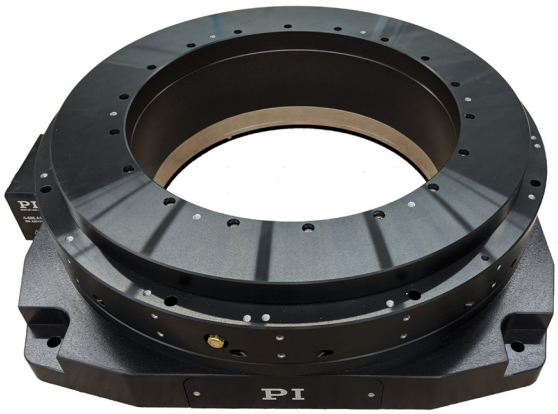
PIglide RLA Rotation Stage with Air Bearings, Large Aperture

Friction-free, Motorized



A-68x

- 365 mm diameter motion platform, 260 mm diameter aperture
- Low profile
- Eccentricity and flatness < 300 nm

Product overview

The directly driven flat rotation stages of the PIglide RLA series are designed for the highest precision. They have a low profile and a large clear aperture. The RLA stages offer a superior travel accuracy, flatness, and wobble performance.

3-Phase torque motor

- Brushless
- Low cogging torque

Absolute encoder (optional)

Absolute encoders supply explicit position information that enables immediate determination of the position. This means that referencing is not required during switch-on, which increases efficiency and safety during operation.

Accessories and options

- Incremental or absolute encoder
- PIglide filter and air preparation kit
- Single or multi-axis motion controllers and servo drives
- Multi-axis/customized setups
- Base plates made of granite and systems for reducing vibration

Application fields

Tomography, beamline systems, wafer metrology, wafer inspection, measuring technology, inspection systems, calibration, scanning.
Thanks to the friction-free motion, no particles are formed, which makes PIglide stages ideal for cleanroom applications.

Specifications

Motion	A-688	Unit	Tolerance
Travel range	Unlimited, > 360°		
Motion platform diameter	365	mm	
Eccentricity (1)	300	nm	Max.
Flatness (1)	175	nm	Max.
Wobble (1)	1	µrad	Max.

Mechanical properties	A-688	Unit	Tolerance
Load capacity, axial (2)	770	N	Max.
Load capacity, radial (2)	190	N	Max.
Load torque, $M_{X,Y}$ (2)	36	Nm	Max.
Moment of inertia	284710	kg·mm²	Typ.
Moved mass	12	kg	Typ.
Overall mass	24	kg	Typ.
Guide type	Air Bearing		

