Nanotech®
Ultra Precision Machining Systems

MOORE TOOLS

HDL2600

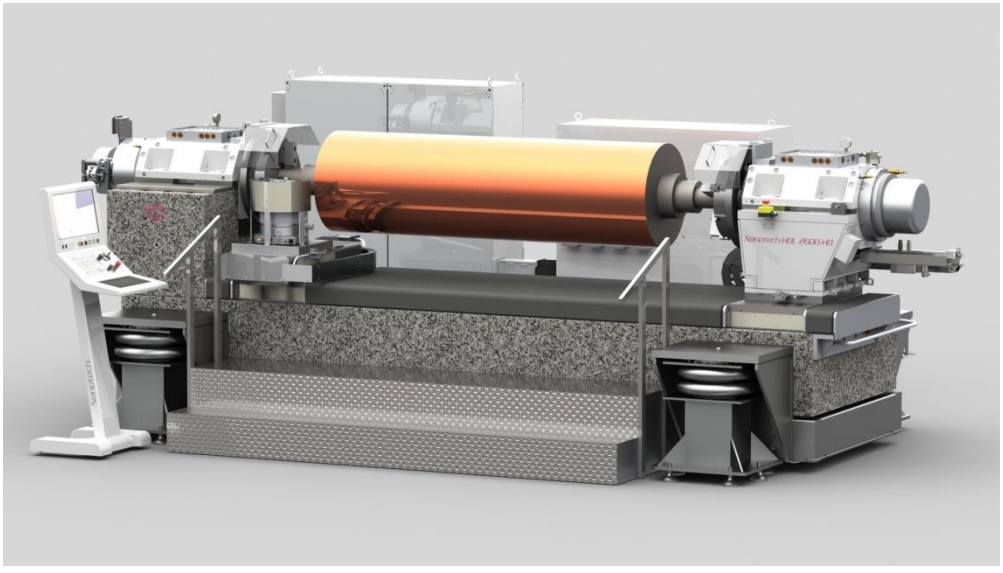
Ultra-Precision CNC Horizontal Drum Lathe

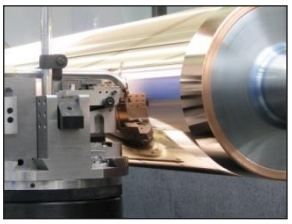
(Standard (SD) or Heavy Duty (HD) configurable as a 4 or 5 axis Machine)

Main Features

- PC based CNC motion controller with Windows operating system and **1 nanometer (0.04 µ") programming resolution**
- Linear encoder/glass scale position feedback system with 0.034 nanometer resolution on X axis; 1.0 nanometer resolution on Z axis; and 100 nanometer resolution on W axis (tailstock)
- Programmable, CNC Controlled W axis, with integral "NanoLock" hydraulic braking system **(provides maximum tailstock rigidity during machining and enables flexible & rapid machine set-up)**
- Box-way hydrostatic oil bearing slideways provide smooth, stiff, and well damped linear motions
- Linear motor drives for rapid cycle times, improved surface quality, and minimal maintenance
- Exclusive Oil Hydrostatic Headstock (with C-axis) and Tailstock spindles; with liquid cooling for increased thermal stability

Options include: **Vibration Air Isolations System, Rotary B-Axis, Fast Tool Servo Systems, Optical Tool Setting Station, Air Shower Temperature Control System, NanoTEMP Thermal Monitoring System, NanoBalance Dual Plane Drum Balancing, Spraymist Lubrication System, Vacuum Chip Extraction System**





Turret Tooling & Temperature Controlled Air Shower Enclosure

Moore Nanotechnology Systems, LLC
230 Old Homestead Hwy, Swanzey, NH 03446 USA
Tel (603) 352-3030 ∀ Fax (603) 352-3363
sales@nanotechsys.com ∀ www.nanotechsys.com

Please see reverse side for more specifications

Nanotech HDL2600-SD / HDL2600-HD Specification Overview

General	Description
System Configuration	Ultra-Precision Multi-Axis Horizontal Drum Lathe
Workpiece Capacity **(HDL2600-SD)**	650 mm Diameter X 3100 mm Length Between Chuck Faces, 2600 mm Optical (cutting) Zone, 1800Kg max. load
Workpiece Capacity **(HDL2600-HD)**	650 mm Diameter X 3100 mm Length Between Chuck Faces, 2600 mm Optical (cutting) Zone, 3000Kg max. load
Base Structure	Natural, Black Granite (Sealed)
Vibration Isolation	Bilz Leveling and Vibration Dampening Mounts (Standard) Passive pneumatic air isolation system with self leveling (Optional)
Control System	Delta Tau PC based CNC motion controller with Intel Core 2 Quad Core 2.5 GHz, operating in a Windows environment, with 22" color flat panel touch screen display, 4 GB memory, 10/100/1000 Base T Ethernet, DVD+/-RW SATA Drive, and 500GB hard drive. Total system mounted in NEMA 12 cabinet.
System Programming Resolution	1 nanometer linear; 0.0001° rotary

