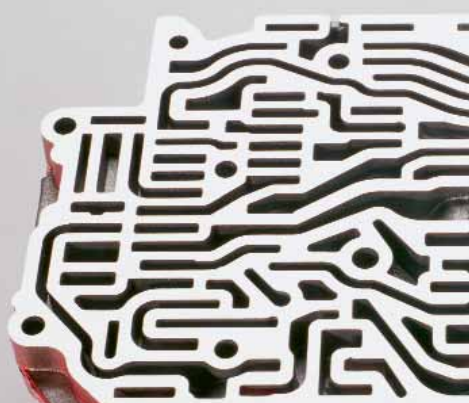


MAPAL Competence – Face milling

Machining examples

Valve body

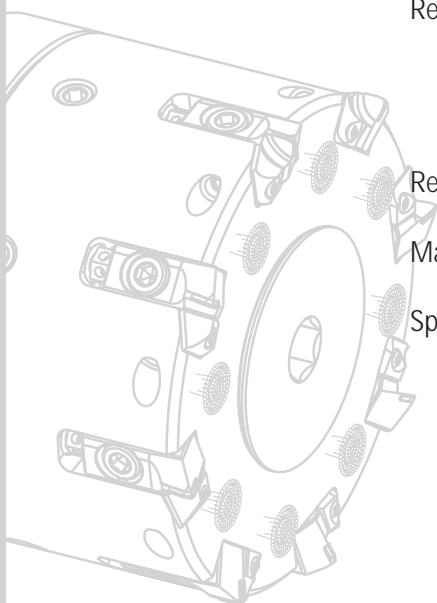
- | | |
|-------------------|---|
| Material: | • Aluminium (GD AISi9Cu3) |
| Tool: | • MAPAL face milling head
PowerFeed Z 6 (special design)
• D 370 mm |
| Cutting material: | • PCD |
| Requirement: | • Face mill on machining centre
• Machine the whole surface
in one cut |
| Result: | • Flatness = 9 μm
• Straightness = 8 to 10 μm
• Surface quality
$R_z = 1.6 \mu\text{m} / R_{\text{max}} = 2.2 \mu\text{m}$ |
| Machining values: | • Spindle speed $n = 3,000 \text{ rpm}$
• Feed $v_f = 1,800 \text{ mm/min}$ |
| Special feature: | • Design of a flattened face milling
head (beam milling cutter)
for use on machining centres |

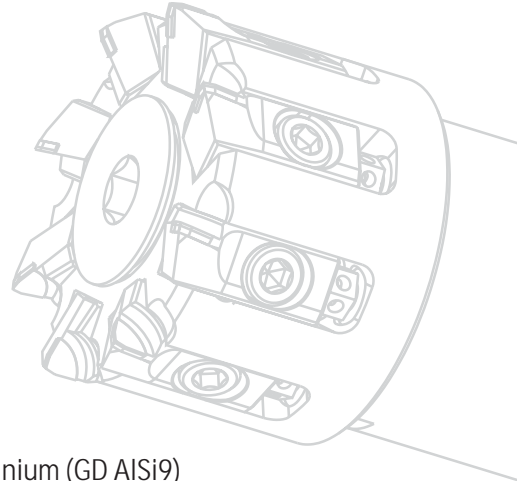


Competence – Face milling

Cylinder head

- | | |
|-------------------|--|
| Material: | • Aluminium (GD AISi8Cu3) |
| Tool: | • MAPAL face milling head
PowerSpeed Z 8
• with integral deburring brushes
• D 125 mm |
| Cutting material: | • PCD |
| Requirement: | • Milling of combustion chamber
side over a total width of
380 mm
• Max. possible tool diameter on
machine = D 125 mm |
| Result: | • Flatness = < 10 μm
• Surface quality $R_z = 4 \mu\text{m}$ |
| Machining values: | • Spindle speed $n = 6,500 \text{ rpm}$
• Feed per tooth $v_f = 6,240 \text{ mm}$ |
| Special feature: | • Machine surface in several
tracks by laterally offsetting
face milling cutter.
• Transitions which are produced
are smoothed with integral
brushes
• Brushes activated by increasing
coolant pressure |





