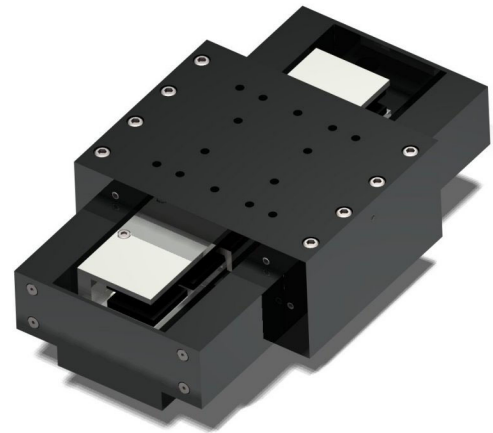


ATLAS I SERIES

LINEAR AIR BEARING STAGES

- Fully preloaded, frictionless precision air bearings
- Non-contact linear motor drive
- Non-contact optical encoder
- 5 μm to 50 nm resolution
- Extremely compact size
- Integrated XY systems available

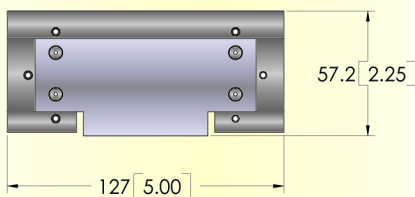


The smallest in Nelson Air's Atlas line of air bearing stages, Atlas I stages offer superior positioning performance in an extremely compact package. High performance air bearings with integrated linear servomotors and optical encoders deliver totally noncontact, frictionless motion with submicron resolution and repeatability. Designed to meet the demanding needs of precision production facilities, these systems are equally suited to laboratory environments where flexibility and ease of use are critical.

A PROVEN STANDARD

Air bearings are the proven standard for superior smoothness of motion and positioning control in high precision applications. The Atlas I Series stages employ fully preloaded air bearings with large bearing surfaces to provide excellent mechanical stiffness and load capacity. Manufactured to exacting standards, this design delivers superior pitch, yaw, roll, and straightness characteristics. The noncontact, inherently frictionless nature of air bearings also translates into increased reliability and a virtually limitless lifetime.

Compact Design



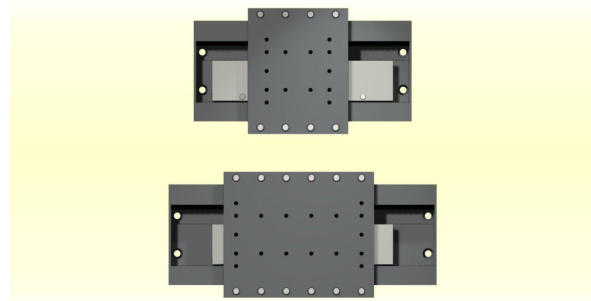
The Atlas I's small cross-section makes it ideal for many medium duty applications

PRECISION POSITIONING

Driven by a cogless linear servomotor, Atlas I Series stages deliver positioning resolution on the order of ± 1 encoder count with unsurpassed velocity control. Combined with standard encoder resolution options from 5 μm down to 50 nm these stages are designed to meet the needs of a wide range of precision applications.

FLEXIBILITY

Atlas I Series stages can be modified with a variety of options to suit any application. These modifications range from custom mounting hole patterns to integration of multiple axes for XY positioning. Fully preloaded air bearings allow these stages to operate in any orientation and a pneumatic counterbalance can be fitted for vertical operation.



Two Models Available: The Atlas IA (top) has a 100 mm (4 in) long carriage; the Atlas IB (bottom) has a 150 mm (6 in) long carriage for increased load capacity.

KEY SPECIFICATIONS:

Travel: 100 mm (4 in) or 150 mm (6 in)
Load Capacity: 23 kg (50 lbs) to 41 kg (90 lbs)
Resolution: 5 μm , 1 μm , 0.5 μm , 0.1 μm , 50 nm
Accuracy: $\pm 1.25 \mu\text{m}$ ($\pm 50 \mu\text{in}$) to $\pm 2.0 \mu\text{m}$ ($\pm 80 \mu\text{in}$)
Straightness and Flatness:
 $\pm 0.25 \mu\text{m}$ ($\pm 10 \mu\text{in}$) to $\pm 0.35 \mu\text{m}$ ($\pm 14 \mu\text{in}$)



NELSON AIR CORP.

