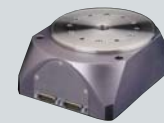


Rotary Series: Direct Drive Precision Stages



Parker 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	6.2	54.80	18.60	164.40	300

Model No. @ øH	Radial Runout @ øk	Axial Runout of Rotation	Wobble @ Axis	Inertia		Stage Weight	
	(microns)	(microns)	(arc sec)	(gm cm sec ²)	(oz in sec ²)	(kg)	(lb)
R100D	20	18	60	14.2	0.197	2.24	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 $K_{E(L-L)}$ (V/kRPM)	Torque Constant $K_{T(L-L)}$		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

Direct Drive Precision Stages

High Performance in a Compact Package

Parker 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 1.4 arc seconds. The RD Direct Drive features speeds up to 700 RPM with significant torque capability.

When to Use:

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

Applications:

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

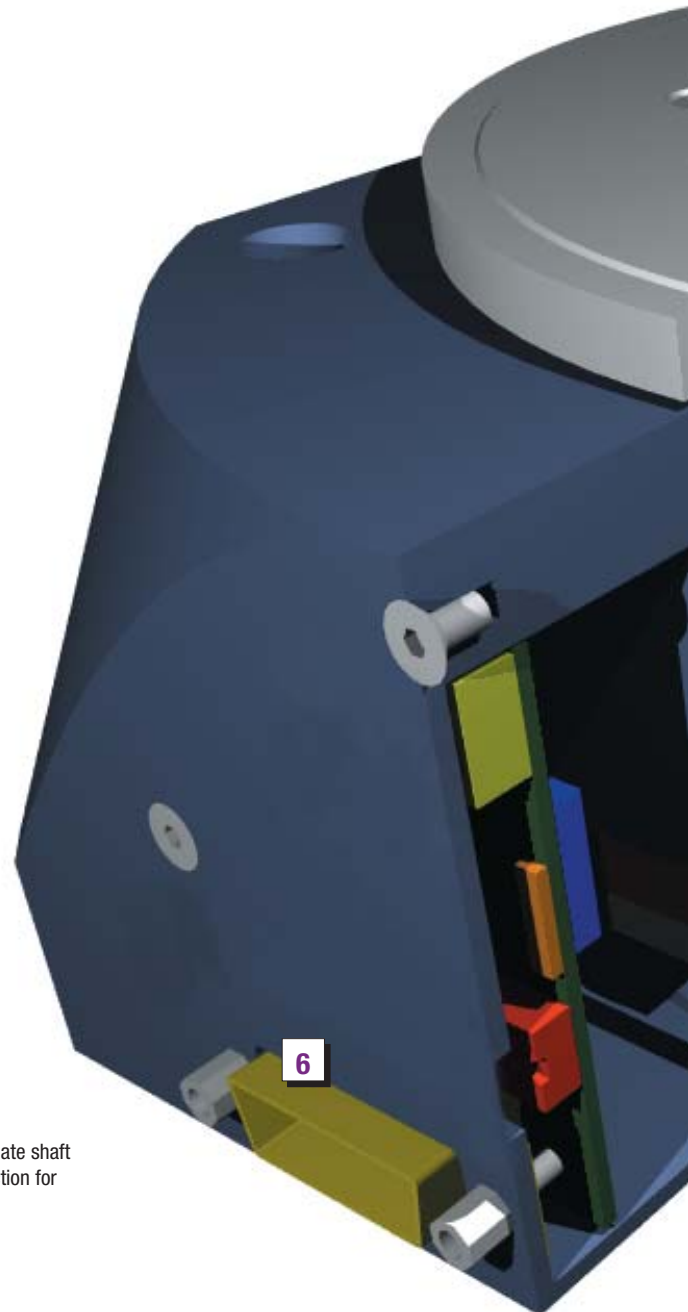
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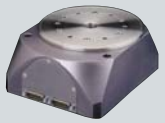
Robust bearing design
for high load capacity