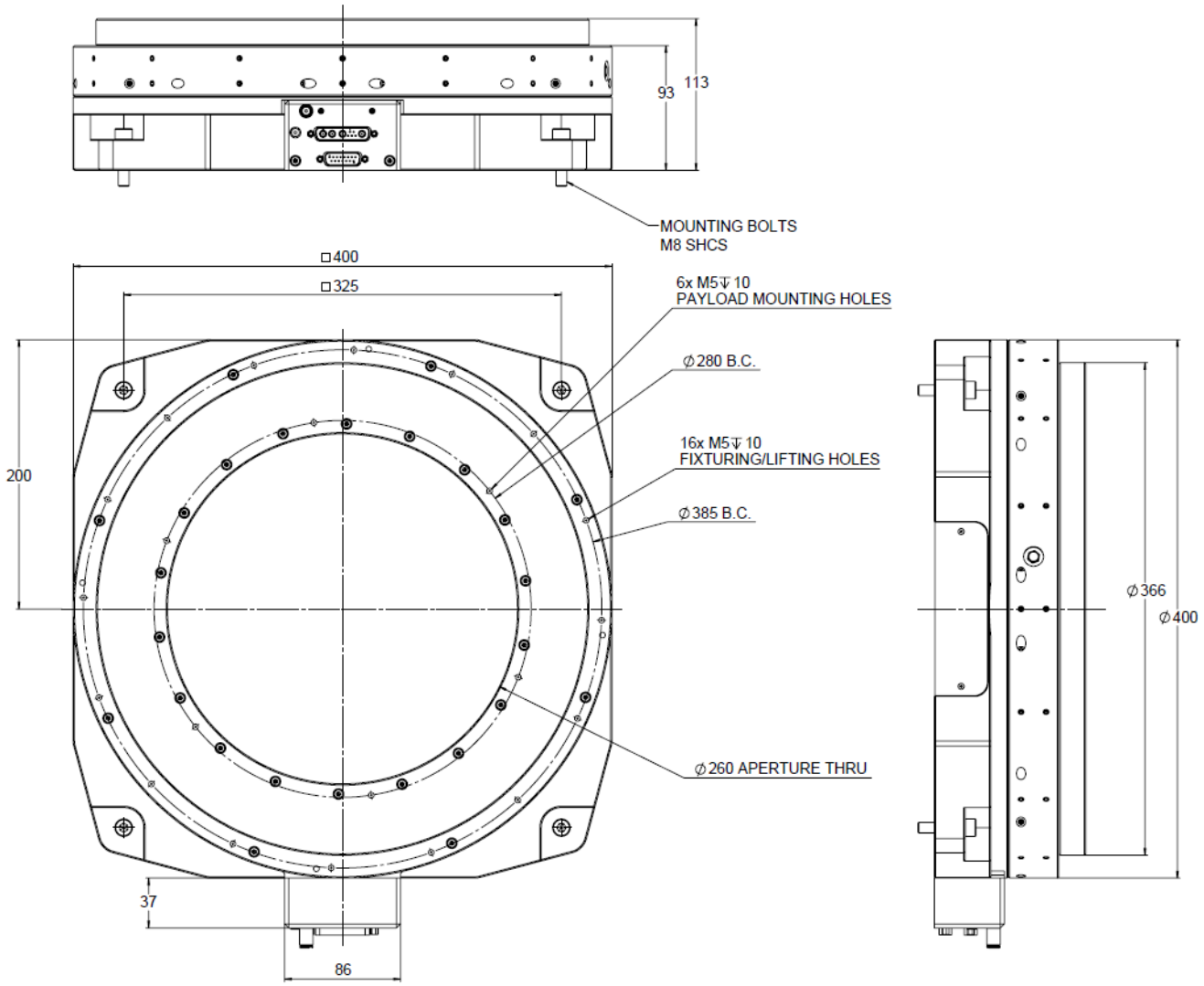
Drive properties	A-688	Unit	Tolerance
Drive type	Torque motor, 3-phase, brushless		
Intermediate circuit voltage	48, nominal 80, max.	V DC	
Peak current	6.9	A	Max.
Nominal current	3.2	A	Max.
Peak torque	85	Nm	Max.
Nominal torque	39	Nm	Max.
Torque constant	12.3	Nm/A	Typ.
Resistance phase-phase	3.6	Ω	Typ.
Inductance phase-phase	1.24	mH	Typ.
Back EMF phase-phase	10.1	V/kRPM	Typ.

Positioning	A-688.A100	A-688.B100
Integrated sensor	Incremental angle-measuring system	Absolute angle-measuring system
Sensor signal	Sin/cos, 1 V peak-peak	BiSS-C
Lines/revolution	55040	–
Velocity (3)	500 rpm max.	500 rpm max.
Sensor resolution	0.03 µrad (4)	0.0015 µrad
Bidirectional repeatability	± 4 µrad	± 4 µrad
Accuracy, with error compensation (5)	± 8 µrad	± 8 µrad
Reference switch	1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak	–

Miscellaneous	A-688
Operating pressure [6]	75 to 85 psi (515 to 585 kPa)
Air consumption	< 2 SCFM (56 SLPM)
Air quality	Clean (filtered to 1.0 µm or better) - ISO 8573-1 Class 1 Oil free - ISO 8573-1 Class 1 Dry (-15 °C dew point) - ISO 8573-1 Class 3
Materials	Hardcoat aluminum, stainless steel mounting hardware

[1] Dependent on the quality of the underlying surface, the payload, orientation, and forces that act on the stage from the outside. Please contact PI for application-specific parameters. The specified values are static (no rotary motion during measuring) and without load.
[2] The loads listed assume a supply pressure of 550 kPa (80 psi). Please contact PI if other pressures are required.
[3] May be limited by the payload, payload imbalance, controller or drive.
[4] Assumes 4096x interpolation. Contact PI for the use of other factors.
[5] The specified values are based on error compensation controlled by the controller. The stage must be ordered with an A-8xx series controller from PI to reach these values. Accuracy values assume short duration and do not consider the long-term effects of thermal drift on the stage.
[6] To protect the stage against damage, it is recommended to connect an air pressure sensor to the Motion-Stop input of the controller.
Ask about customized versions.

Drawings / Images



A-688, dimensions in mm

Ordering Information

A-688.A100
PIglide RLA rotation stage, air bearing, 365 mm motion platform diameter, 260 mm diameter aperture, low profile, incremental angle measuring system with sin/cos signal transmission, brushless 3-phase torque motor

A-688.B100
PIglide RLA rotation stage, air bearing, 365 mm motion platform diameter, 260 mm diameter aperture, low profile, absolute angle-measuring system with BiSS-C signal transmission, brushless 3-phase torque motor