# **Rotary Actuators-**

### • Tight spaces:

The "Ultra Thin" profile and bearing supported flange provide an extremely compact package for tight space applications. Payload can be connected directly to the flange without the need for extra bearing support.

- Large Payload, High Torque: The RR-55, RR-66, RR-76 are design for heavy-duty industrial and foundry applications
- Precision applications: Zero backlash, preloaded ball bearings, and slip fit dowel pins make this a very precise and repeatable rotary actuator.
- Rotary Air Manifold Eliminates twisting airlines.
- Pneumatic/Hydraulic Operation: The RR-76 can be used for either pneumatic or hydraulic operation.

# **Mounting Information:**



# **Technical Specifications:**

**Pneumatic Specifications** Pressure Operating Range Cylinder Type **Dynamic Seals** Valve Required to Operate

Imperial Metric 40-100 psi 3-7 bar **Dual Double Acting** Internally Lubricated Buna-N 4-way, 2-position

### **Air Quality Requirements** A

Air Filtration	40 Micron or Better
Air Lubrication	Not Necessary*
Air Humidity	Low Moisture Content (dry)
	,

**Temperature Operating Range** -30°~180° F Buna-N Seals (standard) -35°~80° C Viton Seals (optional) -20°~300° F -30°~150° C

### Maintenance Specifications

Expected Life	
with Shock Absorbers	1 million cycles
without Shock Absorbers	5 million cycles
w/ Preventative Maintenance	10+ million cycles*
Field Repairable	Yes
Seal Repair Kits Available	Yes
Addition of lubrication will greatly increase service life See Maintenance Section	)

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• The flange is supported in the body by a preloaded ball bearing

### Designed and manufactured in the USA

**RR SERIES** 3.43

RR-56M

13 Kg 35 N-m

5.3 Kg

RR-66M

34 Kg

82 N-m 11.8 Kg

RR-76M

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# **ROTARY ACTUATORS RR-56M** FLANGE OUTPUT SERIES BASE UNIT





30 lbs. 13.64 Kg Maximum Inertia J (with Shock Absorbers) 0.2549 in-lb-sec2 .0288 N-m-sec2 <sup>+</sup>Max. payload based on -A shock option. Please see back cover for DE-STA-CO Global Locations. www.destaco.com www.comoso.com

Metric

712 N

1779 N

23 Nm

23 Nm

۲

Imperial

160 lbs

400 lbs

200 in.-Ibs.

200 in - lbs

Dynamic

Static

1000 in.-Ibs. 113 Nm

1000 in.-Ibs. 113 Nm

800 lbs

2000 lbs

Metric

3559 N

8896 N

Loading Capacity Imperial

Maximum Tension T

Maximum Compression C

Maximum Moment Mx

Maximum Moment My

Maximum Payload Wt



# RR-56M ROTARY ACTUATOR OPTIONS -S, -M, OPTIONAL MID-STOP, ROTARY MANIFOLD



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# ROTARY ACTUATORS RR-66M FLANGE OUTPUT SERIES BASE UNIT





# **Loading Information**

# How to Order: (Order Accessories separately from Basic Model)

**RR-66** See Next Page



Loading Capacity	Si Imperial	t <b>atic</b> Metric	<b>Dy</b> Imperial	<b>namic</b> Metric
Maximum Tension T	1000 lbs	4448 N	200 lbs	890 N
Maximum Compression C	3500 lbs	15569 N	700 lbs	3114 N
Maximum Moment Mx	2000 in1bs.	226 Nm	400 in1bs.	45 Nm
Maximum Moment My	2000 in1bs.	226 Nm	400 in1bs.	45 Nm
Maximum Payload W <sup>+</sup>			75 lbs.	34 Kg
Maximum Inertia J (with Sh	nock Absorber	rs)⁺ 1	.025 in-lb-sec	<sup>2</sup> .1158 N-m-sec <sup>2</sup>
<sup>†</sup> May navload based on -A sh	ock ontion			