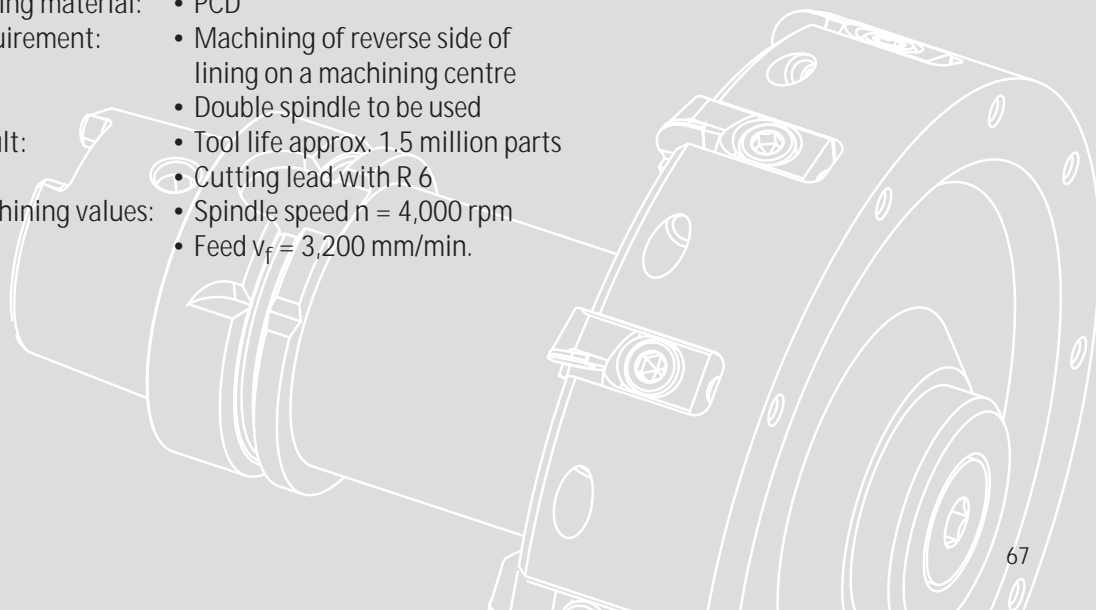
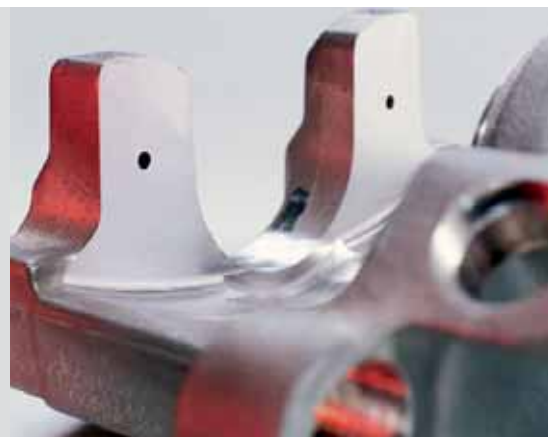
Timing housing

- | | |
|-------------------|--|
| Material: | • Aluminium (GD AISi9) |
| Tool: | • MAPAL face milling head
PowerFeed Z 8
• D 63 mm |
| Cutting material: | • PCD |
| Requirement: | • Milling over whole component
• Milling path per component approx. 5 m |
| Result: | • Tool life approx. 15,000 parts
• Milling path approx. 75,000 m |
| Machining values: | • Spindle speed $n = 15,000$ rpm
• Feed per tooth $f_z = 0.08$ mm |
| Special feature: | • Dimension A for face milling head and milling cutter arbor = 208 mm |



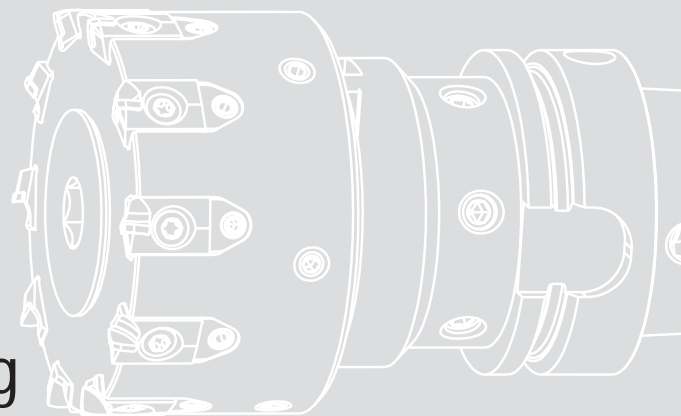
Disc brake housing

- | | |
|-------------------|--|
| Material: | • Aluminium (GK AISi7Mg) |
| Tool: | • MAPAL face milling head
PowerSpeed Z 10
• D 160 mm |
| Cutting material: | • PCD |
| Requirement: | • Machining of reverse side of lining on a machining centre
• Double spindle to be used |
| Result: | • Tool life approx. 1.5 million parts
• Cutting lead with R 6 |
| Machining values: | • Spindle speed $n = 4,000$ rpm
• Feed $v_f = 3,200$ mm/min. |



