



Machine Base and Control	Description	
Machine Base	Sealed natural granite base provides exceptional long term machine tool stability	
Machine Type	Ultra-precision, two, three, or four axes CNC contouring machine	
Vibration Isolation	FEA optimized dual sub-frames and integral self-leveling TMC MaxDamp® isolators (Optional PEPS® II-VX active vibration cancellation available)	
Control System	UPx™ Control System with optional Adaptive Control Technology	
Operating System	QNX real time operating system	
Programming Resolution	0.01 nm linear / 0.000001° rotary	
File Transfer/Storage	USB, CD, ethernet, on-board data storage backup	
Performance	Surface roughness (Ra) < 1.0 nm, form accuracy (P-V) < 0.1 μm (tested and measured on one surface upon request)	
Linear Hydrostatic Slideways	Description	
Type	Hydrostatic bearing slideways with symmetrical linear motor placement and liquid cooling	
Travel	X and Z: 220 mm (8.6 in.)	
Maximum Feedrate	4,000 mm/min. (157 in./min.)	
Drive System	Linear motor	
Position Feedback Resolution	8 μm (0.008 nm)	
X-axis Straightness	Horizontal (critical direction): 0.2 μm (8.0 μin.) full travel	0.05 μm/25 mm (2.0 μin.)
Z-axis Straightness	Horizontal (critical direction): 0.2 μm (8.0 μin.) full travel	0.05 μm/25 mm (2.0 μin.)
Vertical Straightness	0.375 μm (15 μin.) full travel	
Hydrostatic oil supply system	Hydro-7 Smart Servo Control, low pulsation pump, optional thermal control	
Workholding/Positioning Spindle	High Speed HS 75 Spindle (3 Year Warranty)	High Performance HS 150 Spindle (3 Year Warranty)
Air Bearing Type	Slot-type thrust bearing	Slot-type thrust bearing
Material	Steel shaft/Bronze journal	Steel shaft/Bronze journal
Motor	Integral brushless DC motor	Integral brushless DC motor
Ultimate Load Capacity (@ spindle nose)	45 kg (100 lbs) @ 100 PSI	136 kg (300 lbs) @ 100 PSI / 204 kg (450 lbs) @ 150 PSI
Axial Stiffness	105 N/μm (600,000 lbs/in.)	230 N/μm (1,314,000 lbs/in.)
Radial Stiffness	35 N/μm (200,000 lbs/in.)	130 N/μm (743,600 lbs/in.)
Motion Accuracy	Axial/Radial ≤ 20nm (0.8 μin.)	Axial/Radial ≤ 15 nm (0.6 μin.)
Thermal Control	Liquid cooled chiller ±0.1° C Accuracy	Liquid cooled chiller ±0.1° C Accuracy
C-axis Feedback Resolution	0.018 arc-sec 9,000 line encoder	0.010 arc-sec 16,200 line encoder (9,000 line encoder available on request)
C-axis Position Accuracy	±1.0 arc-sec	±1.0 arc-sec
C-axis Max Speed	4,000 RPM	2,000 RPM (4,000 RPM with 9,000 line encoder)
Work Holding Spindle Max speed	18,000 RPM	10,000 RPM
Rotary B-axis	HydroRound Rotary B-axis with Hydrolock	
Type	Patented self compensated oil hydrostatic bearing, bi-conic, integral brushless DC motor	
Tabletop Size	330 mm (13 in.)	
Load Capacity	225 kg (500 lbs)	
Maximum Speed	10 RPM continuous / 50 RPM intermittent	
Hydrolock Holding Torque	> 108 N-m / 80 ft-lbs	
Position Feedback Resolution	0.004 arc-sec	
Radial Error Motion	0.10 μm (4.0 μin.) @ tool height (4.4 in. above table top), can be improved with optional error mapping	
Coning Error	1.0 nm/mm (1.0 μin./in.)	
Radial Stiffness	225 N/μm (1,280,000 lbs/in.)	
Axial Stiffness	600 N/μm (3,428,000 lbs/in.)	
Moment Stiffness	3.4 N-m/μrad (30 in.-lbs/μrad) (144 in.-lbs/arc-sec)	
Positioning Accuracy	±0.1 arc-sec	
Facility Requirements	Nanoform® X	
Power	208 ±10% or 230 ±10% VAC - 3.0 KVA 1 phase - 50/60 Hz	
Air Supply	Typical: 12 SCFM @ 100 PSIG	
Machine Footprint (W x L x H)	929 mm x 2152 mm x 1790 mm (36.6 in. x 84.8 in. x 70.5 in.)	