

TFR



TFR Thrufeed Centerless “Ring Gage”

Unique dynamic fixture yields
a high-precision reading on
every ring at production rates

The application of closed-loop gaging to thrufeed ring grinding has long been difficult because of the high rate of production and the high precision required. Control Gaging has broken both of these barriers at once with its unique “Ring Gage.”

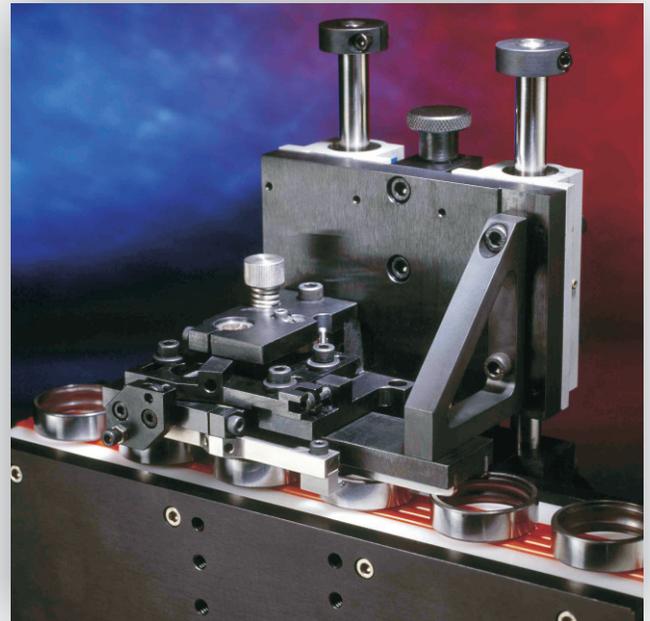
As parts leave the grinder they are separated and knocked flat onto a fast-moving conveyor by an ingenious pneumatic device. The gage mechanism rides up onto the part and aligns it square to the gage contacts. The measuring head itself pivots on a flexure to “find” the part diameter.

As the workpiece passes through the gage, the D500 controller’s high-speed signal processing determines the precise maximum diameter. Advanced software then combines configurable trend analysis and proven compensation logic for precise control of part size. Parts can be ground more aggressively while maintaining or improving target size accuracy and consistency.

Optional diverter(s) are available to separate out-of-spec workpieces from the parts flow.

Part Types Measured by the TFR

- Bearing rings
- Valve seat inserts
- Transmission rings
- other rings and discs



TFR Part Size Ranges:

Diameter ranges:

Small	30 - 60mm (1.2 - 2.4")
Medium	40 - 90mm (1.6 - 3.5")
Large	90 - 140mm (3.5 - 5.5")

Length range (all units):

6 - 35mm (.24 - 1.38")

D500 Gage Controller

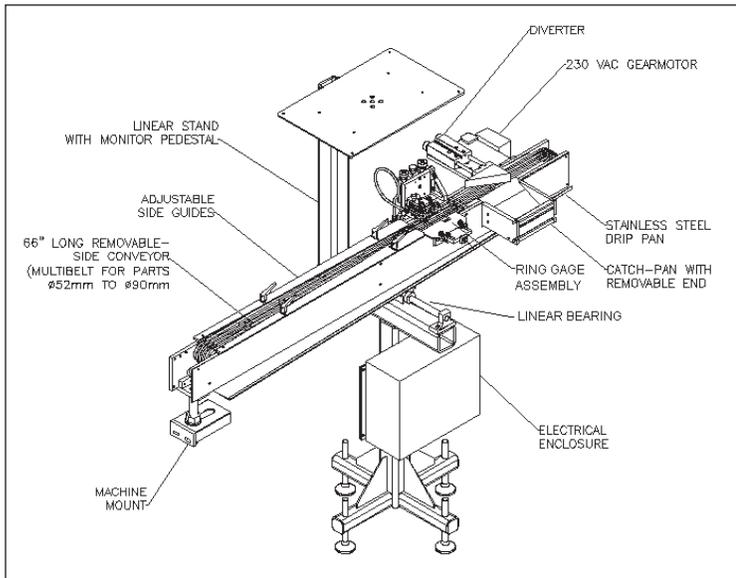


The D500 provides a range of software methods for trend-based size control. The advanced IPC option (Intelligent Process Control) significantly outperforms all other compensation techniques, and can control a machine to its best possible operating capability.

