

PIglide RL Flat Rotation Stage with Air Bearing

Friction-free, Motorized



A-63x

- 150 mm, 200 mm, 300 mm or 350 mm motion platform diameter
- Low profile
- Eccentricity and flatness < 100 nm
- Option for self-locking at rest by magnetic preload

Product overview

The directly driven low-profile rotation stages of the PIglide RL series are designed for the highest precision with low-profile design. Various options can be combined to create a solution ideal for point-to-point indexing or constant velocity scanning. The RL stages offer superior travel accuracy, flatness, and wobble performance.

3-Phase torque motor

- Brushless
- Slotless
- 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
- Vacuum feedthrough
- Self-locking at rest by magnetic preload
- Clear aperture on request
- 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

Optical alignment, wafer inspection, wafer alignment, 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-634	A-635	A-637	A-638	Unit	Tolerance
Travel range	unlimited, > 360°	unlimited, > 360°	unlimited, > 360°	unlimited, > 360°		
Motion platform diameter	150	200	300	350	mm	
Eccentricity ⁽¹⁾	200	150	100	100	nm	Max.
Flatness ⁽¹⁾	75	75	50	50	nm	Max.
Wobble ⁽¹⁾	2	2	1	1	μrad	Max.

Mechanical properties	A-634	A-635	A-637	A-638	Unit	Tolerance
Load capacity, axial ⁽²⁾	190	320	600	1200	N	Max.
Load capacity, radial ⁽²⁾	40	80	150	200	N	Max.
Load torque, M _{x,y} ⁽²⁾	4.5	12	50	130	Nm	Max.
Moment of inertia	6640	23400	119610	152080	kg·mm ²	
Moved mass	1.9	3.6	7.6	10.4	kg	
Overall mass	4.6	7.5	17	23	kg	
Guide type	Air bearing, magnetic preload	Air bearing, magnetic preload	Air bearing, magnetic preload	Air bearing, magnetic preload		

Drive properties	A-634	A-635, A-637, A-638	Unit	Tolerance
Drive type	Torque motor, 3-phase, brushless, ironless, slotless	Torque motor, 3-phase, brushless, ironless, slotless		
Intermediate circuit voltage	48, nominal 80, max.	48, nominal 80, max.	V DC	
Peak current	6.9	13.9	A	Max.
Nominal current	2.3	4.5	A	Max.
Peak torque	4.7	8.5	Nm	Max.
Nominal torque	1.6	2.8	Nm	Max.
Torque constant	0.59	0.66	Nm/A	Typ.
Resistance phase-phase	6.7	4.5	Ω	Typ.
Inductance phase-phase	0.9	0.6	mH	Typ.
Back EMF phase-phase	71	80	V/kRPM	Typ.

Positioning	A-63x.A100	A-63x.B100
Integrated sensor	Incremental angle-measuring system	Absolute angle-measuring system
Sensor signal	Sin/cos, 1 V peak-peak	BISS-C
Lines/revolution	A-634: 23600 A-635: 31488 A-637: 55040 A-638: 31488	–
Velocity ⁽³⁾	500 rpm max.	500 rpm max.
Sensor resolution	A-634: 0.06 μ rad ⁽⁴⁾ A-635: 0.05 μ rad ⁽⁴⁾ A-637: 0.03 μ rad ⁽⁴⁾ A-638: 0.05 μ rad ⁽⁴⁾	0.0015 μ rad
Bidirectional repeatability	$\pm 4 \mu$ rad	$\pm 4 \mu$ rad
Accuracy, with error compensation ⁽⁵⁾	$\pm 8 \mu$ rad	$\pm 8 \mu$ rad
Reference switch	1 / revolution, differential pulse over one sensor signal period, 1 V peak-peak	–

Miscellaneous	A-63x
Operating pressure ⁽⁶⁾	75 to 85 psi (515 to 585 kPa)
Air consumption	< 2 SCFM (56 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
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.

