

ABG10000 Series

Air-Bearing Gantry

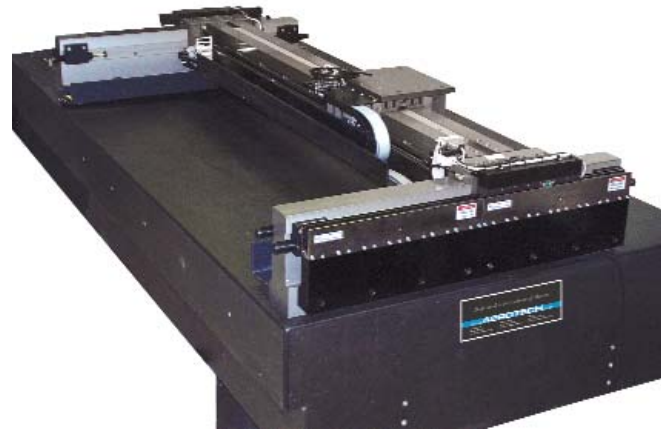
Air bearings for ultra smooth motion

All axes are fully preloaded

Dual linear-motor-driven lower axis

Travel to 1 m x 1 m

Options include: z axis, vibration isolation, machine base, and control enclosure



The ABG10000 air-bearing gantry puts Aerotech's core technologies and extensive manufacturing capability to work for you, providing outstanding performance and versatility in a wide range of automation applications.

These systems are used in applications such as high-speed pick-and-place, automated assembly, vision inspection, dispensing stations, and high-accuracy inspection.

Linear Motor/Linear Encoder

Aerotech's high-performance BLM series brushless linear servomotors drive the ABG10000 to speeds of 1 m/s and accelerations of 0.5 g. Feedback is from a rugged noncontact optical linear encoder.

Air-Bearing Design

The ABG10000 incorporates an active preload on both vertical and horizontal surfaces. The opposing thin-film pressure maintains the bearing nominal gap tolerance. This design, in addition to the large air-bearing surface that distributes the load over a large surface area, results in a stage with outstanding stiffness that is ideal for heavy or offset loading.

Proprietary manufacturing techniques result in a stage with unsurpassed geometrical characteristics. The air bearing has an inherent averaging effect that maximizes performance. The thin film will fill small surface voids and allow for other irregularities. This characteristic yields superior pitch, roll, yaw, straightness and flatness specifications.

Rugged Design

Since the linear motor is a noncontact device, there is no backlash, wear, or maintenance. The air bearings are magnetically preloaded and assembled to provide optimized stiffness and load distribution.

Cable Management System

Extensive R&D has resulted in an optimized cable management system (CMS) that has been field-proven to be the industry's most reliable design. Large bend radii and high-flex cables ensure that the air-bearing gantry provides millions of cycles of maintenance-free operation. In the unlikely event of a component failure, a modular design ensures that part replacement is fast and easy.

Turnkey Operation

Aerotech's years of experience manufacturing precision positioning and control systems can be leveraged by acquiring a turnkey system. Typical options include a Z stage, vibration isolation, machine base, and a control enclosure.

Aerotech also manufactures a wide range of high-performance amplifiers and advanced motion controllers that are optimized for use with the ABG10000.

Custom Designs

Aerotech has engineered and manufactured custom high-performance systems to meet customers' needs and specifications for a variety of applications. We can draw on over 35 years of motion control and positioning system experience to produce the ideal solution for your application.

ABG10000 Series SPECIFICATIONS

Gantries

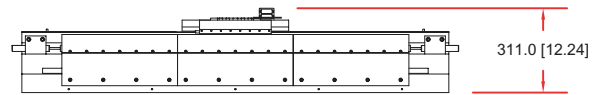
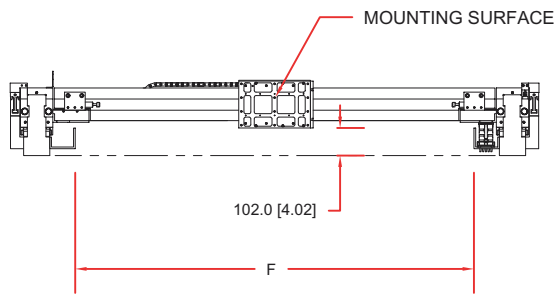
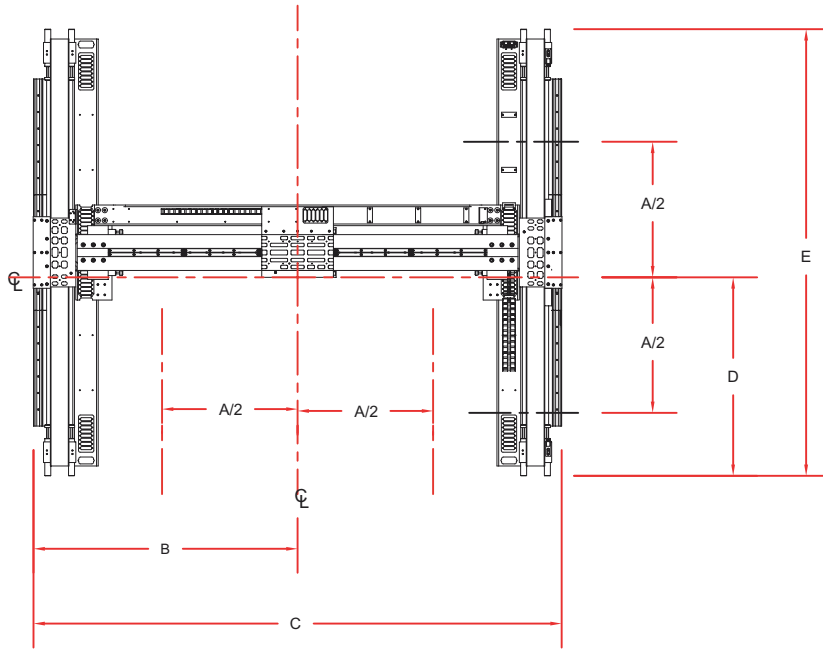
ABG10000 Series

