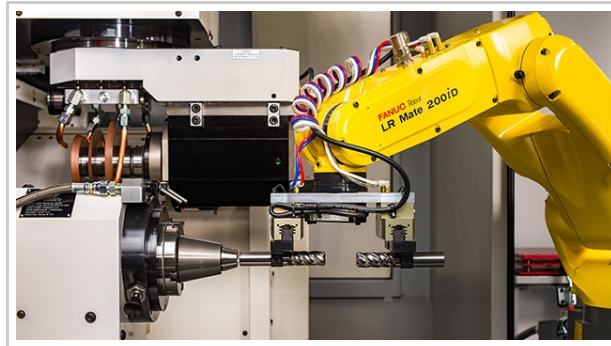


Tool & Cutter Grinders

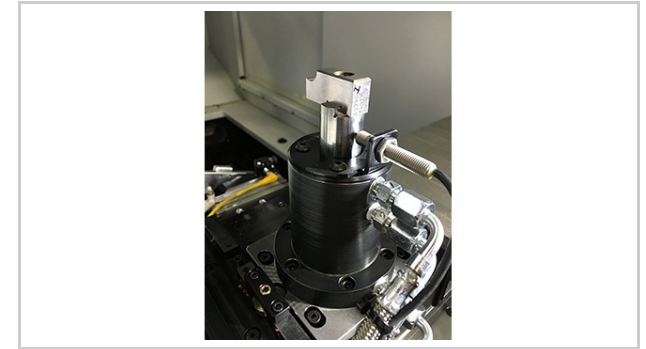
NTG Automation Solution



5-Axis CNC Tool and Cutter Grinder



6-Axis Fanuc LR Mate 200iD



Hydraulic Pop Up Steady on W-Axis

Key Automation Features

- Traveling W-Axis for Steady Resting
- Six Station Wheel Changer
- Auto Slick Dressing
- NUMROTO In Process Measurement
- Schaublin W Series Work Holding
- Schunk Tendo Hydraulic Holding



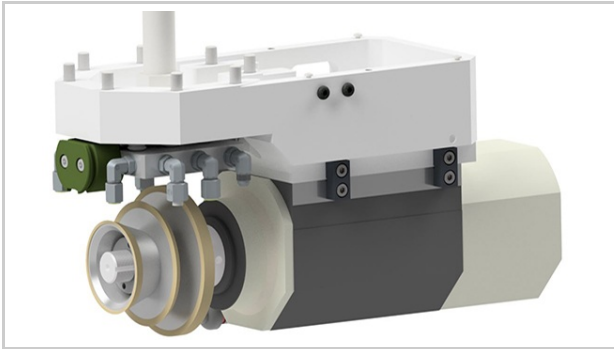
20 mm Solid Carbide End Mill

Results

- Manufacture End Mills and Drills - Lights Out
- 1/2" End Mills at a rate of (12) per hour
- Drills up to 8" OAL
- Tolerances On Tools Through the Batch Held To Within 5 Microns
- Surface Finishes below 0.1 um Ra

Tool & Cutter Grinders

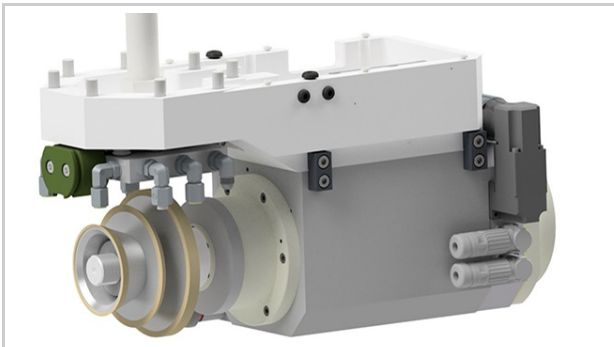
NTG Spindle Solutions



Weiss Spindle

Weiss Spindle

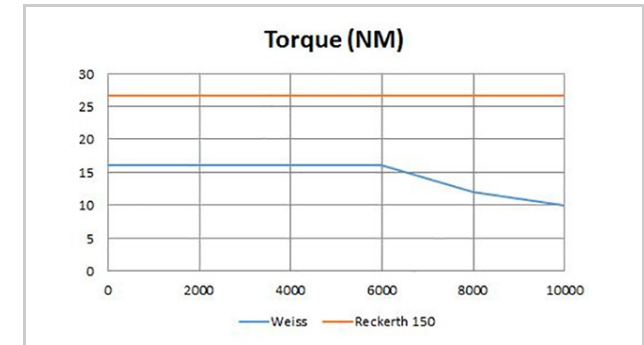
- 10,000 and 15,00 RPM Speed Options
- 10 KW (13 HP) Continuous Power
- 16 NM of torque at 2000 RPM
- Ideal for:
 - Tool diameters under 15 mm
 - Regrinding operations



