

# PIglide VC: Linear Air Bearing Voice Coil Stage

HIGH PERFORMANCE MINIATURE NANOPositioning SYSTEM



## A-131 Series

- Table face 50mm diameter
- Overall height 95mm
- Travel lengths to 25mm
- 10kg max payload
- Non-contact fully preloaded air bearings
- Ironless cog-free voice coil motor
- Integral optical linear encoder
- Resolutions to 100nm
- Velocity to 1.0m/sec
- Acceleration to 8.0g
- Cleanroom compatible
- Customizable
- Ideal for scanning or high-resolution positioning

### Overview

The PIglide VC air bearing stage is voice coil driven with fully preloaded air bearings and an integral optical linear encoder. This stage offers high speed and high acceleration in a small 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 high speed scanning and machining applications. The non-contact design also makes this stage ideal for cleanroom applications. There are no moving electrical cables to manage. The stage offers optional bellows covers to protect the air bearing from dirty environments.

### Accessories and Options

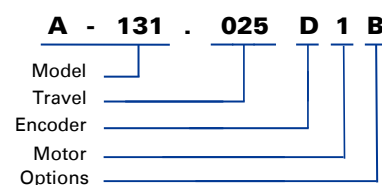
- Multiple encoder resolutions
- Bellows protection covers
- Air preparation kits
- Single or multi-axis motion controller and servo drives
- Additional accessories available on request

Model	A-131.025D1
Travel	25 mm
Drive System	Brushless DC voice coil motor, 1-phase
Feedback System	Non-contact optical linear encoder
Motor Bus Voltage	48 VDC nominal, 80 VDC max
Continuous Force	22.3 N
Peak Force	70.4 N
Motor Force Constant	6.9 N/A
Motor Back EMF	6.9 V/m/sec
Motor Resistance	2.7 ohms
Motor Inductance @ 1000 Hz	1.4 mH
Max Continuous Power	28 W
Home Index	Near center of travel, repeatable to +/- 1 encoder count
Maximum Velocity (1)	Up to 1.0 m/sec
Maximum Acceleration (1)	Up to 8.0 g
Maximum Payload (2)	10 kg
Accuracy (3)	+/-0.2 $\mu$ m
Repeatability	+/-0.1 $\mu$ m
Encoder Resolution (4)	100 nm
Straightness & Flatness (5)	< 0.25 $\mu$ m TIR over full travel
Pitch & Yaw (5)	< 2 arc-sec TIR over full travel
Stage Mass	3.6 kg
Moving Mass	0.85 kg
Cabling	Internal, non-moving
Operating Pressure (6)	80 +/-5 psi (550 +/-35 kPa)
Air Consumption	< 1.0 SCFM (28 SLPM)
Air Quality	Clean (filtered to 1.0 $\mu$ 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 from the stage table face.
3. Improved accuracy can be obtained with controller-based error compensation.
4. Encoder resolution can be changed upon request, please contact PI for a quote. Finer resolutions may limit maximum velocity.
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.

Model	Travel	Encoder (1)	Motor Wiring	Options
A-131	025 = 25 mm	A = 20 $\mu$ m/line incremental, sine (1 Vp-p) output	1 = Standard motor option, 48 VDC	Blank = None
		D = 100nm resolution incremental, A-quadr-B (TTL) output		B = Bellows cover
		F = 500nm resolution incremental, A-quadr-B (TTL) output		

1. Alternate TTL encoder resolutions are available on request. Please contact PI for a quote.



### Ordering Example

Part# A-131.025D1B is a  
Model: A-131 (PIglide VC linear air bearing voice coil stage)  
Travel: 25 mm  
Encoder: D (100nm resolution incremental, A-quadr-B TTL output)  
Motor Wiring: 1 (48 VDC)  
Options: Bellows cover