2

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

6





3

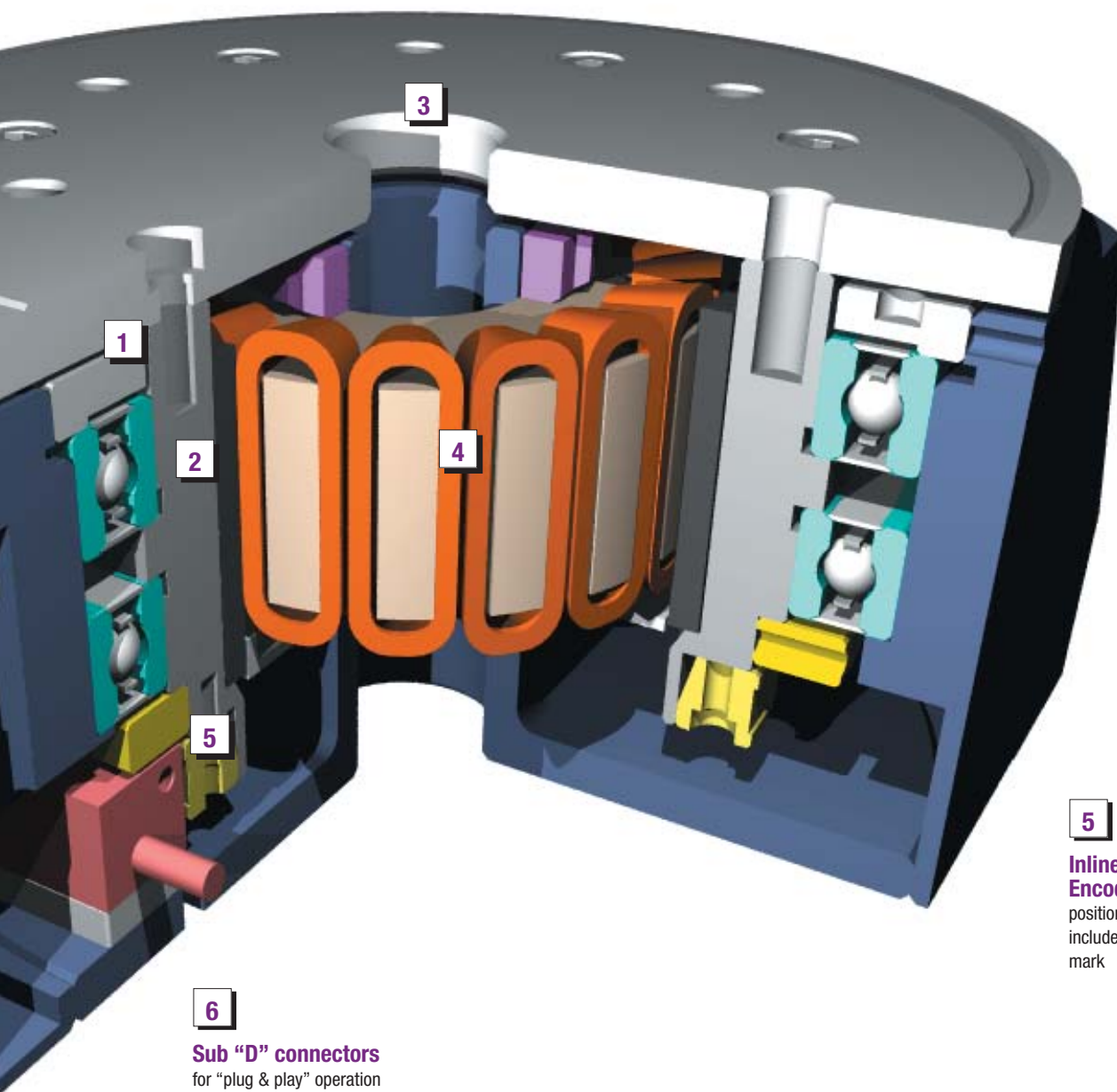
Stainless Steel Top Plate

precision ground for accurate mounting

4

Integrated Brushless Motor

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



5

Inline Rotary Encoder

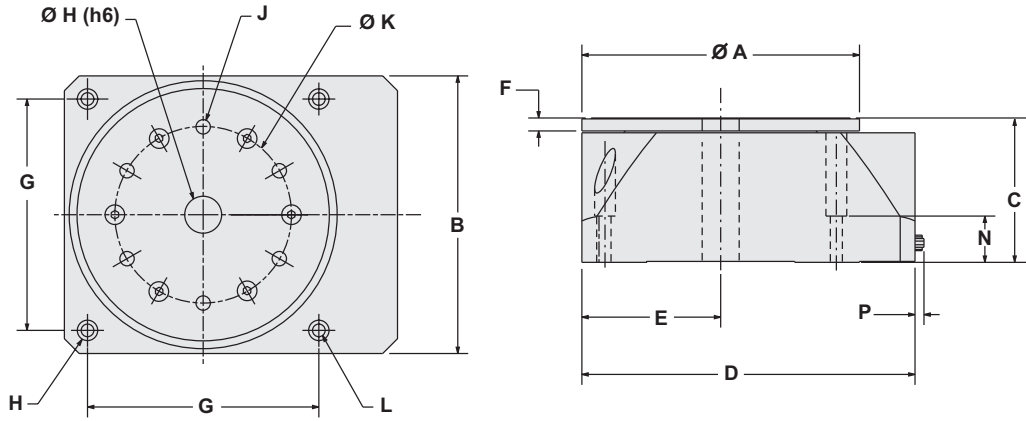
for direct position feedback. Also includes once per rev index mark

6

Sub “D” connectors

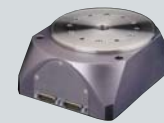
for “plug & play” operation and easy hook-up.

