

Machining Systems		Freeform® 700 Specification criteria	
Base/Control	Machine Type	Three-Five Axis	
	Machine Base	Natural, high-stability, fully sealed, impala granite/steel frame	
	Vibration isolation	Self leveling dual chamber vibration isolation system	
	Control System	UPx 1.0 - 1.0nm Resolution	
	Operating system	QNX Rev. 4.0	
Slideway Design	SPDT Perfomance	Surface - 4.0nm RA Form- 0.15µm P-V	
	Type	Hydrostatic Box-type	
	Material	DuraBar Cast Iron	
	X -Travel	350mm (14")	
	Z -Travel	300mm (12")	
	Y-Travel	150mm (6")	
	Maximum feedrate	1500mm/min. (59"/min.)	
	Drive system	AC Linear Motor	
	Position Feedback Resolution	8.6 or 1.4nm	
	X-Axis straightness Horz./Vert.	0.3µm (12µ") / 0.5µm (20µ")	
	Z-Axis straightness Horz./Vert.	0.3µm (12µ") / 0.5µm (20µ")	
	Y-Axis straightness Horz./Vert.	0.5µm (20µ") both directions	
	X - Pitch / Roll Motion	2.0 arc-sec	
	Z - Pitch / Roll Motion	2.0 arc-sec	
	Z - Pitch / Yaw Motion	2.0 arc-sec	
X- Vertical / Horizontal Stiffness	438 N/µm / 438 N/µm (2,500,000 lbs/in.)		
Z- Vertical / Horizontal Stiffness	438 N/µm / 438 N/µm (2,500,000 lbs/in.)		
Y- Z dir. / X dir. Stiffness	263 N/µm / 263 N/µm (1,500,000 lbs/in.)		
Workholding Spindles	C-Axis/ workholding spindle	Standard: Precitech SP150 Spindle	
	Type	Precitech built Air bearing spindle with slot type thrust bearing.	
	Material	Steel shaft/Bronze journal	
	Standard swing capacity	700mm (28")Diameter.	
	Load capacity	68Kg (150 lbs.) @ spindle nose - 48 Kg (105 lbs.) 50mm (2")out from spindle nose	
	Axial stiffness	228 N/µm (1,300,000 lbs/in.)@ 100 PSI	
	Radial stiffness	88 N/µm (500,000 lbs/in.) @ 100 PSI (spindle nose)	
	Motion accuracy	Axial/Radial ≤ 25nm (1µ")	
	Mounting location	On vertical, Y-axis	
	Thermal control	Liquid cooled motor housing /Journal bearing	
	Drive amplifier	DC Brushless Sin Drive	
	C-axis feedback resolution	0.05 - 0.72 arc-sec	
	C-axis position accuracy	+/- 2.0 arc-sec	
	C-axis max speed	275 RPM	
	Workholding spindle max speed	5000 RPM	
Included features	Mechanical locking mechanism, Vacuum through center, annular grooved vacuum chuck.		
Tooling Spindles	High speed tooling spindles	Standard: Precitech SP75FF Spindle	Optional: Professional Instruments 2.25
	Type	Precitech built Air bearing spindle with slot type thrust bearing.	
	Material	Steel shaft/Bronze journal	Steel shaft/Aluminum anodize journal
	Max speed	15,000 RPM	50,000 RPM
	Standard swing capacity	125mm Diameter.	
	Load capacity	18Kg (40 lbs.) @ nose / 11 Kg (25lbs.) 50mm (2") out from nose	20Kg (50mm in front of spindle nose)
	Axial stiffness	70 N/µm (400,000 lbs/in.) @ 100 PSI	68.6 N/µm (392,000 lbs/in.) @ 100 PSI
	Radial stiffness	26 N/µm (150,000 lbs/in.) @ 100 PSI (spindle nose)	22.6 N/µm (130,000 lbs/in.) @ 100 PSI (spindle nose)
	Motion accuracy	Axial/Radial ≤ 50nm (2µ")	Axial/Radial ≤ 50nm (2µ")
	Mounting location	Available vertical, horizontal, 45 degree or on Rotary B-axis	
Thermal control	Liquid cooled motor housing	Liquid cooled motor housing	
Drive amplifier	3-phase	3-phase	
Rotational B-Axis	Rotary B-Axis	Precitech HydroRound B-Axis LARGE	
	Type	Bi-conical, self compensated, oil hydrostatic bearing. DC Brushless direct drive motor.	
	Material	High-Alloy Steel	
	Standard swing capacity	300mm (12") Diameter.	
	Load capacity	455Kg (1000 lbs.) (safety factor of 6)	
	Axial stiffness	1750 N/µm (10,000,000 lbs/in.)	
	Radial stiffness	525 N/µm (3,000,000 lbs/in.)	
	Motion accuracy	Axial/Radial ≤ 0.10µm (4µ").	
	Coning Error	1.0nm/mm (1.0µ"/in.)	
	Drive amplifier	3-phase	
Feedback resolution	0.036-0.36 arc-sec - 0.14 arc-sec		
Position accuracy	+/- 2.0 arc-sec (compensated)		
Maximum speed	10 RPM continuous - 50RPM intermittent		
Utilities	Machine Utilities	Freeform® 700 Platform	
	Power	208 or 230VAC -1 phase - 50/60Hz	
	Air supply	Typical: 16 SCFM @100PSIG	
	Floor space	2930mm x 3807mm x 2043mm (115" x 150" x 80")	

Standard specifications are subject to change without notice. Product Specifications may also be adjusted to specific customer requirement.