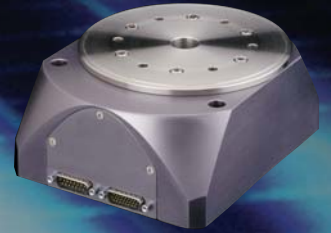




Rotary Series: **Direct Drive Precision Stages**

Bayside's Direct Drive Rotary Stages feature a robust construction and high performance in a compact package, providing smooth, near frictionless motion with zero backlash.





Performance Specifications

Model No.	Axial Capacity		Perpendicular Capacity @ Radius	Continuous Output Torque		Peak Output Torque		Maximum Output Speed ⁽¹⁾ (RPM)
	(kgf)	(lb)		(Nm)	(in lb)	(Nm)	(in lb)	
R100D	75	165.3	20kgf @ 50mm	0.65	5.75	1.96	17.34	700
R150D	150	330.6	75kgf @ 75mm	4.00	35.4	12.00	106.2	500
R200D	250	551.1	150kgf @ 100mm	7.00	61.95	21.00	185.85	300

Model No.	Radial Runout @ ϕH (microns)	Axial Runout @ ϕK (microns)	Wobble @ Axis of Rotation (arc sec)	Inertia		Stage Weight	
				(gm cm sec ²)	(oz in sec ²)	(kg)	(lb)
R100D	20	18	60	14.2	0.197	2.2	4.85
R150D	26	23	45	86.4	1.200	5.8	12.79
R200D	36	30	30	338.0	4.695	10.5	23.15

Encoder Data

Model No.	R100D	R150D	R200D
Total Number of counts/rev ⁽²⁾	473,600	629,760	944,000
Frequency at Max Speed ⁽²⁾ (MHz)	5.5	5.2	4.7
Resolution after x4 (arc sec)	2.73	2.05	1.3728
Repeatability after x4 (arc sec) ⁽³⁾	± 8.4	± 6.15	± 4.1

(1) Maximum speed may be limited by input frequency response of controller or drive.

(2) Post quadrature (includes 10x interpolation and 4x of control)

(3) Typical system repeatability that can be achieved by a closed loop control system.

Motor Specifications

Model No.	Voltage Constant K_{EL-L} (V/kRPM)	Torque Constant K_{TL-L}		Resistance R_{L-L} (ohms@ 25°C)	Inductance L_{L-L} (mH)	Thermal Resistance (°C/W)
		(Nm/amp)	(in lb/amp)			
R100D	75	0.72	6.37	59.9	50	2.0
R150D	210	2	17.7	11.4	14	2.0
R200D	325	3.1	27.4	10.4	21	2.0

Model No.	Rated Voltage (V)	I _{cont} (amps)	I _{peak} (amps)	Logic Voltage (V/amp)	Pole Count
R100D	300	0.9	2.72	5 V @ 170 ma	12
R150D	300	2.0	6.0	5 V @ 170 ma	20
R200D	300	2.0	6.0	5 V @ 170 ma	32



▶ **Rotary Series:** **Direct Drive Precision Stages**

When to Use:

- ▶ Precision rotary motion
- ▶ ZERO backlash
- ▶ Compact
- ▶ Rugged

Applications:

- ▶ Electronic assembly
- ▶ Fiber Optics
- ▶ Medical
- ▶ Packaging
- ▶ Pharmaceutical
- ▶ Robotics
- ▶ Semiconductor

High Performance in a Compact Package

Bayside's Direct Drive Rotary Stage, featuring an integral brushless DC servomotor, has several distinct advantages over traditional worm gear-driven stages. The elimination of the worm gearing offers the ability to reduce wear with zero backlash while exhibiting near frictionless motion.

Its high positioning accuracy, solely based on the stage's encoder, provides repeatability within ± 2 encoder counts, with resolutions ranging to 0.5 arc seconds. The RD Direct Drive features speeds up to 700 RPM with significant torque capability.