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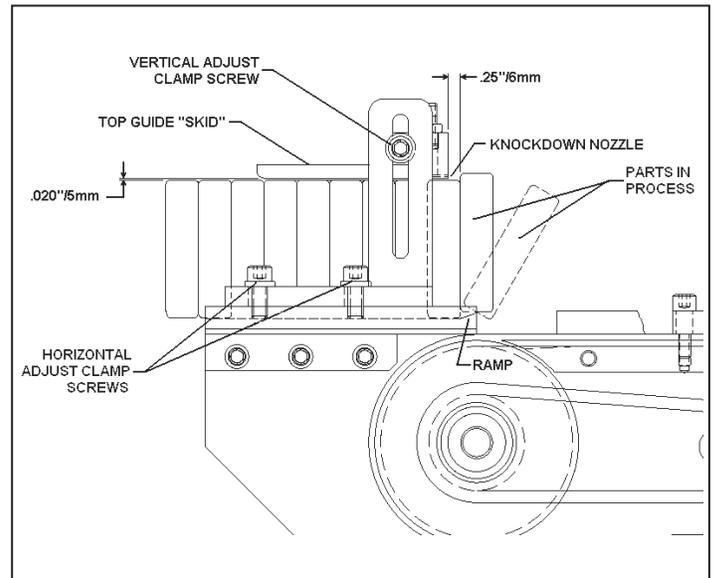
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Typical TFR Conveyor and Stand Assembly

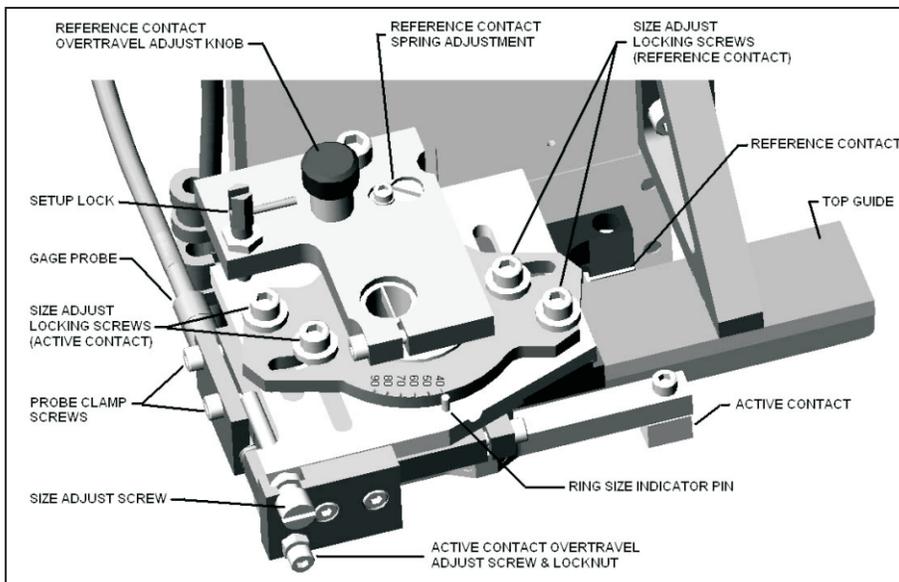
On machines that compensate by moving the regulating wheel and work support, the stand includes a linear bearing. As the machine slide moves, the gage and conveyor move with it to remain in perfect alignment.

Diverter(s) for out of spec parts are mounted downstream of the gage, and the controller times the gate action to coincide with the position of the bad part.



Mechanism-free Knockdown Device

The parts pass from the machine exit guides into a v-block assembly with a small, directed air nozzle. The parts are lifted slightly on a ramp to break the part-to-part surface tension, and the air jet then catches the top of the part to blow it down flat on the conveyor. Once adjusted for a particular part, the device is extremely reliable and virtually maintenance-free compared to a mechanism that would do the same job.



Ring Gage Measuring Head Assembly

Ring Gage Benefits

- ☑ Tighter production tolerances
- ☑ Improved grinding machine productivity
- ☑ Reduced part costs
- ☑ Optimized machine capability
- ☑ Size adjustability over large ranges
- ☑ Part size changeover in minutes

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