precision air bearing positioning

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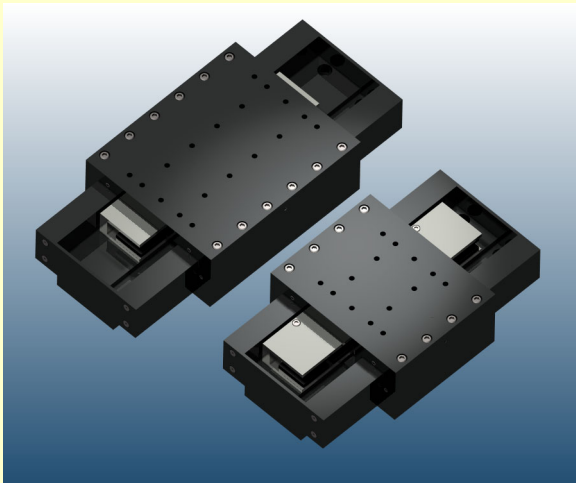
Atlas I Series Linear Air Bearing Stage Specifications

BASIC MODEL		ATLAS IA		ATLAS IB	
Model	ATLAS IA-100	ATLAS IA-150	ATLAS IB-100	ATLAS IB-150	
Stage Travel	100 mm (4 in)	150 mm (6 in)	100 mm (4 in)	150 mm (6 in)	
Drive System	Linear Brushless Servomotor				
Feedback	Noncontact Linear Optical Encoder				
Resolution ¹	5.0 µm, 1.0 µm, 0.5 µm, 0.1 µm, 50 nm				
Maximum Travel Speed	300 mm/s (12 in/s)				
Maximum Linear Acceleration	1g – 10 m/s ² (384 in/s ²) no load				
Maximum Load	Normal	27 kg (60 lbs)		41 kg (90 lbs)	
	Transverse	23 kg (50 lbs)		34 kg (76 lbs)	
Continuous Stall Force	22.2 N (5.0 lbs)				
Peak Force	66.8 N (15 lbs)				
Overall Accuracy ²	±1.25 µm (±50 µin)	±2.0 µm (±80 µin)	±1.25 µm (±50 µin)	±2.0 µm (±80 µin)	
Repeatability	±0.2 µm (±8 µin)				
Straightness and Flatness ³	±0.25 µm (±10 µin)	±0.35 µm (±14 µin)	±0.25 µm (±10 µin)	±0.35 µm (±14 µin)	
Pitch / Roll / Yaw	0.25 arc-sec/25 mm				
Stage Weight	3.2 kg (7 lbs)	3.6 kg (8 lbs)	3.8 kg (8.5 lbs)	4.3 kg (9.5 lbs)	
Operating Pressure ⁴	80 psi ±5 psi				
Air Consumption	<2 cfm				
Material	6061-T6511 Aluminum				
Finish	Hard Coating (62 Rockwell Hardness)				

- Notes:**
1. Higher resolutions available using glass scale encoder, consult Nelson Air for details.
 2. Accuracy of ±0.5 µm (±20 µin) achievable through calibration, consult Nelson Air for details.
 2. Stages require mounting surface flatness better than 0.0001"
 3. Air supply must be filtered to 0.25 µm with 0° F dewpoint.

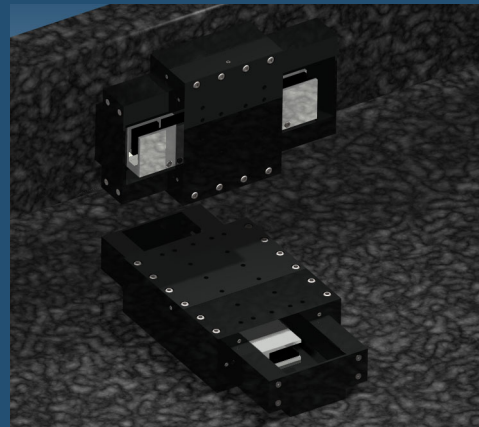
ATLAS I SERIES STAGES INCLUDE:

- Air Bearing Stage
- Linear Servomotor
- Encoder w/ Digitizing Electronics
- Limit switch assemblies

