

Pliglide MB: Miniature Linear Air Bearing Stage

HIGH PERFORMANCE, CLEANROOM COMPATIBLE, CUSTOMIZABLE



A-141 Series

- Table size 57mm x 93mm
- Overall height 38mm
- Travel lengths to 35mm
- 3kg max payload
- Non-contact fully preloaded air bearings
- Ironless cog-free linear motor
- Integral optical linear encoder
- Velocity to 300mm/sec
- Acceleration to 0.5g

Overview

The Pliglide MB air bearing stage is linear servo motor driven with fully preloaded air bearings and an integral optical linear encoder. This stage offers ultra-precision in a miniature package. The combination of non-contact components results in a frictionless motion platform that offers the highest performance, quality, and life. This stage is ideally suited for many high precision applications, such as metrology, photonics alignment, optics positioning, and scanning. The non-contact design also makes these stages ideal for cleanroom applications. There are no moving electrical cables to manage. The air bearing offers a locking design for the ultimate in position stability.

Accessories and Options

- Air preparation kits
- Single or multi-axis motion controllers and servo drives
- XY stacks and custom configurations with precision alignment
- Counterbalance options for vertical (Z) orientations
- Customizations available
- Granite bases and vibration isolation systems

Specifications

Model	A-141.035A1
Travel	35 mm limit-to-limit
Drive System	Brushless ironless linear servo motor, 3-phase
Feedback System	Non-contact optical linear encoder with travel limits and home index Sin/Cos, 1 V peak-peak, 20 μ m signal period
Motor Bus Voltage	48 VDC nominal, 80 VDC max
Motor Force Constant	2.1 N/A
Continuous Force	0.58 N
Peak Force	2.3 N
Motor Back EMF	0.7 V/m/sec
Motor Resistance (phase-to-phase)	22.4 ohms
Motor Inductance (phase-to-phase)	1.0 mH
Maximum Velocity (1) (unloaded)	300 mm/sec
Maximum Acceleration (1) (Unloaded)	0.5 g
Maximum Payload (2)	3 kg
Accuracy (3) (uncompensated)	+/-2.0 μ m
Accuracy (3) (with error compensation)	+/-0.25 μ m
Repeatability	+/-0.1 μ m
Encoder Resolution (4)	2.4nm with 8192x Interpolation Factor
Straightness & Flatness (5)	< 0.5 μ m over full travel
Pitch & Yaw (5)	< 1 arc-sec over full travel
Stage Mass	0.6 kg
Moving Mass	0.3 kg
Cabling	Internal, non-moving
Operating Pressure (6)	65 +/-5 psi (450 +/-35 kPa)
Air Consumption	< 1.0 SCFM (28 SLPM)
Air Quality	Clean (filtered to 1.0 μ m or better) - ISO 8573-1 Class 1 Oil-free -ISO 8573-1 Class 1 Dry (-15 °C dew point) - ISO 8573-1 Class 3
Construction	Hardcoat Aluminum SS Fasteners

1. Maximum velocity and acceleration based on unloaded stage capability may be limited by payload, controller, or drive performance.
2. Assumes payload CG is centered no more than 50mm above the stage table. Stage is designed for horizontal operation only.
3. Improved accuracy can be obtained with controller-based error compensation. Accuracy values assume short-term time duration and do not consider the long-term effects of thermal drift on the stage.
4. Encoder resolution depends on interpolation factor chosen. Resolution will impact repeatability specification.
5. Dependent on the flatness of the surface to which the stage is mounted.
6. To protect stage from damage, an under-pressure air sensor tied to the controller E-stop input is recommended.

Ordering Information

A-141.035A1 Pliglide MB Miniature Linear Air Bearing Stage, 35mm Travel, 20 μ m Incremental Encoder with Sine (1 Vp-p) Output, 3-phase Linear Motor, 48V