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



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

Cable Options:

Mating Power Cable

Part Number	Length	Used With
10963018-3000	3 meters	Flying Leads
10963018-8000	8 meters	Flying Leads

Mating Sensor Cable

Part Number	Length	Used With
10963241-3000	3 meters	Flying Leads

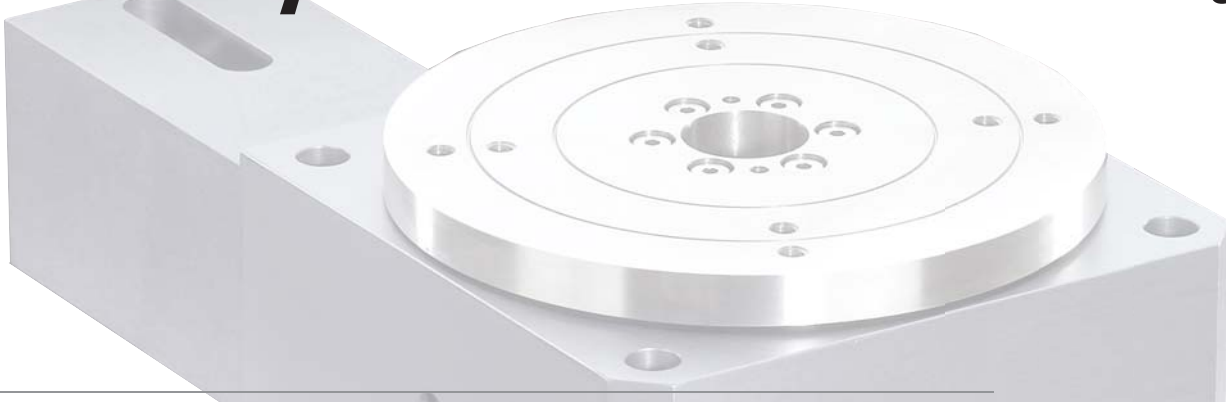
“Only for use with stage versions without LC display and programmable limits/outputs 5v requirement and Y-cable limits branch of previous cable type”

How to Order

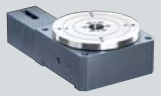
Direct Drive Rotary Stages are supported by a worldwide network of offices and local distributors.
Call **1-800-305-4555** for application engineering assistance or for the name of your local distributor.
Information can also be obtained at www.baysidemotion.com or www.parkermotion.com.

Specifications are subject to change without notice.

Rotary Series: Worm Drive Precision Stages



Parker Bayside's Worm Drive Precision Stages feature a unique self-compensating preload to limit backlash, solid or tough-bore construction, and built-in limit switches.



Performance Specifications

Model No.	Axial Capacity		Perpendicular Capacity			
	(kg)	(lb)	@ 25mm		@ 150mm	
			(kgf)	(lb)	(kgf)	(lb)
R100M	100	220	22	48	7	15
R150M	400	880	88	194	33	73
R200M ⁴	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 ⁴	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

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 ⁴	±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.

(4) See 200 RT Series page 90.

Worm Drive Precision Stages

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.