MAPAL Competence – Face milling

Machining examples



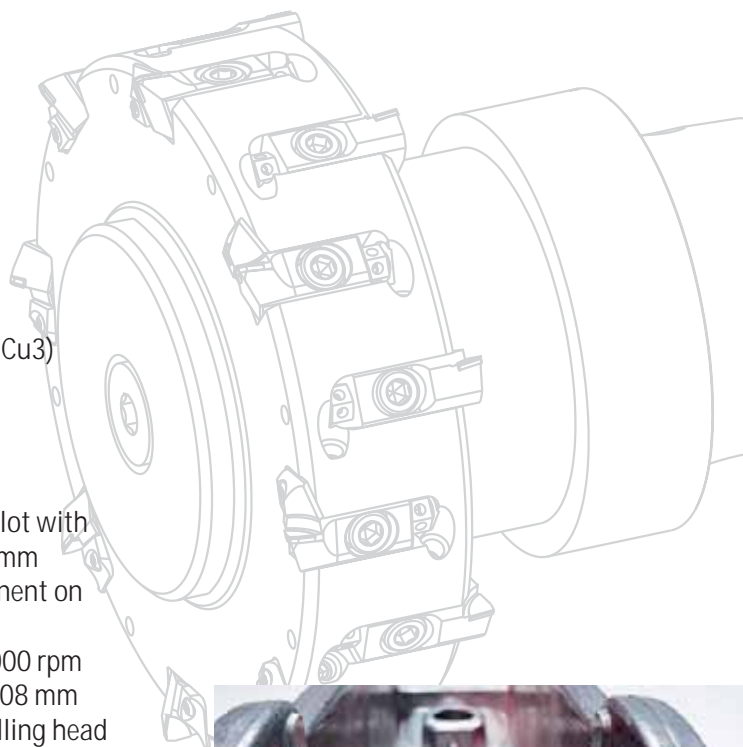
Hydraulic housing



- Material: • Cast iron (GG 25)
- Tool: • MAPAL facing head
EcoFeed Z 10
• D 80 mm
- Cutting material: • PCB
- Requirement: • Surface quality for lateral seal surfaces $R_a = 0.8 \mu\text{m}$
- Result: • Surface quality
• $R_a = 0.32 - 0.53 \mu\text{m}$
• Tool life 2,000 parts
- Machining values: • Spindle speed $n = 2,800 \text{ rpm}$
• Feed per tooth $f_z = 0.05 \text{ mm}$
- Special feature: • As much as 13 times longer tool life compared to conventional face milling head

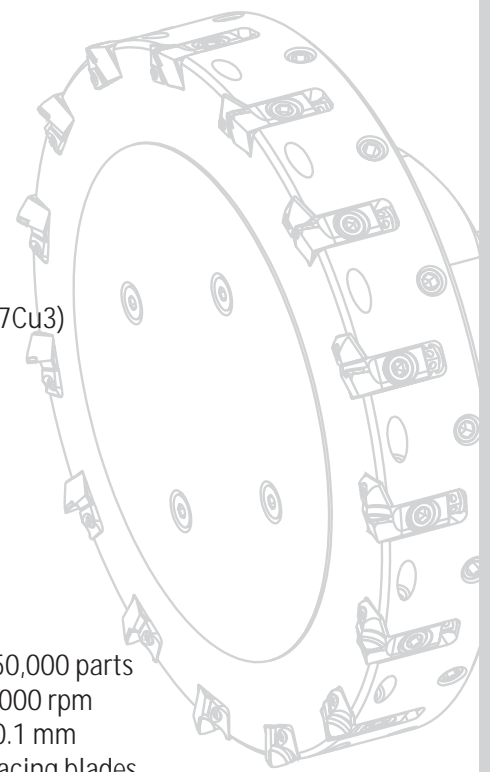
Console

- Material: • Aluminium (GD AISi9Cu3)
- Tool: • MAPAL facing head
PowerSpeed Z 8+8
• D 250 mm
- Cutting material: • PCD
- Requirement: • Milling of a bearing slot with a width of $50.35 \pm 0.02 \text{ mm}$
• Machining of component on both edges
- Machining values: • Spindle speed $n = 8,000 \text{ rpm}$
• Feed per tooth $f_z = 0.08 \text{ mm}$
- Special feature: • Double sided face milling head with Z 8+8 allows complete machining in one pass



Cylinder head cover

- Material: • Aluminium (GD AISi7Cu3)
- Tool: • MAPAL facing head
PowerSpeed Z 15
• D 250 mm
- Cutting material: • PCD
- Requirement: • Dry machining
• Surface quality
 $R_z = \text{max. } 15 \mu\text{m}$
- Result: • Surface quality
 $R_z = 3.8 \mu\text{m}$
• Tool life more than 50,000 parts
- Machining values: • Spindle speed $n = 3,000 \text{ rpm}$
• Feed per tooth $f_z = 0.1 \text{ mm}$
- Special feature: • Tool fitted with 12 facing blades
and 3 wide finishing blades



Clutch housing

- Material: • Aluminium (GD AISi9Cu5)
- Tool: • MAPAL face milling head
PowerSpeed Z 8
• D 125 mm
- Cutting material: • PCD
- Requirement: • Face milling and control cut in
clutch bell in one operation
- Result: • Surface quality $R_a = 6 \mu\text{m}$ on
face surface
• Tool life more than 30,000 m
on face surface
- Machining values: • Spindle speed $n = 8,500 \text{ rpm}$
• Feed per tooth $f_z = 0.07 \text{ mm}$
- Special feature: • A spiral milling tool has been
incorporated into the location
arbor for the face milling head
for the control cut.