Basic Model		ABG10250-250	ABG10500-500	ABG10750-750	ABG11000-1000
Travel		250 mm x 250 mm	500 mm x 500 mm	750 mm x 750 mm	1000 mm x 1000 mm
Motor Type		Linear Brushless Servomotor (Bridge Axis: BLM-264-A, Gantry Axis: BLM-264-A)			
Bus Voltage		Up to 320 VDC			
Continuous Current	A _{pk}	5.10			
	A _{rms}	3.61			
Encoder		Non-contact linear encoder LT (20 µm fundamental) or LN (4 µm fundamental)			
Resolution		0.005 µm - 1.0 µm (LT); 0.001 µm - 0.2 µm (LN)			
Accuracy ⁽¹⁾⁽²⁾		±2 µm (HALAR)			
Repeatability (Bi-Directional)		±0.5 µm (HALAR)			
Straightness ⁽³⁾		±1 µm	±2 µm	±2 µm	±3 µm
Flatness ⁽³⁾		±4 µm	±6 µm	±12 µm	±14 µm
Roll ⁽³⁾		±2 arc sec	±3 arc sec	±4 arc sec	±5 arc sec
Pitch ⁽³⁾		±6 arc sec	±8 arc sec	±13 arc sec	±15 arc sec
Yaw ⁽³⁾		±1 arc sec	±2 arc sec	±3 arc sec	±4.5 arc sec
Maximum Speed ⁽⁴⁾		1000 mm/s			
Maximum Acceleration		0.5 g - 5 m/s ² (193 in/s ²)			
Moving Mass	Bridge	9 kg	9 kg	9 kg	9 kg
	Gantry	64 kg	70 kg	77 kg	84 kg
Orthogonality		5 arc sec			
Operating Pressure ⁽⁵⁾		80 psig +0 psig -5 psig			
Air Consumption ⁽⁶⁾		2.0 SCFM			
Material		Aluminum			
Finish		Hard Coating			
Stage Mass (not including risers or granite base)		260 kg	282 kg	303 kg	325 kg

Notes

1. Measured at center of travel.
2. Available with Aerotech motion controller.
3. Maximum application load may be limited by performance requirements; no load specifications are shown.
4. Maximum speed based on stage capability; maximum application velocity may be limited by system data rate and system resolution.
5. To protect air bearing against under-pressure, an in-line pressure switch tied to E-stop input is recommended.
6. Air supply must be clean, dry to 0° F dewpoint and filtered to 0.25 µm or better; recommend nitrogen at 99.9% purity.

ABG10000 Series DIMENSIONS



Basic Model	Total Travel	Dimensions - Millimeters [Inches]				
		A	B	C	D	E
ABG10250	250.0 [10.00]	614.1 [24.18]	1228.2 [48.35]	357.3 [14.07]	897.4 [35.33]	750.6 [29.55]
ABG10500	500.0 [20.00]	764.1 [30.08]	1528.2 [60.17]	482.3 [18.99]	1147.4 [45.17]	1050.6 [41.36]
ABG10750	750.0 [30.00]	854.1 [33.63]	1708.2 [67.25]	607.3 [23.91]	1397.4 [55.02]	1230.6 [48.45]
ABG11000	1000.0 [40.00]	974.1 [38.35]	1948.2 [76.70]	732.3 [28.83]	1647.4 [64.86]	1470.6 [57.90]

ABG10000 Series ORDERING INFORMATION

Ordering Information

ABG10	250-250	-10	-NC	-LT50AS
Series	Travel	Motor	Limits	Standard Linear Encoders
ABG1	0250-0250	-10	-NC	-LTXXAS
	0500-0500		-NO	-LNXXAS
	0750-0750			
	1000-1000			

Air-Bearing Gantry

ABG10250-250	250 mm x 250 mm air-bearing cartesian gantry with linear motor, linear encoder, and limits
ABG10500-500	500 mm x 500 mm air-bearing cartesian gantry with linear motor, linear encoder, and limits
ABG10750-750	750 mm x 750 mm air-bearing cartesian gantry with linear motor, linear encoder, and limits
ABG11000-1000	1000 mm x 1000 mm air-bearing cartesian gantry with linear motor, linear encoder, and limits

Motor

-10 Brushless linear motor — BLM-264-A

Note: Standard motor option includes dual motors on the gantry axis.

Limits

-NC Normally-closed end of travel limit switches (STANDARD)

-NO Normally-open end of travel limit switches

Standard Linear Encoders

-LT25AS	Linear encoder for ABG10250-250; amplified sine output
-LN25AS	Linear encoder for ABG10250-250; amplified sine output
-LT50AS	Linear encoder for ABG10500-500; amplified sine output
-LN50AS	Linear encoder for ABG10500-500; amplified sine output
-LT75AS	Linear encoder for ABG10750-750; amplified sine output
-LN75AS	Linear encoder for ABG10750-750; amplified sine output
-LT100AS	Linear encoder for ABG1100-1000; amplified sine output
-LN100AS	Linear encoder for ABG1100-1000; amplified sine output

Note: Standard encoder option includes dual encoders on the lower (Y) axis.