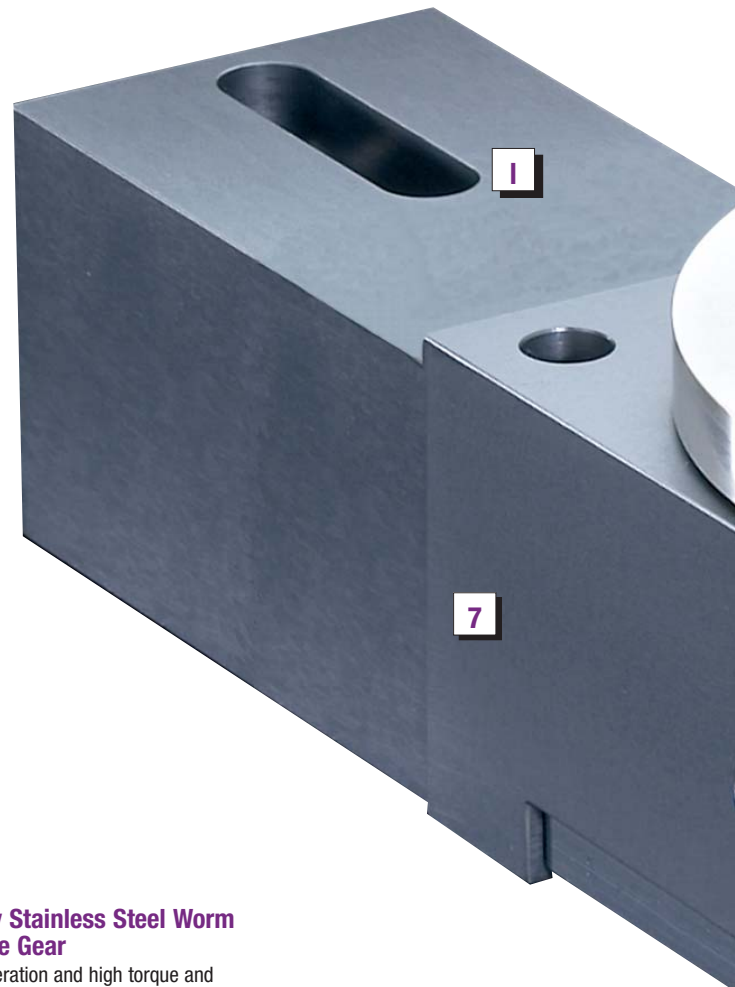
- ▶ Unique self-compensating preload to limit backlash
- ▶ Solid or thru bore construction
- ▶ Robust bearing design for high-load capacity
- ▶ Built-in limit switches
- ▶ Aluminum construction with stainless steel top plate

When to Use:

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

Applications:

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



7

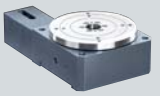
Heavy Duty Stainless Steel Worm with Bronze Gear

