

Machine Base	MGG 650
Type	Completely sealed, impala natural granite
Vibration isolation	Self leveling dual chamber vibration isolation system. Natural frequency <3.5 Hz.

Machine Linear Slideways	MGG 650 Slideways
Type	Hydrostatic oil bearing box-type slideways manufactured in house
Material	Durabar cast iron
Travel	X 660mm, Y 610 mm, Z 100mm
Maximum feedrate	1000mm/min.
Drive system	AC linear motor
Motor location	Located centrally and mounted vertically eliminating offset drive forces and minimizing thermal
Position feedback	10.0nm (0.4μ") scales
X-Axis straightness	Horizontal: 1.50μm/460mm Vertical: 0.75μm/460mm
Y-Axis straightness	Horizontal: 0.75μm/460mm Vertical: 0.75μm/460mm
Z-Axis straightness	Horizontal: 0.75μm/100mm Vertical: 0.75μm/100mm
Angular errors (Full Travel)	X Pitch and Roll: < 4 arc-sec. Y Pitch and Roll: < 4 arc-sec. Z Pitch and Roll: < 4 arc-sec.
X-Axis stiffness	Vertical: 438N/μm (table center), Horizontal: 262N/μm (table center)
Y-Axis stiffness	Vertical: 175N/μm (table center), Horizontal: 263N/μm (table center)
Z-Axis stiffness	Vertical: 210N/μm (table center), Horizontal: 140N/μm (table center)

C-Axis	Magnetic, preloaded oil thrust, air bearing journal
Type	Hydrostatic bearing. DC Brushless direct drive motor.
Material	Durabar/ Stainless tabletop
Table Diameter	450mm (18")
Load capacity	Unknown
Axial stiffness	158 N/μm (900,000 lbs/in.)
Radial stiffness	20 N/μm (114,000 lbs/in.)
Motion accuracy	Axial/Radial ≤ 0.4μm (16μ").
Mounting location	On horizontal, Z-axis
C-axis feedback resolution	0.69 arc-seconds
C-axis position accuracy	+/- 1.5 arc-sec (compensated)
C-axis max speed	9 RPM

High speed milling/flycutting spindle	SP75FF Spindle
Type	Air Bearing spindle with slot type thrust bearing manufactured in house. DC Brushless direct drive
Material	Steel shaft/Bronze journal
Max speed	15,000 RPM
Standard swing capacity	125mm Diameter.
Load capacity	20Kg (50mm in front of spindle nose)
Axial stiffness	70 N/μm @ 80 PSI
Radial stiffness	20 N/μm @ 80 PSI (at spindle nose)
Motion accuracy	Axial/Radial ≤ 50nm (2μ") through dynamic range.
Mounting location	Horizontally on vertical axis
Thermal control	Liquid cooled motor housing
Included features	Flycutting Toolholder

Control System	UPx™ Control System
Operating system	QNX-real time OS utilizing non proprietary motion control boards for advanced capability and
Programming resolution	1.0nm
Axis interface cards	PMDI
Storage	256MB/CD-R/40GB/10/100 ethernet No modem necessary

Optional Equipment	
Optical tool setting system	
3 axis programming software	
Thermal enclosure - Doors provide access to four sides.	
Air shower temperature control +/- 0.1 degree C	
Tip/tilt Work Holding Table	

Facility Requirements	MGG 650
Power	208 or 230VAC -1 phase - 50/60Hz
Air supply	Typical: 16 SCFM @100PSIG
Floor space	2930mm x 3807mm x 2043mm

specifications are subject to change without notice