2

Rotor / Shaft

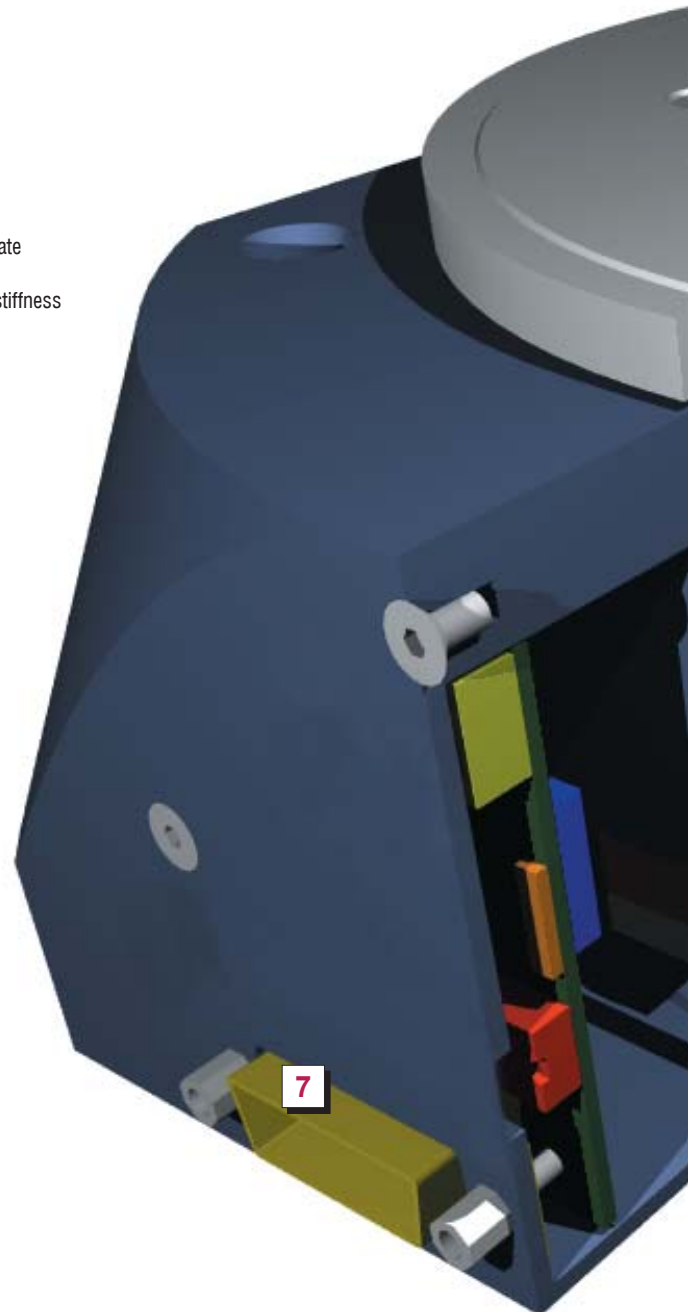
motor rotor and top plate
shaft as one piece
construction for high stiffness