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

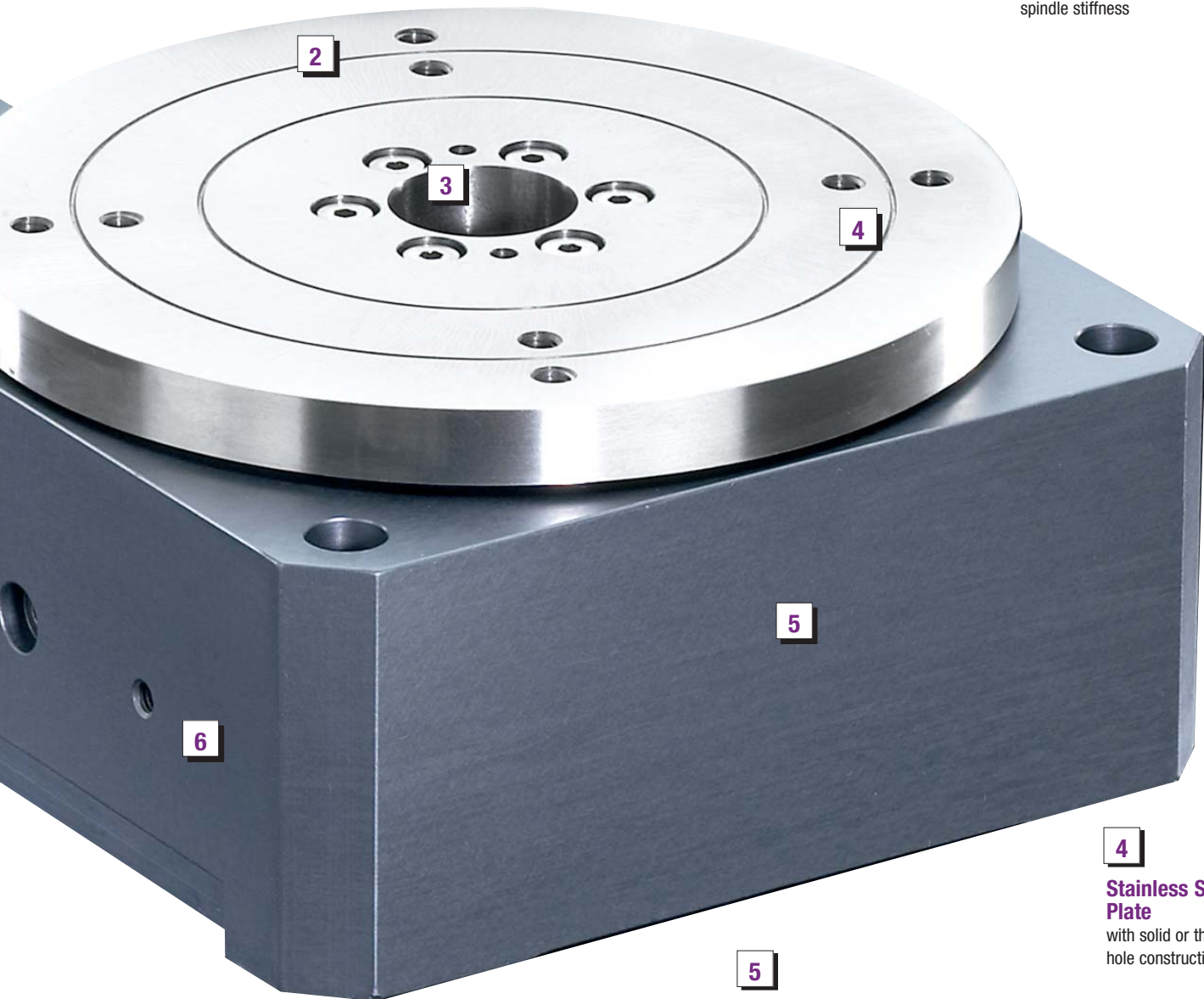
Integral Limit Switches

mounted under top plate for safety

3

Preloaded Crossed Roller Bearings

for high loads and spindle stiffness



2

3

4

5

6

4

Stainless Steel Top Plate

with solid or through hole construction

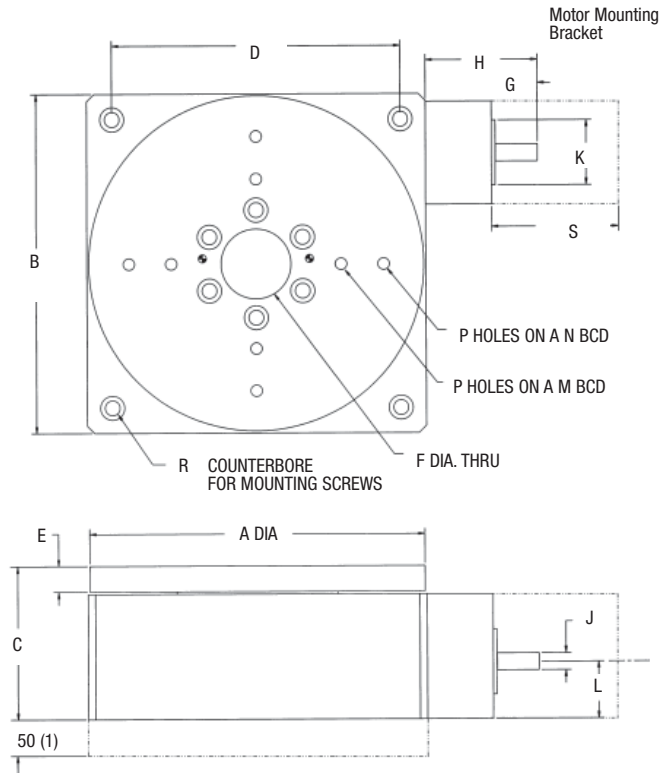
5

Optional Inline Rotary Encoder

for direct position feedback

Rotary Series

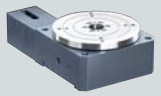
Dimensions



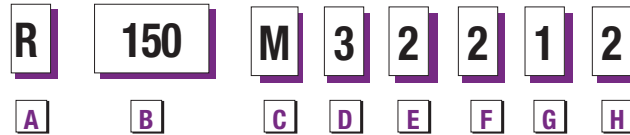
Model No.	A		B		C		D		E	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
R100M	98.5	3.88	100	3.94	55	2.16	85	3.35	8	0.32
R150M	147.6	5.81	150	5.90	75	2.95	125	4.92	11	0.43
R200M	197.7	7.78	200	7.87	90	3.54	170	6.70	15	0.59
R300M	297.7	11.72	300	11.81	108	4.25	270	10.63	16	0.63

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



Order Numbering
Example:



A	STAGE SERIES
R	Worm Gear Rotary Series

E	MOTOR MOUNTING
X	See how to order step 2

B	METRIC SQUARE WIDTH
100	100mm
150	150mm
200¹	200mm
300	300mm

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

C	DRIVE
M	Separate Motor

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

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

H	ENVIRONMENT
1	Standard
2	Clean Room

(1) See page 90 for 200RT series and page 127 for manual driven rotary positioning stages

How to Order

1. Pick features and options above.
2. Specify motor, make and model for mounting kit.

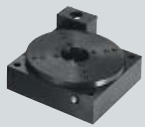
Parker Bayside's Rotary Series is supported by a worldwide network of offices and local distributors. Call **1-800-305-4555** for application engineering assistance and the name of the local distributor or Parker Bayside office nearest you. Visit us online at www.baysidemotion.com or www.parkermotion.com for product information.