'n



# RR-66M ROTARY ACTUATOR OPTIONS -S, -M, OPTIONAL MID-STOP, ROTARY MANIFOLD



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# **RR-56 & 66 Series Assembled View**



ltem	Qty	Name
01	1	Body, Main
02	1	Flange
03	1	Pinion
04	2	Rack, Piston
05	1	Ring, Inner Bearing
06	1	Ring, Outer Bearing
07	1	End Plate
08	1	Ported End Plate
10	1	Washer, Thrust
11	2	Bearing, Thrust
13	1	Bearing, Needle
14	1	Bearing, Needle
16	1	Cap

**NOTE:** Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

# **C** RR-56 & 66 **T** SERIES **G** MAINTENANCE

# **Accessory Installation & Adjustment Instructions**

- 1) Install sensors and brackets as shown,
- Install targets so when a turntable is at each end of stroke, a target is aligned with a sensor





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### Item Qty Name

RR-56 & 66-S	( Midstop )
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12	1	Body, Mid-Stop
17	2	Piston Mid-Ston

~ ~	-			
30	2	Mid-Sto	p Adjustment Scre	ews

### RR-56-M ( Rotary Manifold )

09	1	Manifold, Rotary
19	1	Manifold
31	4	Dowel Pin

**NOTE:** Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

### Manifold Option Assembly Procedure

- Lubricate and install 12 small o-rings.
  (6 in the pinion, 6 in the rotary manifold.
- 2) Install 7 O-rings on the rotary manifold.
- Press 1/8" dia. dowel pin into manifold.
- Install rotary manifold in manifold block.
- 5) Attach manifold block to rotary actuator body.

### Mid-Stop Option Assembly Procedure

- 1) Lubricate and install o-rings.
- Install mid-stop pistons, adjustment screws, seal washers, and hex nuts in rotary actuator body.
- 3) Attach mid-stop body to rotary actuator body.
- 4) Install flow controls.

### **Mid-Stop Adjustment Procedure**

- Remove mid-stop body from actuator base.
- Remove the two mid-stop pistons from the mid-stop body and insert them into their respective cylinder bores in the actuator base.
- 3) Back off both mid-stop adjustment screws (#30) while pushing the midstop pistons firmly into the cylinder bores. the face of the pistons should seat against the actuator base. If not, then continue to back out the stop screws.
- 4) Turn the turntable to the desired position and advance the mid-stop adjustment screws until both screws touch the main piston faces.
- 5) Re-attach the two mid-stop pistons to the mid-stop body and fasten midstop body back onto actuator base.





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# **RR-56 & 66 Options Assembled View**



7	1	Plate, End
20	2	Shock Absorber

**NOTE:** Contact the Robohand Sales Department for a complete spare parts

list with order numbers and prices.





# ROTARY ACTUATORS RR-76M FLANGE OUTPUT SERIES BASE UNIT



Note: Shock Absorbers "Option -A" are recommended for most applications. All specifications provided are with this option



Specifications	RR-76	RR-76M
Maximum Payload <sup>†</sup>	200 lbs.	91 Kg
Maximum Payload Inertia <sup>+</sup>	4.95 inlbssec <sup>2</sup>	0.5596 N-m-sec2
Maximum Rotation	180°	180°
Max. Torque Mid-Position @ 100 PSI	1900 in-lbs.	215 N-m
Max. Torque End of Stroke @ 100 PSI	950 in-lbs.	107 N-m
Weight of Base Unit	53 lbs.	24 Kg
Pressure Range	40-100 psi	3-7 bar
Bore Ø (2X)	3.250 in.	82.55 mm
Displacement	62.6 in <sup>3</sup> .	1026 cm <sup>3</sup>
Temperature Range - Viton® Seals	20°~300° F	-30°~150° C
Shock Absorber Temperature Max	160° F	71° C
Actuation Time (180° @ 80PSI/5.5 Bar)	1.4 sec.	1.4 sec.
Actuation Time (90° @ 80PSI/5.5 Bar)	0.8 sec.	0.8 sec.
End Stop Repeatability	±0.02°	±0.02°
End Stop Adjustability*	20°	20°
Over-Travel (each direction)	4°	4°
Valve required to actuate	4-way, 2-posi	tion

\*Any adjustment of the End Stop Adjustment Screw must be accompanied by an equal adjustment of the Shock Absorbers to prevent bottoming of the pistons against the Shock Absorbers. \*Max. payload based on -A shock option.