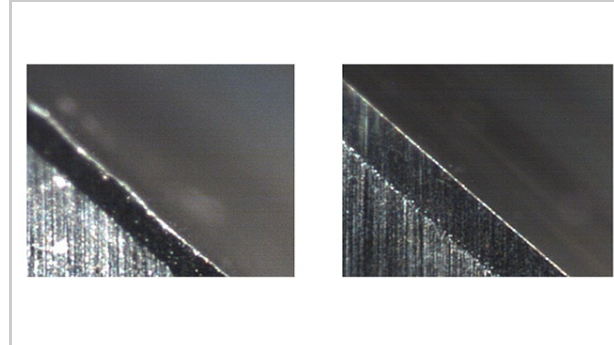
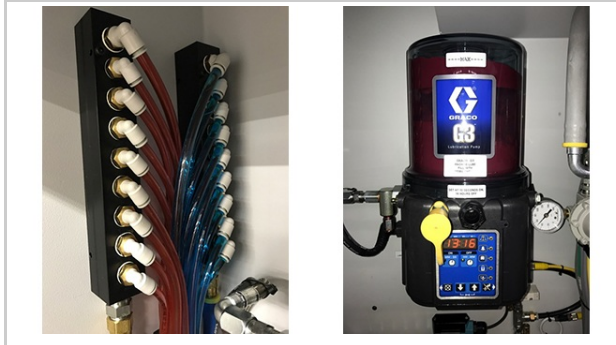
Reckerth Spindle

Reckerth Spindle

- Synchronous spindle for higher power
- 28 KW (38) HP continuous
- 15,000 RPM Standard
- 26 NM of torque at 2000 RPM
- Ideal for:
 - Tool diameters over 15 mm
 - High power application



Latest Technology Tool & Cutter Grinders



Ball Screw Technology (left) and
 Star LinearTechnology (right)

- Linear Motors (X, Y, Z)
- Direct Drive Rotary Axis (C, B)
- Closed Loop Chiller
- Mineral Cast Base and Column
- Premium Scales and Motors
- Flexium+ Control

Closed Loop Cooling

Powerful machines make heat. Increased motor temperature means decreased power and life. Every motor and axis is liquid cooled (9 total loops). A 20K BTU glycol chiller helps stabilize the entire machine and grinding process. Once you have used an actively cooled linear machine, you'll never go back.

Automatic Grease Unit

With only the trucks/rails needing lubrication we are able to use grease not oil. Grease stays on the bearings and unlike oil doesn't contaminate the grinding coolant.

Linear and Direct Drive Motors

Linear Motor Benefits:

- No ball screw wear or backlash
- Better finishes
- Better cutting edge integrity
- Faster rapid traverse speeds

Direct Drive Axis Benefits:

- No worm gear wear or backlash
- Better finishes
- Better radius transitions

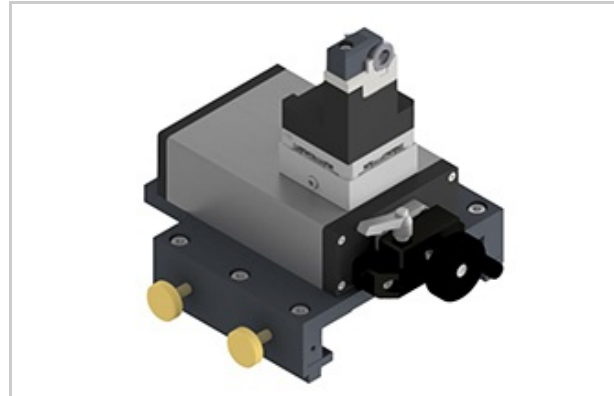
Tool Support Systems

Tool & Cutter Grinders



Runout Minimizer

- Rail Mounted Hydraulic Pop Up with Stabilizing Clamp Down Finger.
- Fine Adjustment for Precision Height Setting
- Design to Work with Tools Less than 12 mm in Diameter.



