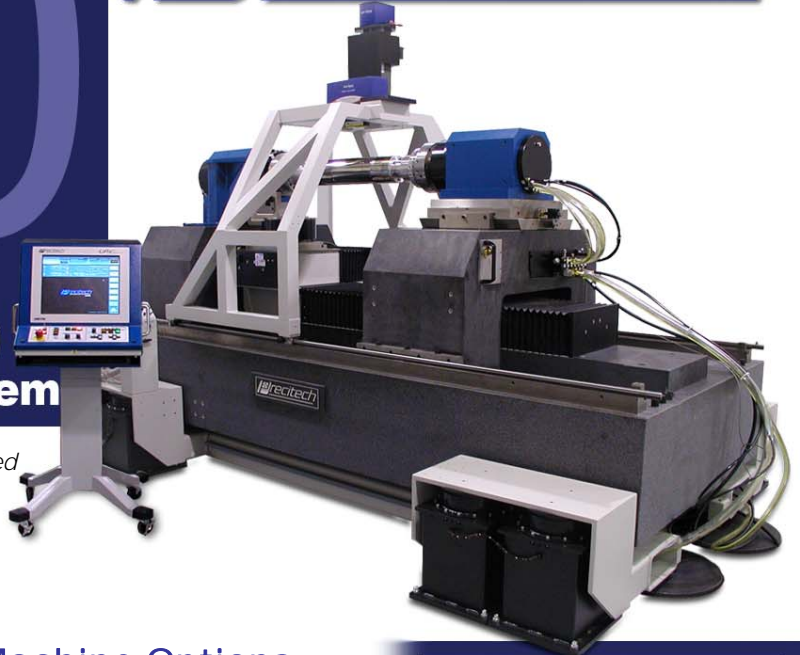


1430



Nanoform® Drum Roll Lathe 1430 Ultra Precision Machining System



Large capacity, multi-axis ultra precision machining system designed specifically for diamond turning optical microstructures on drum surfaces.

Overview

Slide Travel: X- 250 mm (9.8") Z - 1430 mm (56.3")
Swing Capacity: 485 mm (19")
Load Capacity
Headstock: 680Kg (1500 lbs.)
Tailstock: 680Kg (1500 lbs.)
Total: 1360 Kg (3000 lbs.)

Process Capabilities

Diamond Turning: X, Z
Cylindrical Grooving: X, Z, B / X, Z, B, C/X, Z, C
Fast Tool Servo: X, Z, C, FTS / X, Z, B, C, FTS

Design Features

QNx® real time Operating System with industry leading 0.01 nanometer programming resolution <1.0 nanometer feedback resolution including Fast Fourier Transform capability
Sealed natural granite base provides exceptional long term machine tool stability
Self leveling dual chamber pneumatic isolation system
Hydrostatic oil bearing slideways with optimized stiffness and damping characteristics
Linear motors coupled to true analog linear amplifiers
Heavy-duty ultra precision oil bearing spindle with advanced temperature control system
Repositionable tailstock provides flexibility to accommodate drum lengths from 200 mm (7.9") to 2000 mm (79") long with machined drum faces up to 1400 mm long

Machine Options

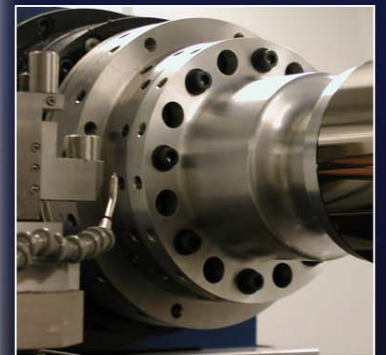
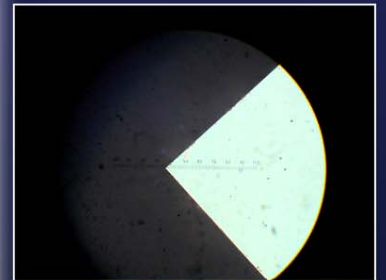
Advanced temperature control system
Fast Tool Servo Freeform® capability
CAM Software
HydroRound rotary B-axis

