

X-Theta Air Bearing Stage

Ultra-Smooth Motorized Rotary & Linear Motion

Ideal for wafer scanning!



ABTech's *X-Theta* stage combines ultra-precision rotary and linear air bearing stages with DC brushless motors and high resolution non-contact encoders to produce the ultimate smooth moving stage, ideally suited for wafer scanning machine applications.

These stages are designed for cleanroom environments, incorporating appropriate materials, part cleaning and ABTech's unique "**Contained Exhaust Technology**" or CET feature. The CET feature allows the air bearing exhaust to be drawn to a common port, where a vacuum supply can be connected to take the exhaust flow away from the work area. This is critical in some applications where particle flow around work surfaces may cause contamination.

The X axis stage is based on ABTech's MLAB 7750 Series, air bearing linear slides with modifications to materials and containing the CET feature. The Theta or rotary axis is a custom 150mm diameter air bearing rotary spin table with a DC brushless motor integrally built into the lower thrust plate. The CET feature is incorporated in this axis as well. The table is fitted with a 216mm diameter intermediate vacuum chuck adapter. A vacuum can be connected to the side of the Theta axis where the vacuum is ported through the stage and jumps an air gap to get through to the chuck adapter. No rotary unions are required.

ABTech can supply complete turn key machine solutions with machine bases, multi-axis controllers and operator interfaces. Consult ABTech with your specifications.

Features:

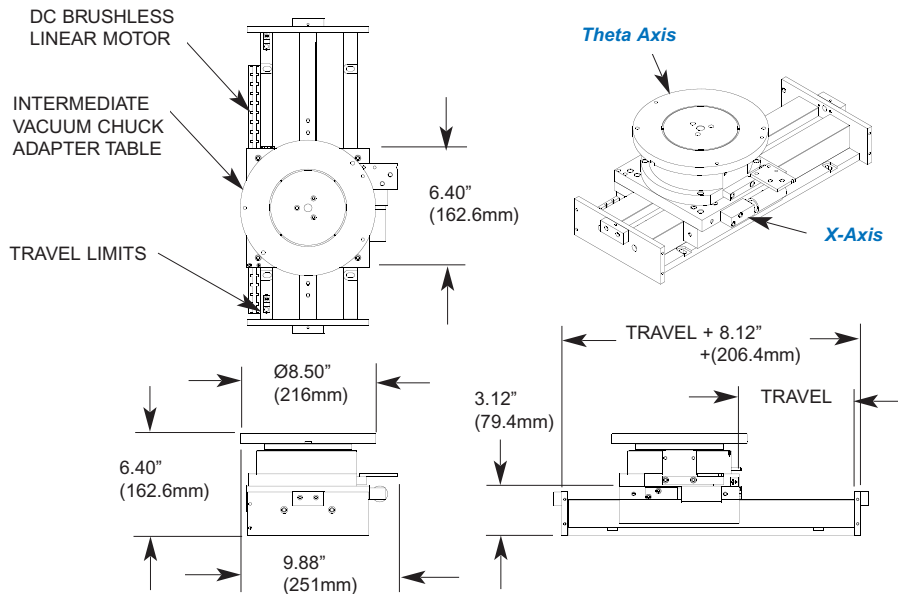
- Magnetically preloaded *linear air bearing* for X-Axis
- Fully constrained *rotary air bearing* spin table - Theta Axis
- "**C**ontained **E**xhaust **T**echnology" feature
- Clean room compatible
- Ultra-smooth motion, no static friction
- Linear & rotary DC brushless motors
- High resolution encoders
- Total noncontact component design - "no parts to wear"
- Intermediate vacuum chuck worktable w/ internal porting
- Low air consumption
- Custom tooling and fixturing design and manufacturing
- Turn key systems available to O.E.M.s

Specifications

X - Theta Air Bearing Stage

Consult ABTech, Inc. for:

- Special sizes and travels
- Special vacuum chucks or other work holding tooling
- Slip ring assembly for Theta axis
- Protective bellow way covers
- Servo drive amplifiers
- Multi-axis motion controllers
- Complete turn key systems machine bases and operator interface.
- Higher accuracies



Theta Axis

X - Axis

Motor	Brushless DC Servo	Brushless Linear Servo
Travel	360°	10.63" (270mm) or 13.97" (355mm)
Cont. Torque/Force	84.48 oz-in	12 lb (53.38 N)
Peak Torque/Force	160 oz-in	37.95 lbs (168.81 N)
Speed	0 - 300 RPM	0 - 20 in./sec. (0 - 508mm/sec.)
Torque/Force Constant	42.24 oz-in/A	4 lb (17.79 N) / A
Continuous Current	2.0 Amps	3.0 Amps
Encoder Resolutions	5.0, 1.0, 0.5, 0.2, 0.1 µm typical	
Position Repeatability	±5 arc-sec (Encoder Res. & controls dependant) ± 5.0µ" (0.125µm)	
Straightness of Travel	N/A	10µ"/in & 40µ"/6.00" (0.25µm/25.4mm & 1.0µm/152mm)
Pitch, Roll & Yaw	N/A	5 arc-sec / 12.00" (300mm)
Load Capacity	35lbs (15.9Kg)	
Air Consumption	1.0 scfm @50psi	1.0 scfm @50psi

Slide performance can be effected by method of mounting the rail and loading. Consult ABTech's applications engineering. Specifications are at 50psi
 Consult ABTech's applications engineering for moment loading and stiffness considerations.
 Specifications are subject to change without notification. Special accuracies can be supplied.

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