial runout adjustment.
- The internal cooling structure ensures better chip removal effect.

HOT



Finish machining before pressing ring

Valve guide & valve seat machining tools

1. PCD.
2. Internal cooling structure.
3. Thermal shrinkage compound processing.
4. Flange connection.



Rough machining before pressing ring

Throat form tool

Valve guide & valve seat finish machining tools

- Realize efficient and precision machining of the valve guide and value seat cone face at the same time.
- Semi-finish and finish machining tools are capable of distribute the processing in a more reasonable method and ensure longer tool durability.
- Rational guide pad distribution design assured reaming precision.
- Boring blade can achieve fine-adjustment operation.
- Machining processing combined PCD and PCBN material. Double promotion of tool durability and processing quality.
- Excellent precision over repeatability clamping, easy and reliable adjustment.

HOT

Machining after pressing ring

Valve guide & valve seat machining tools



1. Runout 0.003mm.
2. Rational guide pad distribution.
3. Excellent precision over repeatability clamping.
4. PCD.
5. PCBN.
6. Fine-adjustment structure.

Gun reamer for finish machining of valve guide

- Optimized cutting edge material and structure, suitable for precision reaming operation of super length-diameter ratio work piece.
- A variety of blade number and material, can match different processing conditions.
- Front edge runout 0.003mm.
- PCD and carbide materials are available.
- Reliable tool durability.
- Welding type and mechanical clamping type.
- Provide recondition services to reduce to tool cost.



Cutting tools

for the series of complicated hole machining

To ensure the hole coaxiality of tappet, spark plug, fuel spray nozzle, and improve machining efficiency at the same time, Zhengzuan uses the multi-processing compound tools, realized concentration processing for multi-step holes, optimize processing steps, decrease tool changing times and save production time, then reduce the cutting tool inventory at the same time. With the high precision and wear resistance of PCD tools, from processing optimization to high efficiency and stable processing, the machining problems of complicated holes are perfectly solved.

Rough machining tools for tappet hole

- Carbide drill and PCD reamer assembly together with thermal shrinkage connection.
- Cutting edge runout within 0.003 mm to ensure longer tool life and machining precision.
- Drilling and reaming combine structure, it will get precision reaming guide while drilling.
- Unique tool retipping technology can get good precision as new tools so that customer can save cost and resources.



Finish machining tools (mechanical clamping type) for tappet hole

- Mechanical clamping inserts replacement and adjustment is simple and convenient.
- Precise design of the guide structure to ensure smooth processing.
- Flange connection can adapt different types of tool holders.
- Excellent tool rigidity.



Finish machining tools for tappet hole

- Axial rake angle reduces axial force and let the cutting light and fast.
- Uneven blades structure effectively avoids the indentation and makes the cutting more stable.
- Cutting edge runout within 0.003 mm to ensure longer tool life and machining precision.
- Internal cooling ensures better chip removal effect.



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Finish machining tools
for tappet hole

Finish machining tools for spark plug hole & fuel spray nozzle hole

- Complex cutting edge with the back taper of 0.003mm manufacturing tolerances, can reach IT7 level tolerance.
- Thermal shrinkage processing helps the compound tools to ensure a higher precision and rigidity.
- Excellent surface quality.



Cutting tools

for machining crankshaft
hole & camshaft hole

Cutting tools for machining high precision and large length-diameter ratio hole

- Boring tools for guide, semi-finish and finish machining.
- The guide pad structure ensures the precision and stability of the large length-diameter ratio boring.
- Cutting edge runout within 0.003 mm to ensure longer tool life and machining precision.
- Adjustable range of the blade is ± 0.1 .
- Adjustable flange connection structure.
- Used in high demand conditions for crankshaft and camshaft holes.

