

Harmonic Drive LLC

Multi-Spindle Lathe Linear Actuator for Tool Wear Compensation

- Special Actuator
- Linear Actuator

Multi-spindle lathes are used for the production of small components, such as hydraulic fittings or fasteners. With the trend towards unattended machining, there is a requirement for actuators that support automated adjustment of the machine.

This design example shows a special linear actuator, which is attached to one or more radial slides and is used for the adjustment of tool wear and to compensate for changes in the temperature of the machine.

The basic targets for this development were:

- extremely compact design
- sealing to allow operation within the machining environment
- capability for micrometer adjustment, while withstanding high axial forces

Harmonic Drive® gears are ideal for this application, providing high stiffness, high torque capacity and compact dimensions. The FR flat-type gear is connected to a pre-loaded ball screw, which converts the rotational movement of the gear into a precise linear movement. The gear is driven by a brushless DC servo motor, which also drives a multiturn absolute encoder, via a toothed belt.

The drive components are enclosed in a cast housing, which protects them from the harsh environment.