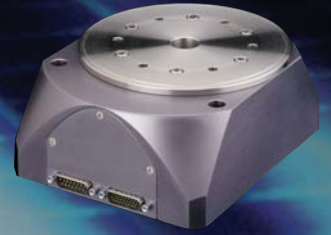
1

Robust bearing design

for high load capacity

7





3

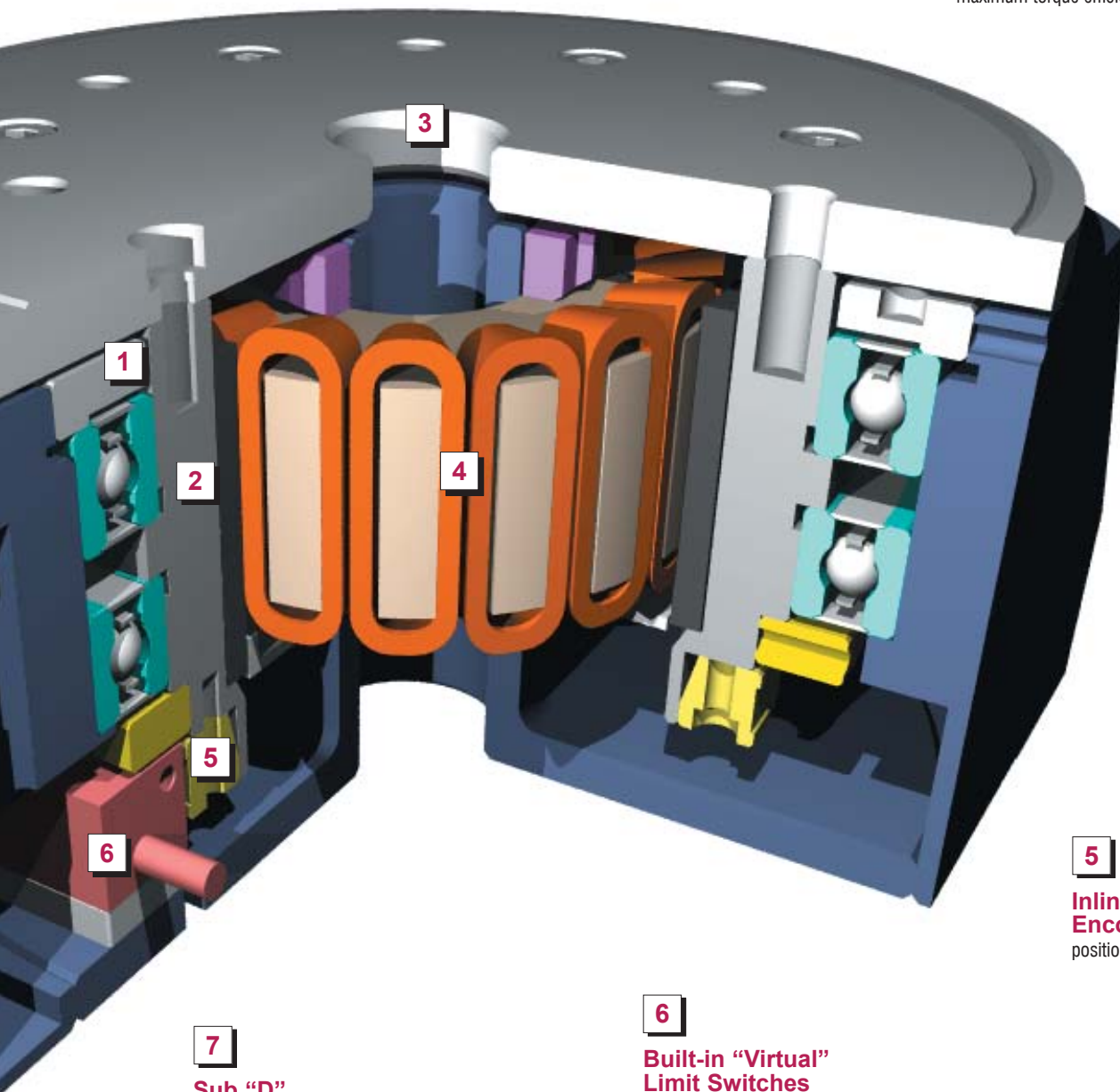
Stainless Steel Top Plate

precision ground for accurate mounting

4

Integrated Brushless Motor

unique design with high copper slot and rare earth magnet for maximum torque efficiency



Linear & Rotary Positioning Stages

5

Inline Rotary Encoder for direct position feedback

6

Built-in "Virtual" Limit Switches

for high positioning accuracy

7

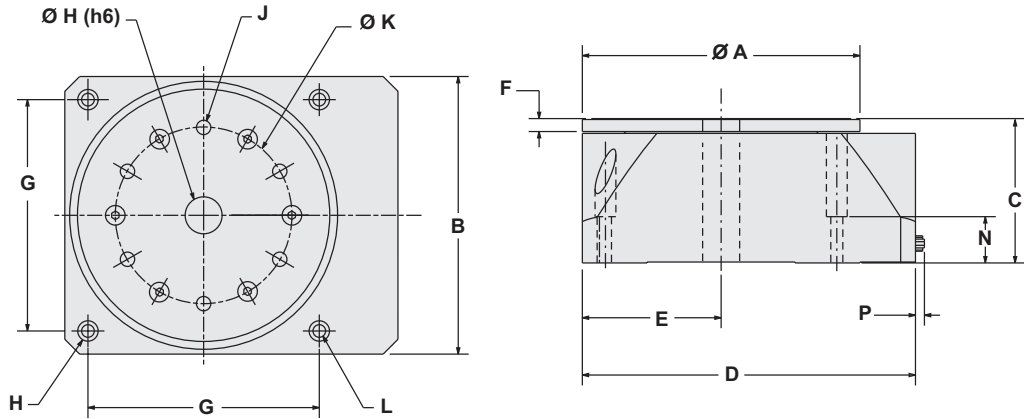
Sub "D" connectors

for "plug & play" operation and easy hook-up.



