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Find the *Newport RGV100BL* at our website: *Click HERE*

High-Speed Precision Rotation Stage

RGV100BL



The RGV100BL Compact Rotation Stage provides ultra-fast rotation, very high resolution, and outstanding positioning performance. Applications include semiconductor wafer inspection, micro-robotics, and precision metrology. Direct-drive technology eliminates the worm gear of traditional rotation stages providing higher speeds, superior reliability, and enhanced position sensitivity. Speed, resolution, and repeatability are increased by a factor of up to ten times. A high efficiency brushless DC torque motor with rare earth magnets supplies an optimum ratio of torque per inertia for high acceleration, with minimal stage heating. At maximum continuous torque, the temperature of the motor increases by only 30 °C. Precision is ensured by a high-resolution glass scale with 15,000 line pairs per revolution that directly measures the position of the rotating platen. The flat encoder is mounted on a precision ground reference surface and is perfectly aligned with the stage's rotation axis to minimize position errors induced by eccentricity, wobble, or axial runout. The RGV100BL features a proprietary 4-point contact ball bearing. This unique, 2-piece design minimizes the number of parts resulting in a more compact stage with superior stiffness, high reliability and outstanding wobble and eccentricity specifications. A 30 mm diameter through-hole allows convenient routing of cables and vacuum lines through the stage. A once-per revolution index pulse permits precision homing to a unique home position. The RGV100BL also features two limit switches that can be enabled or disabled by an external switch.

- Direct drive for outstanding speed of 720 °/s and high reliability
- Large diameter, steel ball bearings for stiffness, low runout and high load capacity
- Precision glass scale encoder for high position repeatability, MIM, and high accuracy
- High torque DC brushless motor

DESIGN DETAILS

Base Material	Aluminum
Bearings	Large diameter steel ball bearings
Motor	High-torque brushless DC motor with rare earth magnets
Motor Initialization	Using a patented process that avoids major motion during initialization and that does not require Hall effect sensors
Motor Commutation	Done by the XPS controller on encoder signals
Feedback	Glass scale encoder with 15,000 line pairs per revolution, 1 VPP, 32768-fold signal subdivision when used with XPS controller
Limit Switches	Two optical limit switches at approx. ±168°, disabled by external switch
Origin	Optical, fixed at position 0°, including mechanical zero signal
Cable Length (m)	5 (included)

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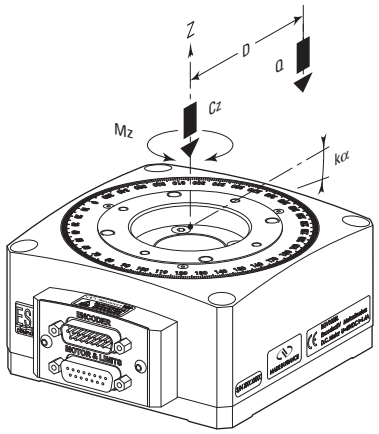
SPECIFICATIONS

Travel Range (°)	360 continuous
Minimum Incremental Motion (mdeg)	0.10
Uni-directional Repeatability, Typical (Guaranteed)[1] (mdeg)	±0.08 (±0.15)
Bi-directional Repeatability, Typical[1] (mdeg)	±0.15
Accuracy, Typical (Guaranteed)[1] (mdeg)	±3.0 (±5.0)
Maximum Speed [no load] (°/s)	720
Maximum Acceleration (°/s²)	1000
Inertia (kg.m²)	0.00104
Wobble, Typical (Guaranteed)[1][2] (µrad)	±5.0 (±10)
Eccentricity, Typical (Guaranteed)[1] (µm)	±1.0 (±1.5)
MTBF (h)	20,000 with 5 kg load, 720 °/s speed and a duty cycle of 30%

1) *Shown are peak to peak, guaranteed specifications or ±half the value as sometimes shown. For the definition of typical specifications which are about 2X better than the guaranteed values, visit www.newport.com for the Motion Control Metrology Primer.*