Specifications are subject to change without notice.

200 RT Series: Rotary Tables



- High repeatable indexing (12 arc sec.)
- Load capacities to 200 lbs
- 360 degrees travel
- Performance tested worm gear drive
- Selectable table sizes and drive ratio
- Dual race angular contact support bearing



200 RT Series: Overview

Quality Design and Construction

The 200RT Series Rotary Tables are designed for precise motor-driven rotary positioning and indexing. These tables are designed to function independently or in conjunction with linear tables used in high precision and precision automation applications. Their low-profile design minimizes stack height in multi-axis configurations and enables them to fit in many places where other motorized rotary devices cannot.

Models are available in 5, 6, 8, 10, or 12 inch diameters and are offered with four gear ratios making it convenient to match size, speed, and load requirements. They can be selected in either English or Metric mounting. They are

found in virtually all industries where intermittent part indexing, part scanning, skew adjustment, or precise angular alignment is required.

At the heart of these tables is a rugged main support bearing which is comprised of two preloaded angular contact bearing races. It is designed for high load capacity and smooth, flat rotary motion. The drive is a precision worm gear assembly that is preloaded to remove backlash. The top and base are constructed of high quality aluminum with an attractive black anodized finish. The top and bottom mounting surfaces are precision ground to assure flatness.

200RT Series Characteristics

Common Characteristics	Units	Precision	Standard
Performance			
Positional Repeatability (unidirectional)	arc min	0.2	0.5
Duty Cycle	%	50	50
Table Runout (Max.)	in (µm)	±0.001 (±25)	±0.003 (±75)
Concentricity	in (µm)	±0.001 (±25)	±0.005 (±127)
Wobble	arc sec.	30	60
Input Velocity (Max.)	revs./sec.	15	15

Travel Dependent Characteristics

Table Diameter inches	Drive Ratio	Load Capacity lbs. (kgf)	Accuracy		Output Torque in-lb (N-m)	Inertia 10 ⁻³ oz-in.-sec ² (10 ⁻⁶ kg-m-sec ²)	Input Breakaway Torque (max) oz-in (N-m)	Running Torque (max) oz-in (N-m)	Weight	
			Prec. arc min	Std.					Std. Top lb (kgf)	Total lb (kgf)
5.0	180:1	25 (11)	3	10	25 (2.8)	0.14 (0.102)	22 (0.16)	20 (0.13)	0.67 (0.3)	6.0 (2.7)
5.0	90:1	25 (11)	3	10	25 (2.8)	0.15 (0.112)	22 (0.16)	20 (0.13)	0.67 (0.3)	6.0 (2.7)
5.0	36:1	70 (32)	5	12	25 (2.8)	0.24 (0.173)	22 (0.16)	20 (0.13)	0.67 (0.3)	6.0 (3.6)
6.0	180:1	150 (68)	3	10	40 (4.5)	0.16 (0.112)	22 (0.16)	20 (0.13)	0.91 (0.42)	8.0 (2.7)
6.0	90:1	150 (68)	3	10	40 (4.5)	0.20 (0.132)	22 (0.16)	20 (0.13)	0.91 (0.42)	8.0 (3.6)
6.0	45:1	150 (68)	5	12	40 (4.5)	0.29 (0.204)	22 (0.16)	20 (0.13)	0.91 (0.42)	8.0 (3.6)
8.0	180:1	150 (68)	3	10	40 (4.5)	0.24 (0.163)	28 (0.19)	25 (0.18)	2.23 (1.01)	15.0 (6.8)
8.0	90:1	150 (68)	3	10	40 (4.5)	0.66 (0.459)	28 (0.19)	25 (0.18)	2.23 (1.01)	15.0 (6.8)
8.0	36:1	150 (68)	5	12	40 (4.5)	0.90 (0.642)	28 (0.19)	25 (0.18)	2.30 (1.05)	15.0 (6.8)
10.0	180:1	200 (90)	3	10	190 (21.5)	0.74 (0.530)	33 (0.22)	30 (0.21)	5.26 (2.30)	29.0 (13.1)
10.0	90:1	200 (90)	3	10	190 (21.5)	1.02 (0.734)	33 (0.22)	30 (0.21)	5.26 (2.30)	29.0 (13.1)
10.0	45:1	200 (90)	5	12	190 (21.5)	2.13 (1.53)	33 (0.22)	30 (0.21)	5.26 (2.30)	29.0 (13.1)
12.0	180:1	200 (90)	3	10	190 (21.5)	0.99 (0.713)	33 (0.22)	30 (0.21)	7.67 (3.49)	32.0 (14.5)
12.0	90:1	200 (90)	3	10	190 (21.5)	1.59 (1.12)	33 (0.22)	30 (0.21)	7.67 (3.49)	32.0 (14.5)
12.0	45:1	200 (90)	5	12	190 (21.5)	3.83 (2.75)	33 (0.22)	30 (0.21)	7.67 (3.49)	32.0 (14.5)