Rotary Series: Direct Drive Precision Stages

Dimensions

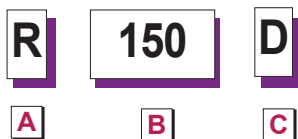


Model No.	A		B		C		D		E		F		G	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
R100D	100	3.94	100	3.94	75	2.95	130	5.12	50	1.96	5	0.196	85	3.34
R150D	150	5.9	150	5.9	78	3.07	180	7.08	75	2.95	7	0.275	125	4.92
R200D	200	7.87	200	7.87	100	3.94	230	9.05	100	3.94	10	0.393	160	6.29

Model No.	H		J	K		L		M		N		P	
	(mm)	(in)	Tap	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
R100D	20	0.787	M5	60	2.36	5.5	0.216	9.5	0.374	25	0.984	5	0.196
R150D	20	0.787	M6	95	3.74	6.5	0.255	11.2	0.440	25	0.984	5	0.196
R200D	30	1.18	M8	125	4.92	8.5	0.334	14.0	0.551	25	0.984	5	0.196

Rotary Series: Direct Drive Precision Stages How to Order

Order
Numbering
Example:



A	STAGE SERIES
	R Direct Drive Rotary

B	MODEL
	100 100 mm
	150 150 mm
	200 200 mm

C	DRIVE
	D Direct Drive

Linear & Rotary
Positioning Stages

Cable Options:

Mating Power Cable

Part Number	Length	Used With
10963018	3 meters	Flying Leads/i-Drive
10963067	8 meters	Flying Leads/i-Drive

Mating Sensor Cable

Part Number	Length	Used With
10963241-3000	3 meters	Flying Leads
10963240-3000	3 meters	i-Drive
10963241-8000	8 meters	Flying Leads
10963240-8000	8 meters	i-Drive
10963136		i-Drive / Controller

(1) NOTE: When an external controller is used in a closed loop mode an additional sensor cable, part number 10963136, is required.

Specifications are subject to change without notice.

