

# High Speed Compact Rotation Stages

PR50 Series

**mks** | Newport

The PR50 compact rotation stages are designed to rotate optical components up to 1 in. diameter, such as polarizers, wave plates, or wedges.

The PR50 stages are a cost-efficient alternative to the SR50 for applications that do not require the high-resolution and precision of the SR50, or for applications that could benefit from higher speeds up to 20°/s. The PR50 stages feature angular resolution of 0.01°, which may be achieved with either DC Servo or open-loop stepper motors in half-step mode. The stages are equipped with a hardware origin and allow for continuous rotation of 360°.



- Compact, low-profile rotation stage for 1 in. diameter optics
- Proprietary ball bearings for smooth motion with low wobble
- High speed or high resolution versions

## Vertical Mounting

The optional EQ45 bracket can be used for vertical mounting of a PR50.

## CONEX Controller Versions

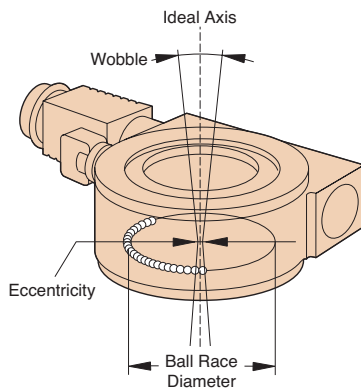
Versions of these stages integrated with a CONEX controller are also offered. The CONEX controller comes with a USB cable and a CONEX-PS-CB for daisy-chaining modules. Conex-PS power supply to be ordered separately.

## Proprietary Ball Bearing Design

The lightweight, low profile design incorporates an aluminum body with pre-loaded ball bearings. This proprietary ball bearing design provides smooth rotation with minimal wobble. A precision ground worm gear produces consistent driving torque to the rotating carriage and eliminates variations in motor current.

## Central Aperture

The central aperture is threaded 1.063-20 in. PR50 stages are shipped with two, same diameter retaining rings to allow mounting of any  $\varnothing 25.4$  mm diameter optics within the aperture. Four M3 holes allow custom top plates attachments.



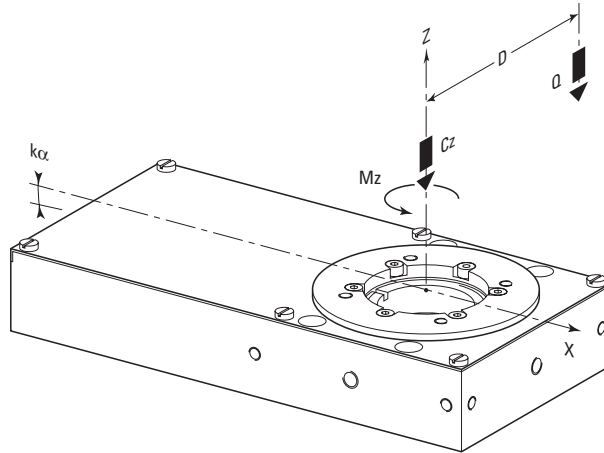
## Specifications

	PR50CC, PR50PP
Travel Range (°)	continuous
Minimum Incremental Motion (°)	0.02
Uni-directional Repeatability, Typical/ Guaranteed (°)	±0.005 / ±0.015
Bi-directional Repeatability, Typical/ Guaranteed <sup>(1)</sup> (°)	±0.030 / ±0.075
Accuracy, Typical / Guaranteed <sup>(1)</sup> (°)	±0.025 / ±0.05
Maximum Speed <sup>(2)</sup> (°/s)	20
Wobble <sup>(1)</sup> Typical/Guaranteed (μrad)	100 or ± 50
MTBF (h)	10,000
Weight (kg)	0.4

1) For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at [www.newport.com](http://www.newport.com)