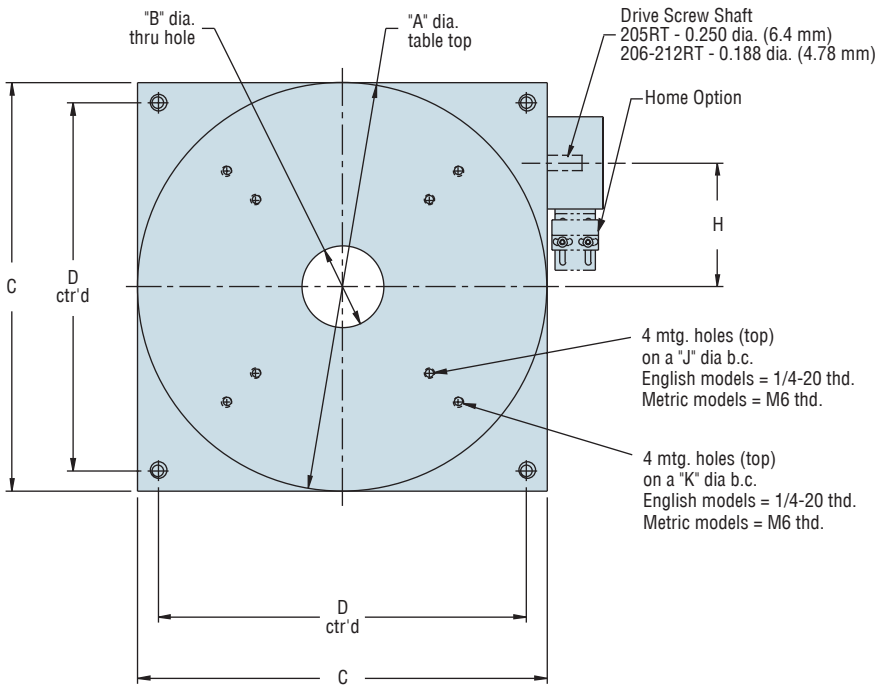
NOTE: For moment load calculations, refer to the technical section of Parker's web site www.parkermotion.com

Rotary Encoder Option:

High resolution, high accuracy ring encoders can be mounted to the base of the rotary table. The encoder is coupled directly to the rotary table top, providing positional feedback with no drive train errors. 314,880 or 3,148,800 post quadrature counts per revolution are available, and an encoder housing is included to enclose and protect the encoder.

Rotary Series

Dimensions inch (mm)



Options:

Motor Couplings

A wide range of coupling styles and bores are available to match motor requirements. Bellows-style couplings, offering the lowest windup are required for all precision grade tables, while the aluminum and stainless steel helix couplers offer good windup characteristics and high durability at a lower cost.

Motor Mounts

The motor mount is designed for an industry standard NEMA 23 motor flange and a maximum shaft length of 0.85".

Home Sensor

The Home sensor provides a fixed reference point to which the table can always return. This is a mechanical reed switch which is mounted to the body of the rotary table and is activated by a magnet imbedded on the table top.

Rotary Encoders

High accuracy rotary encoders can be added for direct positional feedback of the table top position.