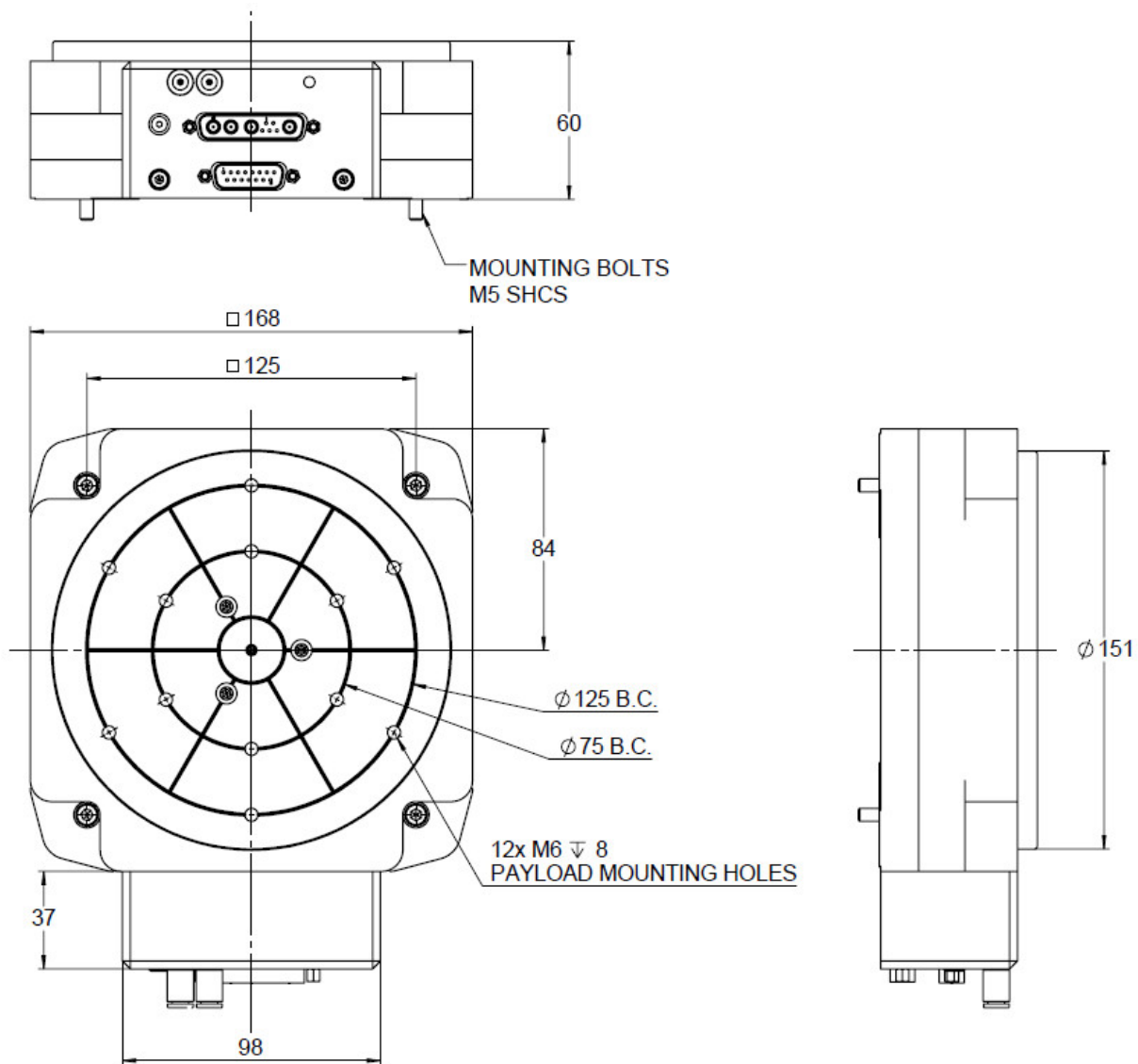
⁽⁴⁾ Assumes 4096x interpolation. Contact PI for the use of other factors.

⁽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-term duration and do not consider the long-term effects of thermal drift on the stage.