Headstock Spindle (C-Axis)	Description
Type	Moore, Oil Hydrostatic
Liquid Cooling (standard)	A continuous flow of temperature controlled liquid is supplied to cooling channels located around the hydrostatic bearing journals. Thermal stability is maintained utilizing an Active Thermal Management System (ATMS) with integral PID controller, liquid to liquid heat exchanger, and refrigerant source
Speed Range	C-Axis mode - 0 to 500 rpm, bi-directional - Spindle mode - 0 to 500 rpm, bi-directional (up to 300 rpm on HD version)
Axial Stiffness	350 N/um (2,000,000 lbs/in)
Radial Stiffness (at nose)	875 N/um (5,000,000 lbs/in)
Drive System	Frameless, Brushless DC motor
Motion Accuracy (@100rpm)	Axial Synchronous: ≤ 100 nanometers (4μ") Radial Synchronous: ≤ 100 nanometers (4μ")
C-axis Position Resolution	0.000005° (0.019 arc seconds)

Tailstock Spindle	Description
Type	Moore, Oil Hydrostatic
Liquid Cooling (standard)	A continuous flow of temperature controlled liquid is supplied to cooling channels located around the hydrostatic bearing journals. Thermal stability is maintained utilizing an Active Thermal Management System (ATMS) with integral PID controller, liquid to liquid heat exchanger, and refrigerant source
Radial Stiffness (at nose)	875 N/um (5,000,000 lbs/in)
Spindle shaft linear stroke	50mm (2")

Linear Axes	X	Z	W (Tailstock)
Type	Fully constrained oil hydrostatic, box way slide	Fully constrained oil hydrostatic, box way slide	Fully constrained oil hydrostatic, box way slide
Travel	350mm (14")	2615mm (102.9")	2000mm (78.7")
Drive System	Brushless DC Linear Motor	Brushless DC Linear Motor	Brushless DC Linear Motor
Feedback Type	Linear scale	Linear scale	Linear scale
Feedback Resolution	0.034 nanometer	1.0 nanometer	100 nanometer
Feed Rate (maximum)	4500mm/min	30,000mm/min (1181in/min)	500mm/min (20.6in/min)
Straightness in critical direction	0.75um/full travel (30u")	1.0um/500mm (40u")	---
Hydrostatic Oil Supply	Compact, low flow, low pressure system with closed loop servo control and pressure accumulator to minimize pump pulsation		

Available Options	Available Accessories	
• SD Spindle Package (1800KG) • HD Spindle Package (3000KG) • Air Isolation System (4 Bags)	• Oil Hydrostatic Rotary B-Axis • NanoBalance Dual Plane Drum Balancing software • Temperature Controlled Air Shower • NanoTEMP Thermal Monitoring System • Video Observation System • Multi Position Tool Holder • Electronic Gage with NanoMETER On Screen Gage Amplifier and Wireless Remote Operator Screen	• Video Microscopy System • Spray Mist Coolant System • Optical Tool Setting Station • Vacuum Chip Extraction System • Various Fast Tool Servo Systems Available

Facility Requirements	Air	Electrical	Floor Space
For optimal cutting results, facility thermal stability should be held within ±0.1°C (±0.18°F) or Optional Temperature Controlled Air Shower should be utilized	7 bar (100psi) 7.5 liters/sec (15 scfm) Dry to 10°C pressure dew point and pre-filtered to 5μm	200-480 VAC; 3 Phase; 50/60hz; (20 KVA for SD) (25 KVA for HD)	5.9m W x 5.3m D x 2.0m H Approx. 20,000 Kg (22,500 Kg for HD) (Machine only with Max Drum Weight, excluding cabinets)

Warranty	1 year full parts and labor warranty

Notes: [1] Working Load Capacities shown above are defined at 60% of ultimate load capacities.
In an effort to continually improve our product performance, specifications are subject to change without notice.
(Please consult your Sales Representative for our latest specifications).

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