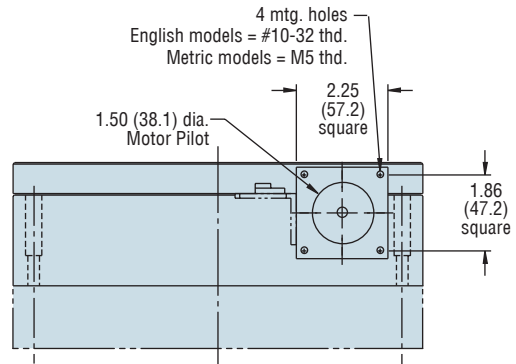
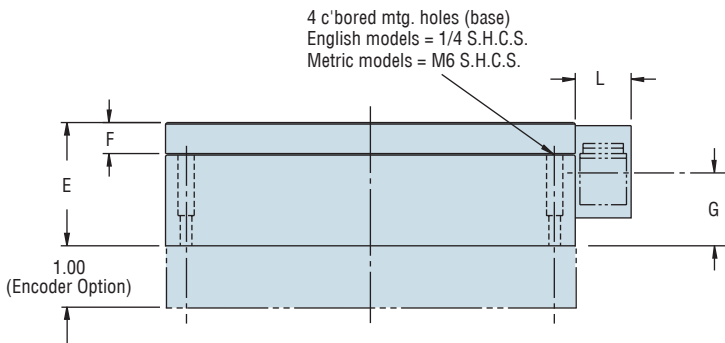
Seals

Custom designed sealed units are offered to prevent excessive wear or internal damage resulting from dust and contaminants.

Motors, Drives & Controls

Micro-step motors with drives are available for direct mounting to the rotary tables. Motion controllers can also be added to provide systems with seamless connectivity.

NOTE: Refer to www.parkermotion.com or contact a Parker applications engineer for additional detailed information pertaining to any of these options or accessories.



	A	B	C	D	E		F		G	H	J	K	L	M
					Std. (T2)	Option (T3)	Std. (T2)	Option (T3)						
English	5.0	1.0	5.0	4.0	1.8	2.42	0.38	1.00	1.11	1.66	3.0	4.0	1.38	0.188
	6.0	1.75	6.0	5.0	2.0	2.62	0.38	1.00	1.23	2.04	4.0	5.0	1.38	0.250
	8.0	1.75*	8.0	6.0	2.5	3.00	0.50	1.00	1.57	2.04	4.0	6.0	1.38	0.250
	10.0	2.0	10.0	9.0	3.0	3.25	0.75	1.00	1.81	3.03	6.0	8.0	1.38	0.250
	12.0	2.0	10.0	9.0	3.0	3.25	0.75	1.00	1.81	3.03	8.0	10.0	2.38	0.250
Metric	127.0	25.4	127.0	100	46.0	61.5	9.6	25.4	28.1	42.1	75	100	35	4.76
	152.4	44.5	152.4	125	50.8	66.5	9.6	25.4	31.4	51.8	100	125	35	6.35
	202.4	44.5*	203.2	175	63.5	76.2	12.7	25.4	39.8	51.8	100	150	35	6.35
	254.0	50.8	254.0	225	76.2	82.6	19.0	25.4	45.9	76.9	150	200	35	6.35
	304.8	50.8	254.0	225	76.2	82.6	19.0	25.4	45.9	76.9	200	250	60.4	6.35

*On the 8.0" (203.2) diameter table with 36:1 ratio, this dimension is 1.0" (25.4).



Order Example

		2	08	01	RT	M	S	H1	C1	M1	E1	T1
Model Series		2										
Table Diameter												
5 in 127 mm			05									
6 in 152.4 mm			06									
8 in 202.4 mm			08									
10 in 254 mm			10									
12 in 304.8 mm			12									
Gear Ratio												
180:1 (Avail. on all dia.).....				01								
90:1 (Avail. on all dia.).....				02								
45:1 (Avail. on 6",10" and 12" dia. only)				04								
36:1 (Avail. on 5" and 8" dia. only).....				05								
Table Style					RT							
Mounting												
English						E						
Metric						M						
Grade												
Standard Grade.....							S					
Precision Grade							P					
Home												
No Home Switch								H1				
Magnetic Home Switch								H2				
Motor Coupling												
No Coupling									C1			
0.25 in Bore, Helix, Aluminum									C2			
0.25 in Bore, Helix, Stainless Steel									C3			
0.25 in Bore, Bellows, required for precision grade.....									C4			
0.375 in Bore, Helix, Aluminum									C5			
0.375 in Bore, Helix, Stainless Steel									C6			
0.375 in Bore, Bellows, required for precision grade									C7			
Motor Mount												
23 Frame Size										M1		
Encoder												
No Encoder											E0	
Ring Encoder - 314,880 post quad. counts/rev.....											E8	
Ring Encoder - 3,148,800 post quad. counts/rev.....											E9	
Table Top												
No Top												T1
Standard Top												T2
Oversized Top (Raises height to clear NEMA 23 Motor).....												T3