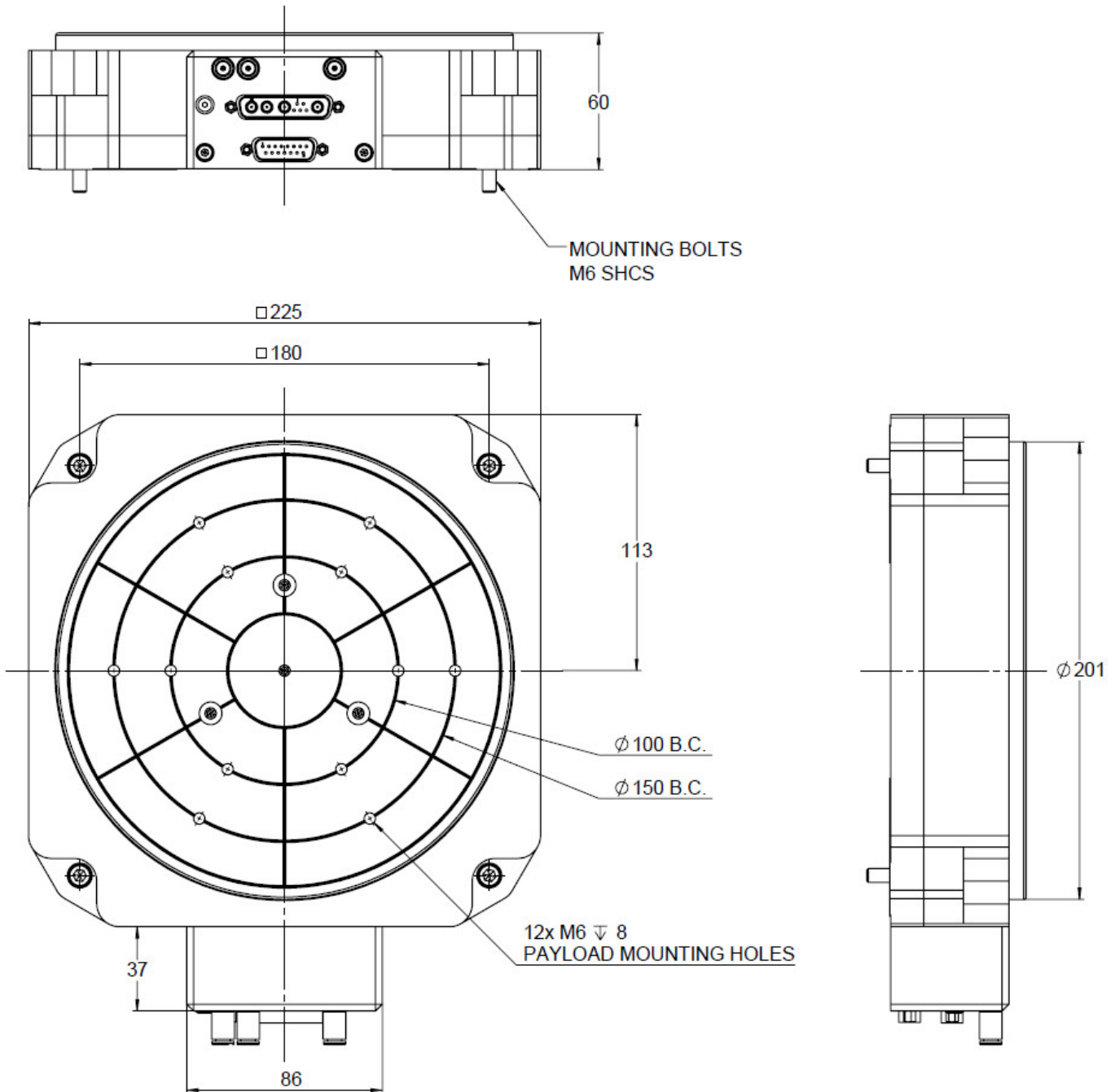
⁽⁶⁾ To protect the stage against damage, it is recommended to connect an air pressure sensor to the Motion-Stop input of the controller.

Ask about customized versions.