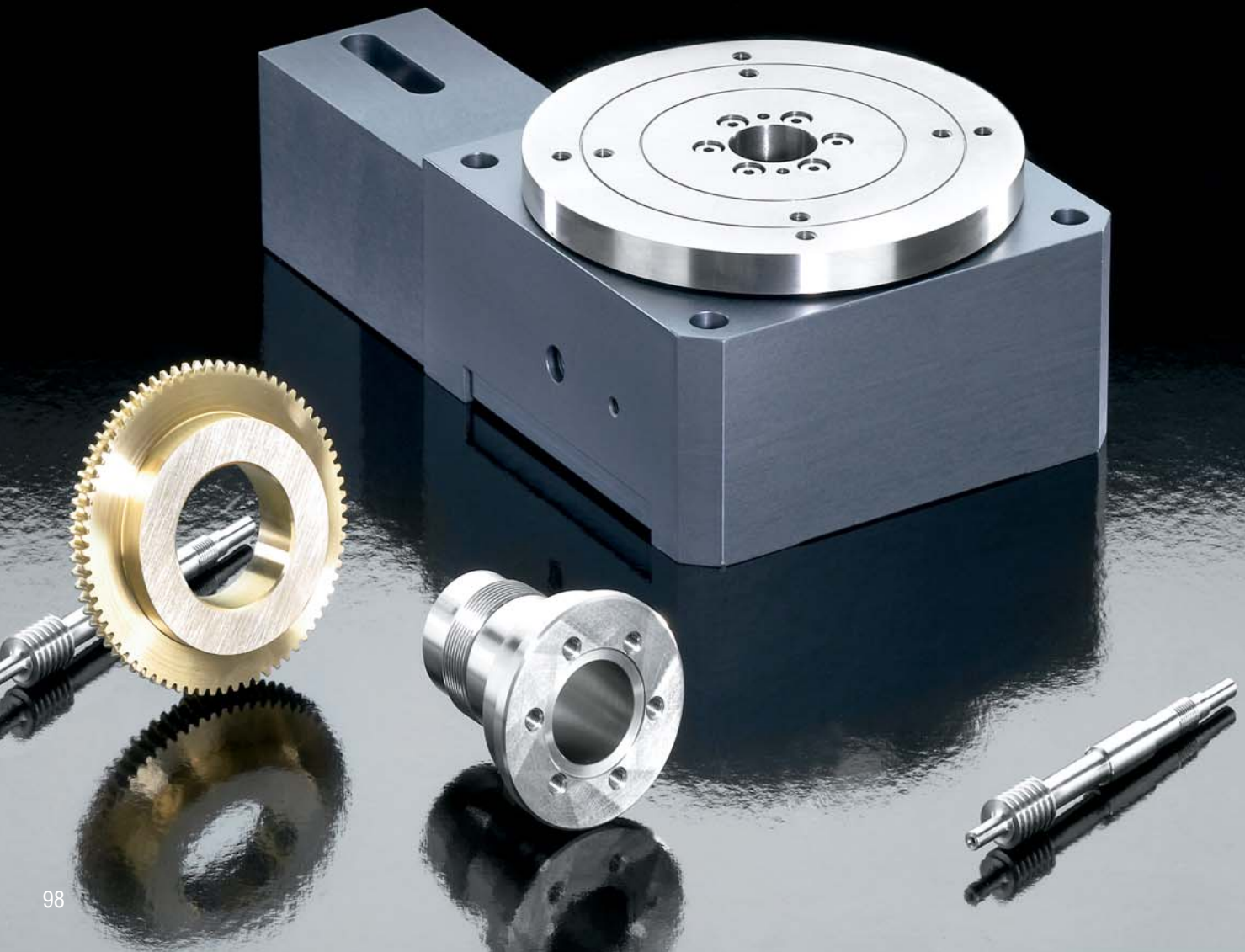
How to Order

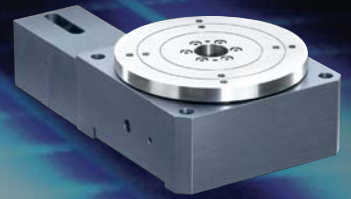
Direct Drive Rotary Stages are supported by a worldwide network of offices and local distributors. Call **1-800-305-4555** for application engineering assistance or for the name of your local distributor. Information can also be obtained at www.baysidemotion.com.



Rotary Series: **Worm Drive Precision Stages**

- ▶ Unique self-compensating preload to limit backlash
- ▶ Solid or thru bore construction
- ▶ Robust bearing design for high-load capacity
- ▶ Built-in limit switches
- ▶ Aluminum construction with stainless steel top plate





Performance Specifications

Model No.	Axial Capacity		Perpendicular Capacity			
			@ 25mm		@ 150mm	
	(kg)	(lb)	(kgf)	(lb)	(kgf)	(lb)
R100M	100	220	22	48	7	15
R150M	400	880	88	194	33	73
R200M	600	1,320	200	440	85	187
R300M	1,000	2,220	325	715	160	352

Model No.	Worm Gear Ratio	Gearing Backlash ⁽¹⁾ (arc sec)	Peak Output Torque @100RPM Input		Peak Output Speed (RPM)	Weight		Inertia	
			(Nm)	(in lb)		(kgf)	(lbf)	(gm cm sec ²)	(oz in sec ²)
R100M	60:1	2	8	70.8	30	2.3	5.0	0.0057	0.0000784
R150M	72:1	2	25	221	30	6.0	13.0	0.055	0.00076
R200M	72:1	2	55	487	30	15.0	33.0	0.148	0.00210
R300M	90:1	2	75	664	30	35.0	77.0	0.368	0.00516

Linear & Rotary Positioning Stages

Accuracy Specifications⁽²⁾

Model No.	Main Bearing Runout (microns)	Top to Base Parallelism (microns)	Position ⁽³⁾ Accuracy (arc min)	Position ⁽³⁾ Repeatability (arc sec)	Input Torque Required	
					(Nm)	(in oz)
R100M	±5	±12	2	12	0.07	20
R150M	±5	±12	2	12	0.14	20
R200M	±7	±17	2	12	0.14	20
R300M	±10	±25	2	12	0.21	30

(1) Gearing backlash is uni-directional.

(2) Accuracy is based on stage mounted to a flat granite surface and measured at 25mm above the center of the stage.

(3) Accuracy and repeatability are based on open loop lead accuracy and can be enhanced with encoder feedback.



