Finishing of Valve Seats and Valve Guides

The MAPAL Solution:

MAPAL Actuating Tools – High-precise and Reliable

For the finishing of valve seats and valve guides on cylinder heads, MAPAL expedites - besides plunging on machining centers - the reaming of valve guides and the turning of valve seats for special machines.

With this procedure both machining operations (reaming and turning) can be realized independently on the same setting.

These special machines are frequently equipped with an additional U axis for the slide movement so that any angle may be machined by adjusting the control.

The MAPAL Solution - Main Facts

- Very short machining times for the complete component due to usage on special machines and transfer lines with partly multi-spindle variants
- Reduced costs for cutting materials by using MAPAL ISO inserts and MAPAL standard reaming blades
- Process reliability and accuracy due to customized tool solutions

Function:

Combined Machining on one Setting

Valve seat and valve guide can be machined independently on the same setting.

The two chamfered slides are actuated by a central drawbar. Advantage: The two machining operations can be carried out at different rotation speeds and feed rates. Separate tool blocks, which can be exchanged easily, provide high flexibility when the component is changed or diversified. The integrated reamer sleeve featuring the new MAPAL clamping system is controlled independently.

Example:

6-Cylinder Cylinder Head

Material: GG25
Cutting Material: PCBN / Carbide

Valve Seat:
- Diameter: mm 34 - 48
- Cutting Speed: m/min 352 - 299
- Rotation Speed: rpm 2,800

Valve Guide:
- Diameter: mm 9
- Cutting Speed: m/min 98
- Rotation Speed: rpm 3,466

Advantages and Possible Versions

- Simple manual adjustment on the machine via setting gages or on all optical setting devices via setting adapters
- The 2-slide design offers variants for combined semi-finishing and finishing or for imbalance compensation
- Precision-balanced at high rotation speeds, therefore, coated carbide or PCBN can be used
- Centrifugal controlled or coolant controlled tool designs available
- Tool is customized according to customer specifications