HOT

High precision machining
for large length-diameter
ratio hole

Combination boring tools with guide pad



1. Cutting edge runout within 0.003mm.
2. Guide pad structure.
3. Flange connection.



Cutting tools

for machining cylinder
head joint surface

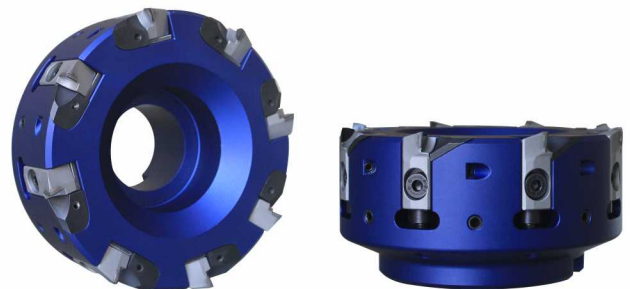
Aluminum base face milling cutter (PCD)

- Suitable for high efficiency rough & finish milling.
- Different No. of blade with the same diameter.
- Internal cooling design optimizes cutting processing.
- Using high-strength aluminum alloy.
- Dia. runout within 0.003mm.
- Axial adjustment range is 2mm.

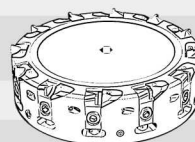
HOT

Cylinder head joint surface milling

High precision mirror
surface milling tool



MFAC30、MFAC31 Series face milling cutter



Diameter: D63-D315

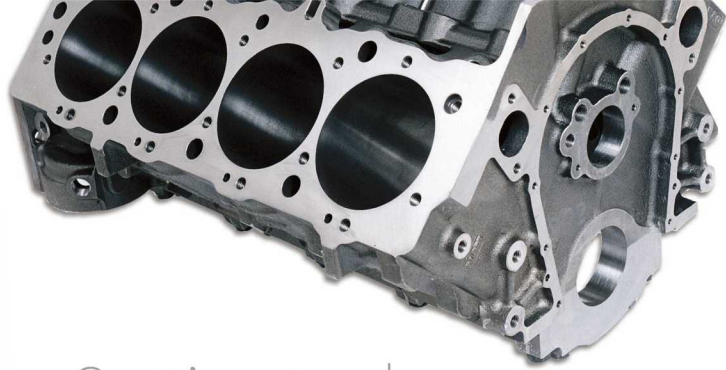
Number of edges: 3-20

Tool holder type: Optional keyway connection tool holder

Axial rake angle: +

Cooling: Internal cooling

Tool body material: High strength aluminum alloy



Cutting tools for machining cylinder bore

Rough boring tools

- The monoblock structural design ensures sufficient strength to meet the needs of roughing.
- Guidance and semi-finishing design to reduce the blade cutting force, and improving tool life.
- Semi-finishing tool holder structure can be adjusted for the axial and radial precision, meanwhile, machining precision is also boosted.
- The design of the chip flute is optimized for cutting.



1. Indexable inserts.
2. Cartridge.
3. Through chip flutes.
4. The integral structure.

Rough boring tools

- Adopted guide pad design to ensure the cylinder bore precision.
- The integral design of the tool holder ensures the tool body has sufficient strength to meet the requirement of rough machining.
- Using hexagonal full-face insert design which has six cutting edges.
- Boring head and shank split design, you can just replace the boring head and achieve one tool
- With multi-purpose application.



HOT Cutting tools for machining cylinder bore

Finish boring tools

1. PCBN.
2. Guide pad structure.
3. Boring head and tool body split design.
4. Tool holder and tool body integral design.

Honing head for machining cylinder bore

New type floating connection

- Connect system structure optimization to avoid stress concentration and extension tool life.
- Easy to maintaining and cleaning. Floating connection more flexible and more accurate positioning.

Honing stones are made of diamond abrasives.

Diamond honing stones have good wear resistance, good stability and machinability which can effectively improve the processing efficiency and extend the tool life greatly.



1. Flexible and reliable connection.
2. Honing stones with good wear resistance.

Cylinder block joint surface processing tool series

High speed PCBN indexable face milling cutter for finish machining

- Inserts height and tool diameter can be adjustable.
- Height adjustment runout within 0.003mm.
- Outer diameter runout within 0.01mm, the inserts can achieve regrinding for 3 times.
- Processing roughness less than Ra1.6.





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