

# Valve Spools

## Application Sheet #500

### Description

Production grinding of valve spools for automotive power steering systems

### Application

- Grind slots and metering flats on spool valves from a solid blank
- All operations completed in a single chucking
- Integrated automatic wheel truing
- Maintain stringent SPC requirements

### Process

Each shaft has equally spaced slots, with metering flats on each side of the slot. Critical tolerances are maintained on both the slots and flats. The grinding process produces slot and flat symmetry to a six-sigma limit and 70% of the part tolerance.

- Slots are ground with a 2.0-2.5 in. diameter, 100 grit, metal bond CBN wheel traveling at speeds up to 24,000 rpm.
- Flats are ground with a 12 in. (305 mm) diameter, 320 grit, vitrified CBN grinding wheel.
- Floor-to-floor cycle time is less than 60 seconds.



### Features and Benefits

- Increase throughput by combining multiple operations
- Available on the Huffman HS-154SG and HS-84SG Valve Spool Grinders
- Precision A-axis workhead with hydraulic expanding chuck for part holding and positioning
- Rotary axis accuracy of  $\pm 36$  arc seconds with repeatability of  $\pm 18$  arc seconds
- Critical linear axes accuracy better than  $\pm 0.0002$  in. (0.0051 mm) and repeatability less than  $\pm 0.0001$  in. (0.0025).
- One spindle, 21.7 hp (16.9 kW), 24,000 rpm, uses a 2.5 in. (63.5 mm) OD, CBN wheel for grinding slots.
- One spindle, 5 hp (3.7 kW), 4,300 rpm, uses a 12 in. (305 mm) OD wheel for grinding flats.
- CNC controlled rotary diamond truing device for 12 in. (305 mm) grinding wheel.
- Scale feedback for Y, Z and A axes
- Push button chuck expansion/contraction
- Four axis movement under CNC control
- Retractable steady rest support
- Automatic front door opener

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