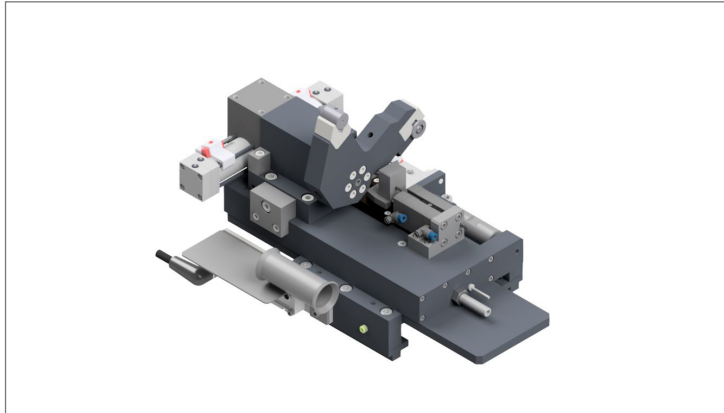
Precision Tail Center

- Rail Mounted Quick Change Center Tail Center Assembly.
- Quick Change for Full and Half Bushings Available.
- Screw Actuated For Fine Positioning



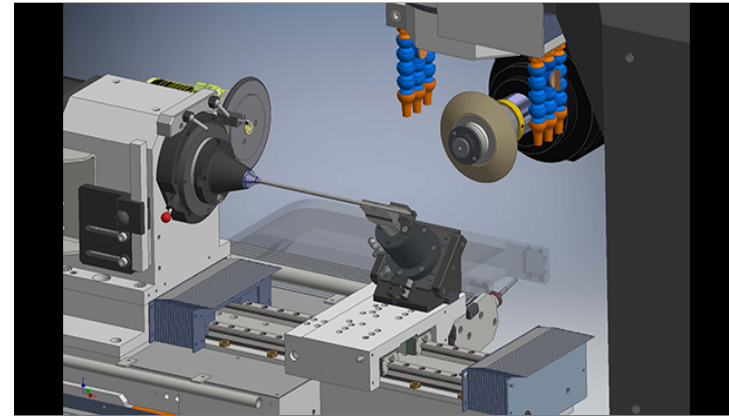
Pop Up Steady

- Rail Mounted Hydraulic Pop Up Steady for Tool Support During Fluting.
- Fine Adjustment for Precision Height Setting.
- Adjustment for Setting Bushing Axis Inline with Headstock Axis.
- 25 mm of Retract Down Stroke for Use with Automation
- "J" and "U" Bushings Standard



Auto Steady Stock

- Tail center and bushing mounted on a single toggle arm
- Pneumatically flip between the two settings
- Slides along the tool axis for engagement and disengagement
- Middle stop position for load and unload for use with automation

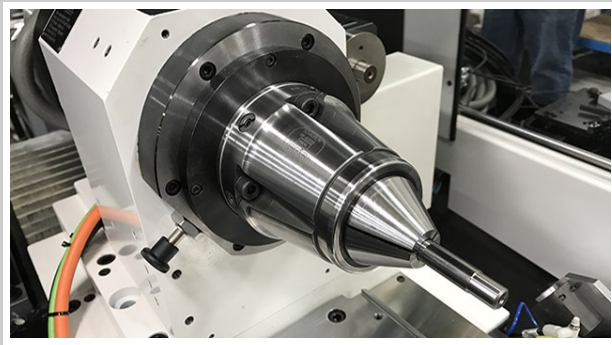


Hydro Pop Up

- Intended for helical fluting with 1A1/1V1 (typical) wheel shapes (unlike an Arobotech).
- Design allows the wheel to pass through the steady rest while fluting and K-landing
- Height adjustable
- Supports tools from .125" - 1.000" with only 4 bushings
- Compatible with W-Axis stage

Tool & Cutter Grinders

Work Holding Solutions



Schaublin Clamping Systems

Schaublin

- W20 (1-20 mm)
- W25 (1-25.4 mm)
- B32 (3-32 mm)
- SRS (3-32 mm)

Schunk

- Tendo (3-25.4 mm)
- Prismo (3-20 mm)



Schunk Clamping Systems



Between Centers:

- Automatic tailstock available

More custom solutions available