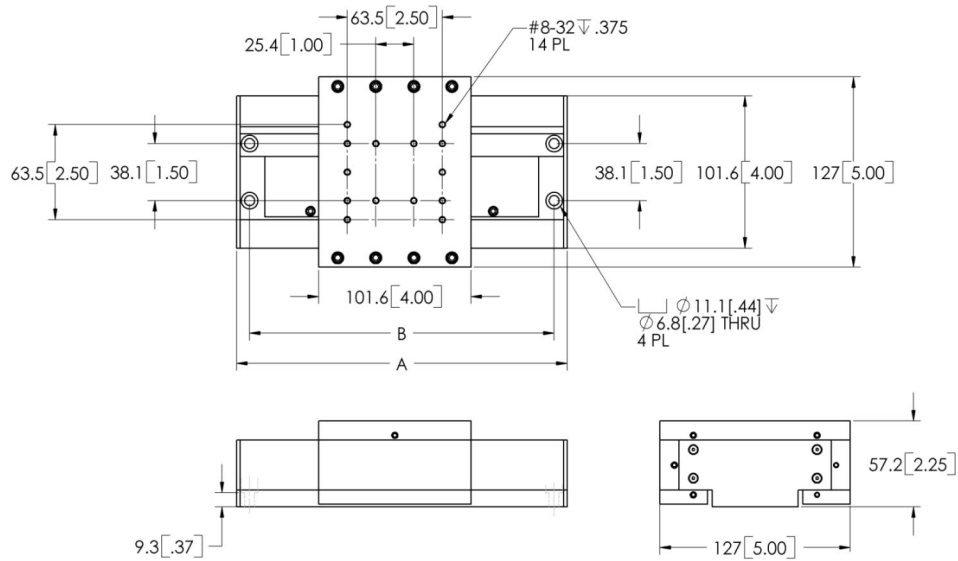


NELSON AIR CAN ALSO SUPPLY:

- Servomotor amplifiers
- Motion controllers
- Cable management systems
- Precision XY assemblies
- Pneumatic counterbalance for vertical operation
- Custom aluminum or granite bases
- Air handling/filtering
- Longer travel assemblies
- Multiple carriages
- Rotary air bearing axes

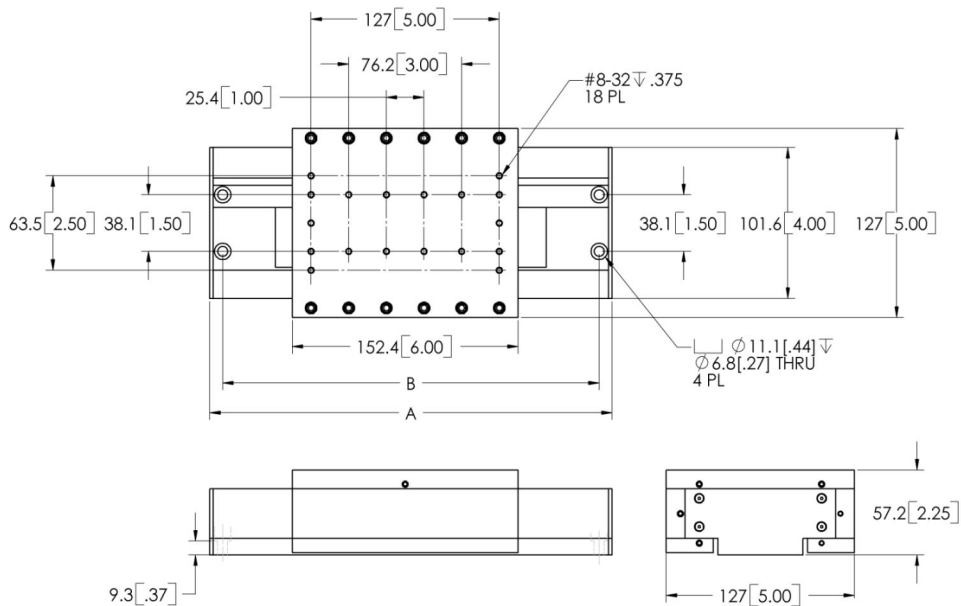


Atlas IA Linear Air Bearing Stage Dimensions



BASIC MODEL	TOTAL TRAVEL	DIMENSIONS - MILLIMETERS [INCHES]	
		A	B
ATLAS IA-100	100 [4.00]	220.6 [8.69]	203.2 [8.00]
ATLAS IA-150	150 [6.00]	271.5 [10.69]	254.0 [10.00]

Atlas IB Linear Air Bearing Stage Dimensions



BASIC MODEL	TOTAL TRAVEL	DIMENSIONS - MILLIMETERS [INCHES]	
		A	B
ATLAS IB-100	100 [4.00]	271.5 [10.69]	254.0 [10.00]
ATLAS IB-150	150 [6.00]	322.3 [12.69]	304.8 [12.00]