

Description of machine and specification of services (Germany and USA)

1. Mechanical processing

1.1 machining center

a) Vertical

48 machines CNC-machining centers

with coolant feeding inside, pressure: 20 – 70 bar

traverse paths: X 1020

Y 510

Z 560

4. axis

number of tools: 60 tools

b) Horizontal

5 machines CNC-machining centers

with coolant feeding inside, pressure 50 bar

traverse paths: X 560, Y 510, Z 510

number of pallets: 2 and 3, each 400 x 400

number of tools: 62 tools

misc.: indexing table 1° partition

2.2 deep hole drilling

1 machine deep hole drilling machine

2 shafts until max. 300mm depth

2.3 CNC-turning center

Horizontal

8 machines production turning machines

cutting diameter: 250 – 485 mm

turning length: max. 485 mm

number of tools : 10

C-axis: feasible

misc.: automated depending on the individual case with handling system or robot

Double spindle turning center

3 machines CNC-double spindle turning center

cutting diameter: 270 mm

tools: 24 powered tools

misc.: 9 steered axes

Y-axis +/- 40 mm for the left side

2.4 Sawing

2 saws

high performance sawing machines

3. Thermal deburring machine (TEM)

- 2 exemplars Bosch TEM P80
chamber size Ø150 x 150mm
- 1 exemplar high pressure water-jet deburring system
- 1 exemplar valveblock deburring system

4. Quality assurance

4.1 measuring machines / test control units

- 4 exemplars Wenzel measuring volume: 900x700x500
- 1 exemplars Trie-Mesueur measuring volume: 1000x700x500
- 1 Mitutoyo
- contour-, surface roughness- and hardness test
- microscope diverse capacities
- laboratory test
- dirt residues analysis according to VDA 19

4.2 QA-verification

- accredited according to VDA 6.1 and DIN EN ISO 9001
- last rating by automobil sub-suppliers
 - April 4th 2005 => A – supplier (DaimlerChrysler)
 - June 20th 2002 => A - supplier (GETRAG)
 - March 25th 1999 => A - supplier (BOSCH, Cardiff)
 - Dec. 2th 1999 => A - supplier (RITTER, Weinstadt)

5. tool making / tool design

- special tools
- apparatuses
- measuring equipment

6. Other services

- a) surface conditioning (eloxal) / deburring (ECM/water jet) done at audited associated companies
- b) raw material purchasing

7. mounting the assembly

- assembling, pressing, screwing, gluing, imprinting etc.