2) *To obtain arcsec units, divide µrad value by 4.8.*

LOAD CHARACTERISTICS AND STIFFNESS



Cz,	Normal centered load capacity	100 N
Kα,	Transversal compliance	15 µrad/Nm
Mz,	Maximum torque	0.42 Nm @ 0 °/s
Jz,	Maximum Inertia	0.032 kg.m²
Q,	Off-center load (N)	Q ≤Cz ÷ (1 + D/35) and Q ≤(Jz - Jq)/D²
	Where D = Cantilever distance (mm) Jq = Inertia of payload	

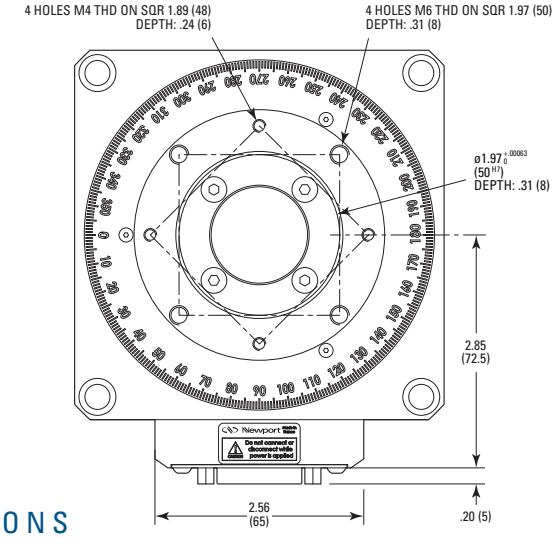
ORDERING INFORMATION

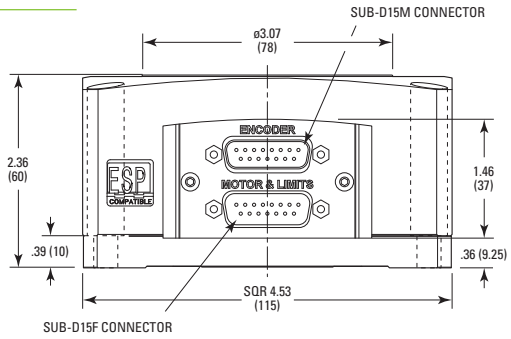
Model	Description
RGV100BL	High Speed 360° Rotation Stage, Brushless Direct, Ultra-Compact

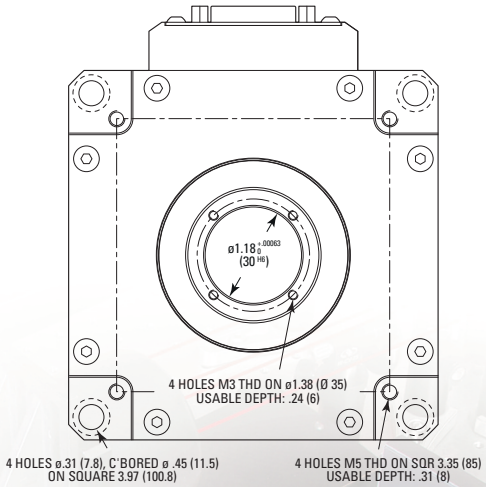
RECOMMENDED CONTROLLERS/DRIVERS

Model	Description
XPS-D	1- to 8-axis universal high-performance motion controller/driver
XPS-DRV11	Universal digital driver card for stepper, DC, brushless and direct motors
XPS-RL	1- to 4-axis universal high-performance motion controller/driver
XPS-DRV02	PWM drive module for brushless motors, 5 A/44 VPP max.

DIMENSIONS







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Newport Corporation, Irvine, California and Franklin, Massachusetts; Evry and Beaune-la-Rolande, France and Wuxi, China have all been certified compliant with ISO 9001 by the British Standards Institution. Santa Clara, California is DNV certified.

RGV100BL_DSE (02/18)

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