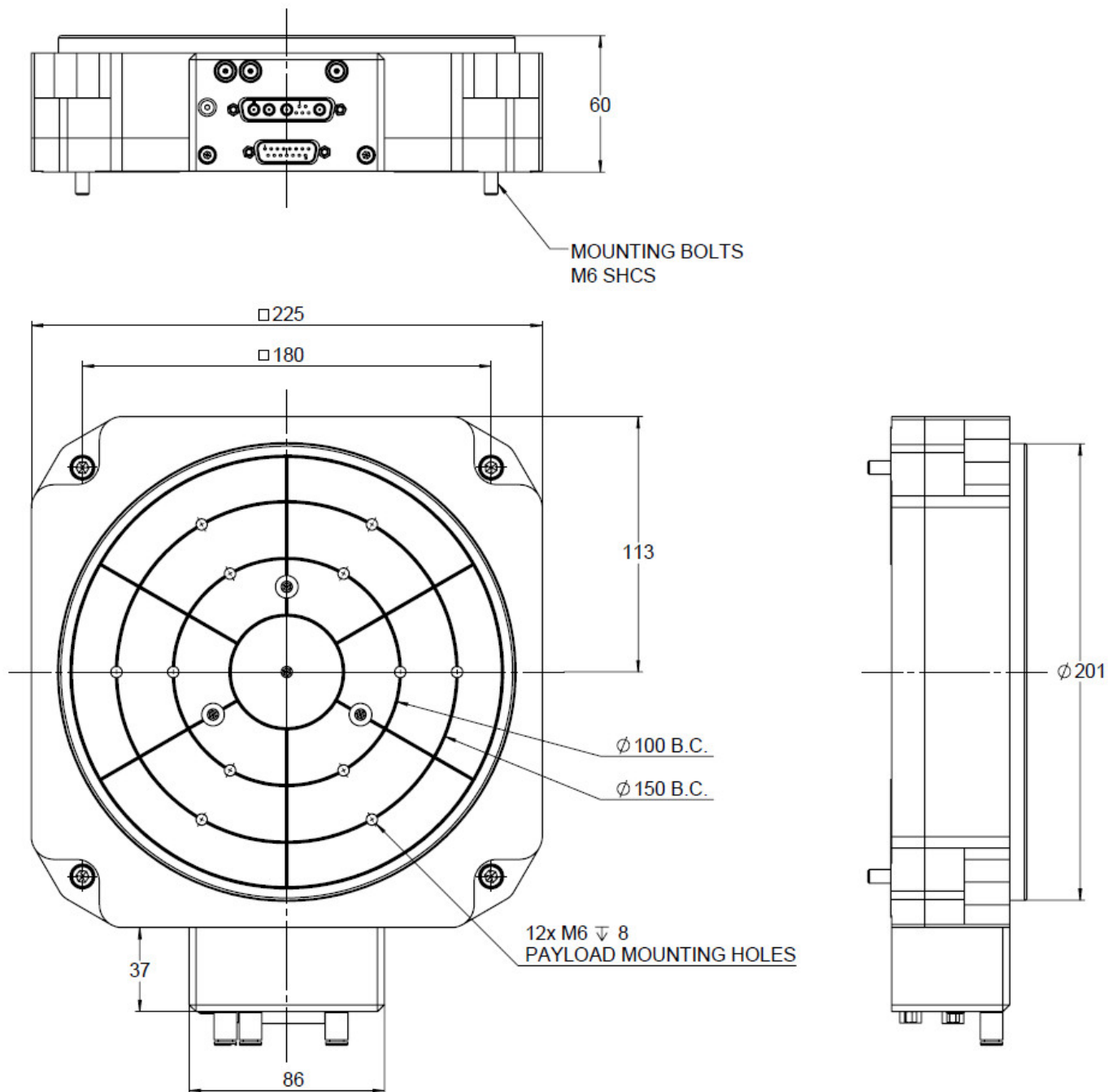
Drawings / Images



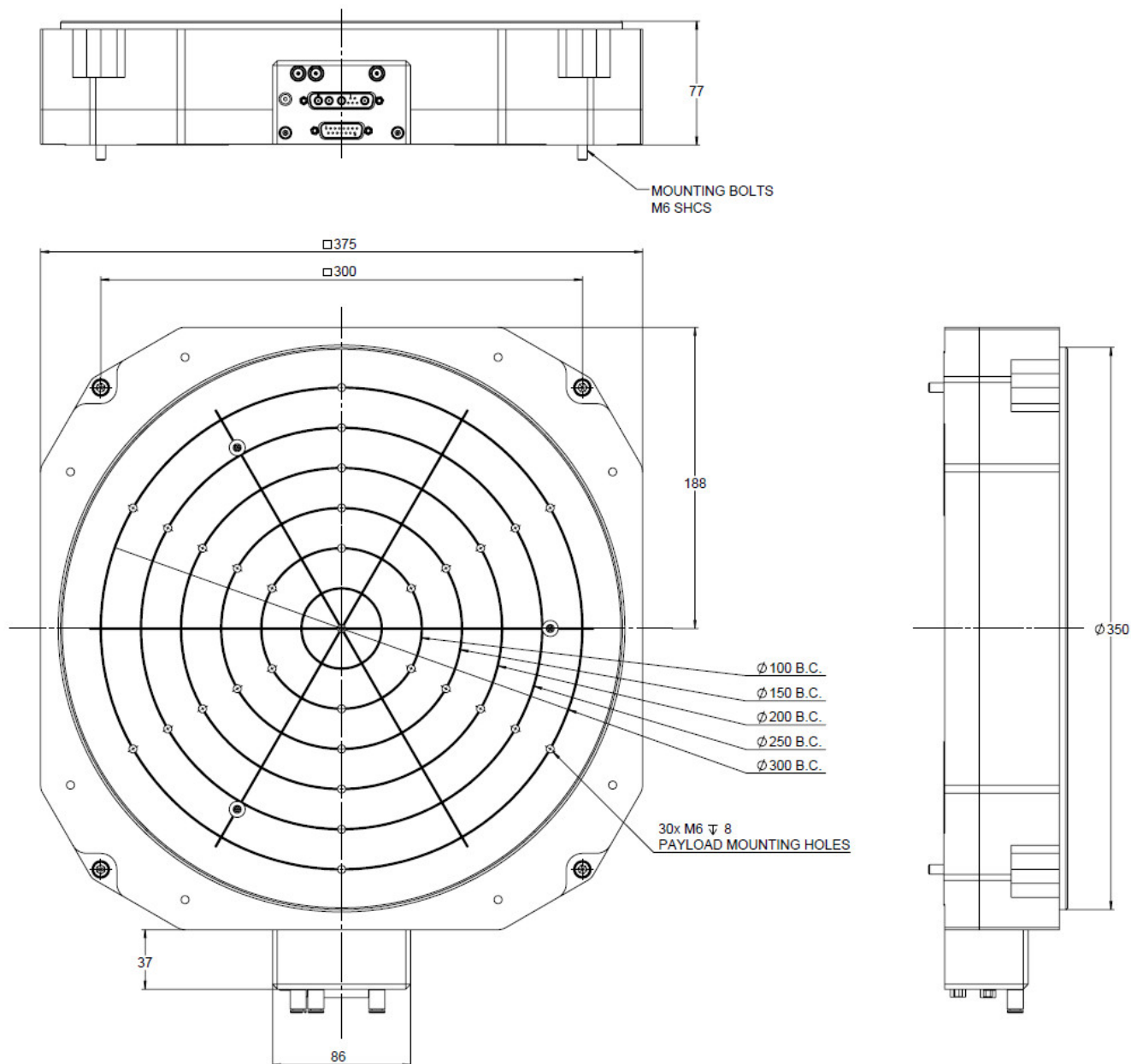
A-634.x100, dimensions in mm



A-635.x100, dimensions in mm



A-637.x100, dimensions in mm



A-638.x100, dimensions in mm

Ordering Information

A-634.A100

PIglide RL rotation stage, air bearing, 150 mm motion platform diameter, low height, angle measuring system with sin/cos signal transmission, slotless, brushless 3-phase torque motor

A-634.B100

PIglide RL rotation stage, air bearing, 150 mm motion platform diameter, low height, absolute angle-measuring system with BiSS-C signal transmission, slotless, brushless 3-phase torque motor

A-635.A100

PIglide RL rotation stage, air bearing, 200 mm motion platform diameter, low height, angle measuring system with sin/cos signal transmission, slotless, brushless 3-phase torque motor

A-635.B100

PIglide RL rotation stage, air bearing, 200 mm motion platform diameter, low height, absolute angle-measuring system with BiSS-C signal transmission, slotless, brushless 3-phase torque motor

A-637.A100

PIglide RL rotation stage, air bearing, 300 mm motion platform diameter, low height, angle measuring system with sin/cos signal transmission, slotless, brushless 3-phase torque motor

A-637.B100

PIglide RL rotation stage, air bearing, 300 mm motion platform diameter, low height, absolute angle-measuring system with BiSS-C signal transmission, slotless, brushless 3-phase torque motor

A-638.A100

PIglide RL rotation stage, air bearing, 350 mm motion platform diameter, low height, angle measuring system with sin/cos signal transmission, slotless, brushless 3-phase torque motor

A-638.B100

PIglide RL rotation stage, air bearing, 350 mm motion platform diameter, low height, absolute angle-measuring system with BiSS-C signal transmission, slotless, brushless 3-phase torque motor