Rotary Series: Worm Drive Precision Stages

When to Use:

- ▶ High accuracy
- ▶ High loads
- ▶ Compact
- ▶ High stiffness

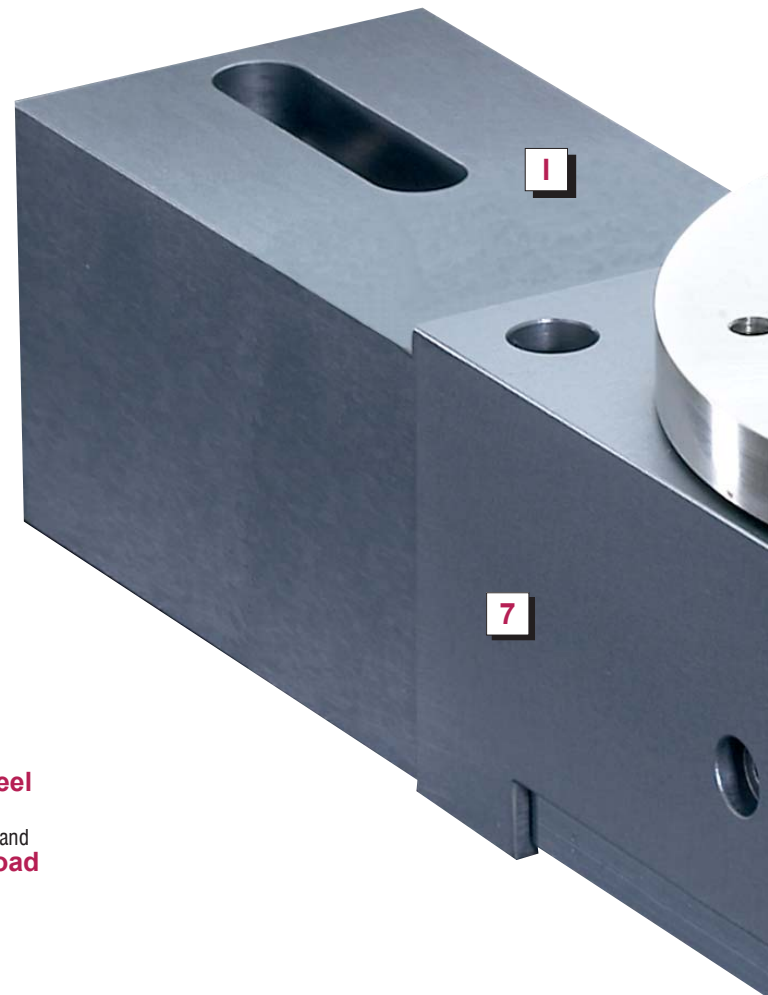
Applications:

- ▶ Electronic assembly
- ▶ Fiber Optics
- ▶ Medical
- ▶ Packaging
- ▶ Pharmaceutical
- ▶ Robotics
- ▶ Semiconductor

The Rotary Stage Series offers an unparalleled combination of high accuracy and high-load capacity.

These rotary stages utilize a precision worm gear with the worm “flexed” against the gear to ensure a proper mesh. This feature provides high repeatability with very smooth operation.

Additionally, the rotary stages incorporate an oversized preloaded crossed roller bearing, offering exceptional stiffness and load capacity.

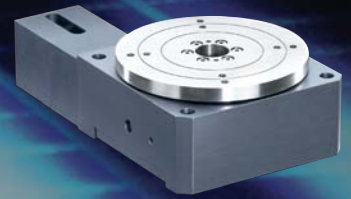


7

**Heavy Duty Stainless Steel
Worm with Bronze Gear**
for smooth operation and high torque and
Self-Compensating Preload
for zero backlash