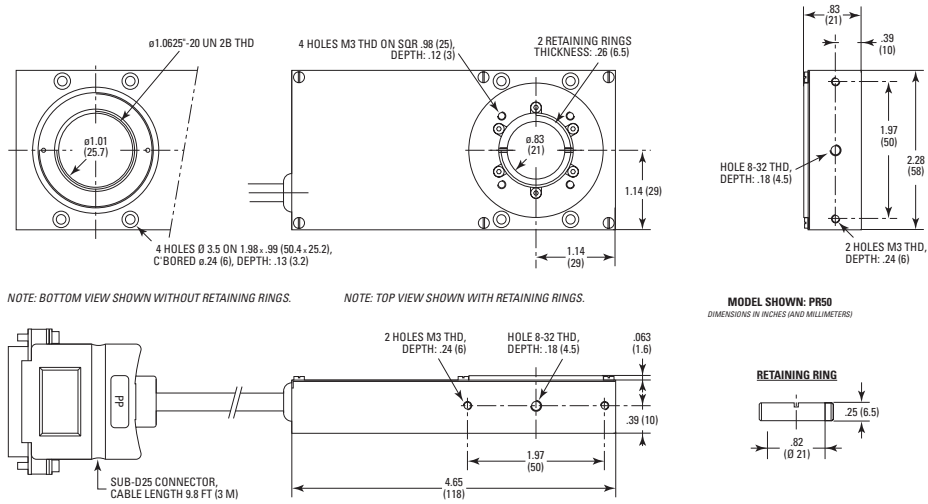
2) Max. speed for PR50PP when used with SMC100PP is 8 deg/sec.

## Load Characteristics



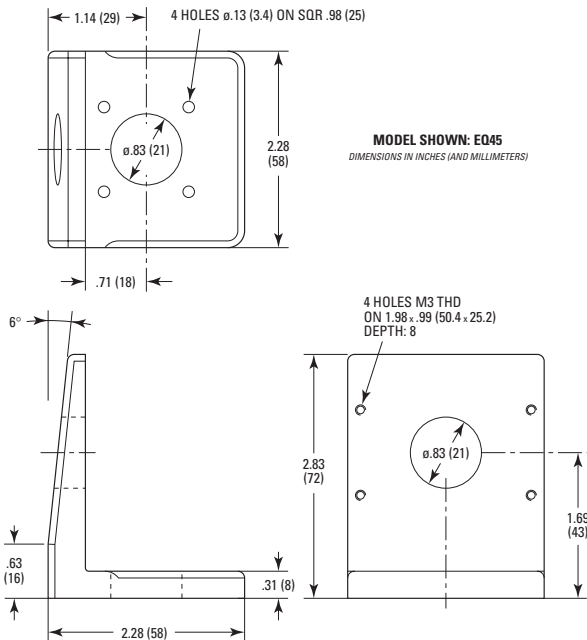
$C_z$ ,	Normal centered load capacity	10 N
$k_\alpha$ ,	Transversal compliance	100 $\mu\text{rad}/\text{Nm}$
$M_z$ ,	Nominal torque	$\pm 0.1 \text{ Nm}$
$Q$ ,	Off-center load (N)	$Q \leq C_z \div (1 + D/22)$
Where D = Cantilever distance (mm)		

## Dimensional Drawings



## Accessories

Model	Description
<b>EQ45</b>	Compact Rotation Stage, 360°, DC Servo Motor, PR Series



## Recommended Controllers/Drivers

Model	Description
<b>XPS-Dx</b>	1- to 8-axis universal high-performance motion controller/driver
<b>XPS-DRV11</b>	Universal digital driver card for stepper, DC and direct motors (required for PR50PP)
<b>XPS-DRV01*</b>	PWM Drive Module, DC and Stepper Motors (required for PR50CC)
<b>XPS-RLDx</b>	1- to 4-axis universal high-performance motion controller/driver
<b>ESP302-xN</b>	1- to 3-axis motion controller/driver
<b>SMC100CC</b>	Single-axis DC motor controller/driver

\* Plug XPS-DRV01 into slots other than slot 1.

## Ordering Information

Model	Description
<b>PR50CC</b>	Compact Rotation Stage, 360°, DC Servo Motor, PR Series
<b>PR50PP</b>	Compact Rotation Stage, 360°, Micro Step Drive Stepper, PR Series
<b>Conex-PR50CC</b>	PR50CC, integrated with Conex Controller
<b>Conex-PS</b>	Power supply, Conex