

## Nanotech **HDL2000 / HDL2000-HD** Specification Overview

General	Description
System Configuration	Ultra-Precision Multi-Axis Horizontal Drum Lathe
Workpiece Capacity (HDL2000)	550 mm Diameter X 2600 mm Length Between Chuck Faces, 2000 mm Optical (cutting) Zone, 1800Kg max. load
Workpiece Capacity (HDL2000-HD)	600 mm Diameter X 2600 mm Length Between Chuck Faces, 2000 mm Optical (cutting) Zone, 3000Kg max. load
Base Structure	Natural, Black Granite (Sealed)
Vibration Isolation	Passive pneumatic air isolation system with self leveling
Control System	Delta Tau PC based CNC motion controller with Intel Core 2 Quad Core 2.5 GHz, operating in a Windows environment, with 19" 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 300 rpm, bi-directional - Spindle mode - 0 to 300 rpm, bi-directional (up to 400 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")	2100mm (82.6")	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	20,000mm/min (787in/min)	500mm/min (20.6")
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	Description
	<ul style="list-style-type: none"> <li>• Oil Hydrostatic Rotary B-Axis</li> <li>• NanoBalance Dual Plane Drum Balancing software</li> <li>• Temperature Controlled Air Shower</li> <li>• NanoTEMP Thermal Monitoring System</li> <li>• Video Observation System</li> <li>• Multi Position Tool Holder</li> <li>• Electronic Gage with NanoMETER On Screen Gage Amplifier and wireless Remote Operator Screen</li> </ul>
	<ul style="list-style-type: none"> <li>• Video Microscopy System</li> <li>• Spray Mist Coolant System</li> <li>• Optical Tool Setting Station</li> <li>• Vacuum Chip Extraction System</li> <li>• Various Fast Tool Servo Systems Available</li> </ul>

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	6.9 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 - Base Machine) (25 KVA for HD)	5.9m W x 5.3m D x 2.0m H Approx. 26,000 Kg (29,000 Kg for HD) (Without Optional Air Shower Temperature Control System)

Warranty	1 year full parts and labor warranty
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Note: 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)