



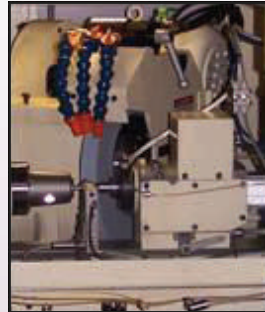
AGN4 Angle Wheelhead Grinder Case Study, September 2006



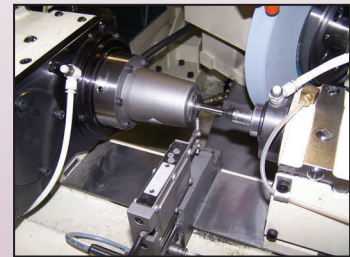
OD ground to .00018" roundness.



Angular wheelhead configuration with standard pneumatic tailstock.



In-process size control with Marposs MicroAlsar gage featuring the model E9 amplifier.



| | | | |
|-----------------------|---|---------------------|-----------------------------|
| Customer: | Hydraulic Component Manufacturer | Application: | Poppet Grind (86L20, 57 Rc) |
| Configuration: | Angular wheel, ALOX 5C Collet chuck, pneumatic 6-axis robot with dual gripper configuration and horizontal pallet station In-process sizing gage Pneumatic operated tailstock | | |
| Process: | Diameter and face multi-plunge grind cycle Dress every five (7) parts 120 parts per hour capability | | |
| Attributes: | Diameter tolerance | +/- .0001" | |
| | Surface finish | 8 Ra (max) | |
| Notable: | Weldon turnkey of machine, tooling, and process; Integration of customer furnished robot, safety mat, and pallet station | | |
| Featuring: | SBS automatic wheel balancer, Schunk gripper tooling, Epson 6-axis robot, GE Fanuc 21i CNC control, Marposs in-process gage | | |