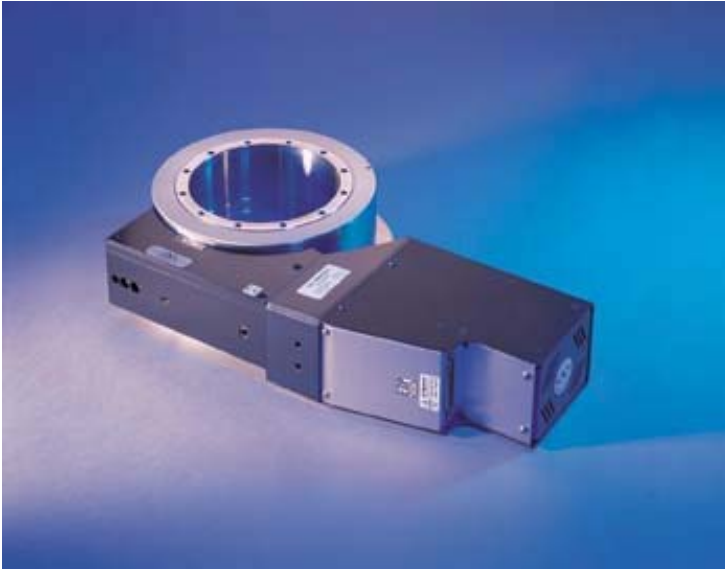


ROTARY OPTION RV-SERIES

www.laserdesign.com

The Leader in 3D Laser Scanning Since 1987



Precision Rotary Stages

- *High accuracy and reliable construction*
- *Excellent choice for semi-automated laser scanning applications*
- *RV-240 handles up to 900 lbs.*
- *Flexible design with various encoder and motor options*
- *Sine plate included with RV-120 model*

Laser Design offers a line of high precision rotary stages to meet varying customer needs. Unlike other laser scanners that utilize a time intensive, manual-scanning approach, Laser Design's rotary stages enable the scanning process to be automated. This unique capability allows the user to start the scan and move on to other tasks while the scanning and data stitching processes take place automatically and with greater accuracy than manual scanning.

These rotary stages provide high-precision angular positioning as well as high-load capacity and long-term durability. They are constructed of tool steel with a double row of preloaded ball bearings on hardened surfaces allowing for high off-center loads. The worm gear drive is precision ground and hardened to ensure precise rotation and long life.

The RV-120 rotary stage comes standard with a Sine Plate to enable positioning of the stage at a user-defined angle. It can handle centered loads of several hundred pounds and is also available with Laser Design's Flip Plate Fixture and Flip Plate Frame options for semi-automated scanning of lightweight small and medium-sized parts. Refer to the separate spec sheets on these items. Typical semi-automated scanning applications include cell phone covers and other similar plastic parts. The RV-240 is a larger stage model that can be used for extreme loads. The RV-240 handles centered loads of up to 900 pounds.

Both stages can be configured with either stepper or servo motors, and can also be outfitted with direct encoders for higher positional accuracy. When direct encoders are specified, the stages offer 340 degrees of rotation. When the worm mounted optical encoder is used, the stages offer full 360-degree rotation.

Featuring a full one-year parts and labor warranty, Laser Design's RV-Series of precision rotary stages is the ideal solution for automated and accurate laser scanning.



Sine Plate for RV-120

RV-Series Precision Rotary Stage Specifications

Design Details

Base Material	Stainless Steel
Bearings	Double row of ball bearings
Drive Mechanism	Ground worm gear with self compensating preload
Worm Gear Ratio	1:90
Feedback	Worm mounted rotary encoder, 4,000 pts/rev., Index pulse
Limit Switches	Optical, at $\pm 170^\circ$, can be disabled for continuous 360° rotation
Origin	Optical
Cable	3 m long cable included
MTBF (h)	20,000
Weight	RV-120: 14.3 lbs RV24035.3lbs

Specifications

Diameter (mm)	RV120: 120, RV240: 240	
Travel Range	360° continuous	With disabled limits,
	$\pm 170^\circ$	With limits enabled
Resolution	0.001°	
Uni-directional Repeatability	0.002°	
Reversal Value (Hysteresis)	0.002°	
Absolute Accuracy	0.010°	
Wobble 3-Point @ 120° Mounting (μrad)	30	RV-120
	25	RV-240
Wobble 5-Point Mounting on a Flat Plane <5 μm (μrad)	20	RV-120
	16	RV-240
Eccentricity (μm)	4	

Load Characteristics

	RV120	RV240
Cz (lbs [N])	404 [1800]	898 [4000]
a (in [mm])	1.57 [40]	2.75 [70]
Maximum Load ¹ (lbs[N]) @:		
0°	404 [1800]	898 [4000]
30°	323 [1440]	787 [3508]
45°	228 [1018]	556 [2481]
60°	186 [831]	454 [2025]
90°	161 [720]	393 [1754]

Calculating maximum off center loads:

For Horizontal loads (loads parallel to rotary axis), Q_H :
 $Q_H \leq Cz/[1+D/a]$ Where D is the off center distance in mm.

For Vertical loads (loads perpendicular to rotary axis), Q_V :
 $Q_V \leq Cz/[2x(1+D/a)]$ Where D is the off center distance from the surface plate of the rotary in mm.

¹ Assumes a load centered on the rotary axis, 4 inches above the surface plate of the rotary.