- Virtual Center
- Error Mapping

On-machine gage & amplifier
Slow Tool Servo/Positioning C-axis

- Adaptive Control Technology

On machine metrology
UltraSet optical tool setting system
Video observation camera



| Machine Base and Control | Description |
|--------------------------|--|
| Machine Base | Sealed natural granite with a fabricated steel frame |
| Machine Type | Ultra precision, two, three, or four axes CNC lathe |
| Vibration Isolation | Low frequency air bag self-leveling system |
| Control System | UPx™ Control System |
| Operating System | QNX real time operating system |
| Programming Resolution | 0.01nanometer linear / 0.00000001° Rotary |
| Axis Interface Cards | PMDI |

| Linear Hydrostatic Slideways | Description |
|------------------------------|--|
| Type | Hydrostatic oil bearing slideways |
| Material | Durabar cast iron |
| Travel | X: 250mm (9.8") Z: 1430mm (56.3") |
| Maximum Feedrate | 3000mm/min. (120"/min) |
| Drive System | AC linear motor |
| Motor Location | Located centrally, mounted vertically eliminating offset drive forces & minimizing thermal distortions |
| Position Feedback Resolution | X: 0.016 nanometers Z: 0.49 nanometers |
| X-axis Straightness | Horizontal: 0.50µm (20µ") over full travel |
| Z-axis Straightness | Horizontal: 1.0µm (40µ") over any 450mm (18") |

| Headstock and Tailstock | HeadStock | Tailstock |
|-------------------------|--|-----------|
| Type | Oil Bearing | |
| Material | Steel shaft/Steel journal | |
| Standard Swing Capacity | 485 mm (19") diameter | |
| Motor | Integral brushless motor | No Motor |
| Load Capacity | Headstock: 680Kg (1500 lbs.) Tailstock: 680Kg (1500 lbs.) Total capacity: 1360Kg (3000 lbs.) | |
| Motion Accuracy | 0.1µm (4µ") Radial/Axial | |
| Thermal Control | Active spindle temperature control | |

| Rotary C-axis Option | Positioning C-axis on Headstock |
|--------------------------------|---------------------------------|
| C-axis Feedback Resolution | 0.000005 degrees |
| C-axis Position Accuracy | +/- 2 arc-sec |
| C-axis MaxSpeed | 1000 RPM |
| Work Holding Spindle Max Speed | 1000 RPM |

| Rotary B-Axis Option | HydroRound Rotary B-axis |
|-------------------------|--|
| Type | Bi-conical, self compensated, Oil hydrostatic bearing, brushless direct drive motor. |
| Material | Stainless Steel |
| Tabletop size | 190mm (7.5") |
| Standard swing capacity | 485mm (19") diameter |
| Travel | Unlimited |
| Load Capacity | 225 Kg (500 lbs.) |
| Maximum Speed | 10 RPM |
| Motor Torque | 3 Ft-lbs. |
| Position Resolution | 0.036 arc-sec |
| Radial Error Motion | 0.10µm (4µ") @ 1" above table |
| Axial Error Motion | 0.10µm (4µ") |
| Coning Error | 1.0nm/mm (1.0µ"/in.) |
| Radial Stiffness | 175N/µm (1,000,000 lbs./in.) |
| Axial Stiffness | 525N/µm (3,000,000 lbs./in.) |
| Moment Stiffness | 10.8N-m/arc-sec (20 lbs-in/µrad.) |

| Facility Requirements | Nanoform® DRL1430 |
|-----------------------|------------------------------|
| Power | 390 - 480VAC 3 Phase 50/60Hz |
| Air supply | Typical: 41.5 SCFM @100PSIG |
| Weight | 17200 Kg (38,000 lbs.) |

| Optional Equipment for Nanoform® DRL1430 |
|--|
| Thermal enclosure / Temperature Control |
| HydroRound Rotary B-axis |
| Positioning C-axis |
| Fast Tool Servo |
| Field Balancer |
| Optical Tool Setter |
| High Speed milling spindle |
| SP75 Flycutting spindle |