6

**Completely Sealed
and Lubricated**
for long life even in harsh environments



1

Motor Mounting and Coupling
for easy installation

2

Integral Limit Switch
mounted under top plate for safety

3

Preloaded Crossed Roller Bearings
for high loads and spindle stiffness



2

3

4

5

6

Linear & Rotary
Positioning Stages

4

Stainless Steel Top Plate
with solid or through hole construction

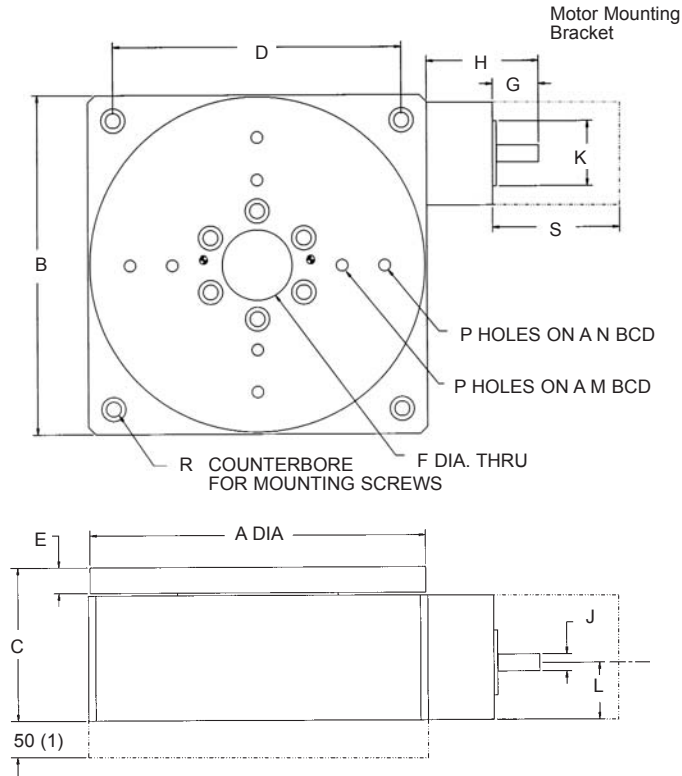
5

Optional Inline Rotary Encoder
for direct position feedback



Rotary Series: Worm Drive Precision Stages

Dimensions



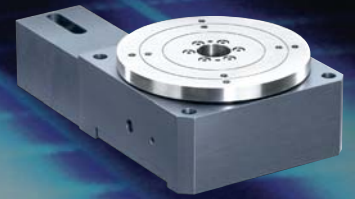
(1) This dimension is used when the in-line encoder option is selected.

Model No.	A		B		C		D		E	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
R100M	98.5	3.88	100	3.94	55	2.16	85	3.35	8	0.32
R150M	147.6	5.81	150	5.90	75	2.95	125	4.92	11	0.43
R200M	197.7	7.78	200	7.87	90	3.54	170	6.70	15	0.59
R300M	297.7	11.72	300	11.81	108	4.25	270	10.63	16	0.63

Model No.	F		G		H		J		K	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
R100M	12	0.47	15	0.59	45	1.77	5	0.197	18	0.709
R150M	25.5	1.00	27	1.06	66	2.60	10	0.394	38.1	1.50
R200M	38	1.50	27	1.06	66	2.60	10	0.394	38.1	1.50
R300M	51	2.00	39	1.53	113	4.45	12	0.472	73	2.875

Model No.	L		M		N		P	R	S		Stage Weight	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	Tap	C'Bore	(mm)	(in)	(kg)	(lb)
R100M	21	0.83	45	1.772	75	2.953	M5 x 0.8	M5	38.1	1.50	1.8	3.97
R150M	30.1	1.18	100	3.937	125	4.921	M6 x 1	M6	60.2	2.37	5	11
R200M	33.5	1.32	100	3.937	150	5.905	M8 x 1.25	M8	60.2	2.37	13	28.66
R300M	44.2	1.74	150	5.905	250	9.843	M8 x 1.25	M8	73.1	2.88	29	63.93

Rotary Series: Worm Drive Precision Stages How to Order



Order
Numbering
Example:

R **150** **M** **3** **2** **2** **1** **2**
A **B** **C** **D** **E** **F** **G** **H**

A	STAGE SERIES
R	Worm Gear Rotary Series

B	METRIC SQUARE WIDTH
100	100mm
150	150mm
200	200mm
300	300mm

C	DRIVE
M	Separate Motor

D	GEAR RATIO
2	60:1 (R100)
3	72:1 (R150 and R200)
4	90:1 (R300)

E	MOTOR MOUNTING
2	NEMA 23 (150, 200)
3	NEMA 34 (300)
4	NEMA 17 (100)

F	LIMIT SWITCHES
1	None
2	End of Travel
3	End of Travel and Home

G	ENCODER IN LINE WITH TOP PLATE
1	None
3	2000 LPR

H	ENVIRONMENT
1	Standard
2	Clean Room

Linear & Rotary
Positioning Stages

Specifications are subject to change without notice.

How to Order

Bayside's Rotary Series is supported by a worldwide network of offices and local distributors.

Call **1-800-305-4555** for application engineering assistance and the name of the local distributor or Bayside office nearest you.

Visit us online at www.baysidemotion.com for product information.