Hydraulic Specifications	RR-76	RR-76M
Actuation Time (180° @ 80PSI/5.5 Bar)	4.8 sec.	4.8 sec.
Actuation Time (90° @ 80PSI/5.5 Bar)	2.4 sec.	2.4 sec.
Mid Stop Actuation Time (80PSI/5.5 Bar)	4.1 sec.	4.1 sec.







UNLESS OTHERWISE NOTED ALL				
TOLERAN	CES ARE AS	SHOWN BELOW		
Ģ	$\Rightarrow$	$\bullet$		
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]		
$\oplus$	Imperial in	Metric [mm]		
Metric Threads Course Pitch	$\begin{array}{c} 0.00 = \pm .01 \\ 0.000 = \pm .005 \\ 0.0000 = \pm .000 \end{array}$			

## **Loading Information**



	Sta	Static		Dynamic	
Loading Capacity	Imperial	Metric	Imperial	Metric	
Maximum Tension T	2000 lbs	8896 N	1000 lbs	4448 N	
Maximum Compression C	4500 lbs	20017 N	2000 lbs	8896 N	
Maximum Moment $\mathbf{M}_{\mathbf{X}}$	4000 in1bs.	452 Nm	2000 in1bs.	226 Nm	
Maximum Moment My	4000 in1bs.	452 Nm	2000 in1bs.	226 Nm	
Maximum Payload W <sup>+</sup>			200 lbs.	91 Kg	
Maximum Inertia J <sup>+</sup>			4.952 in-lb-sec <sup>2</sup>	0.5596 N-m-sec2	
<sup>+</sup> Max. payload based on -A shock option.					

# How to Order: (Order Accessories separately from Basic Model)

**RR-76** See Next Page

SERIES

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# RR-76M ROTARY ACTUATOR OPTIONS -S, -A, -M, -H OPTIONAL MID-STOP, ROTARY MANIFOLD

SERIES

3.53



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Lightweight Machine Oil

G

Teflon® Based Grease

www.comoso.com

**RR-76 SERIES** MAINTENANCE

3.54

SK

Seal Kit Items

Thread Locker

KRYTOX

Krytox™ Lubricant





01

02

03

04

05

06

08

Δ GLUE

Super Bonder

 $\Rightarrow$  $(\phi)$ 

Third Angle Projection



ltem	Qty N	ame
<u>01</u>	1	Body, Main
02	1	Flange
03	1	Pinion
04	2	Rack, Piston
05	1	Ring, Inner Bearing
06	1	Ring, Outer Bearing
07	1	End Plate
<u>16</u>	1	Plug
20	1	Bearing, Needle
<u>21</u>	1	Bearing, Needle
22	1	Washer, Thrust
23	2	Bearing, Thrust
24	1	0-Ring
<u>31</u>	1	Ported End Plate
NOTE Depar list wi	:: Conta rtment f ith orde	ct the Robohand Sales for a complete spare parts r numbers and prices.

# **Accessory Installation & Adjustment Instructions**

- Install sensors and brackets as shown,
  Install targets so when a turntable is at
  - each end of stroke, a target is aligned with a sensor





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# Item Qty Name

RR-5	6&	66-S ( Midstop )
12	1	Body, Mid-Stop
13	2	Piston, Mid-Stop
20	2	Mid-Ston Adjustment Screws

### RR-56-M (Rotary Manifold)

09	1	Manifold, Rotary
11	1	Manifold
31	4	Dowel Pin

NOTE: Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

### **Manifold Option Assembly Procedure**

- 1) Lubricate and install 10 small O-rings. 2) Press 1/8" dia. dowel pin into
- manifold. 3) Install rotary manifold into pinion
- with shoulder screws. 4) Attach manifold block to rotary
- actuator body.

# **Mid-Stop Option**

- Assembly Procedure 1) Lubricate and install o-rings.
- 2) Install mid-stop pistons, adjustment screws, seal washers, and hex nuts in rotary actuator body.
- 3) Attach mid-stop body to rotary actuator body.
- 4) Install flow controls.

### **Mid-Stop Adjustment Procedure**

- 1) Remove mid-stop body from actuator base.
- 2) Remove the two mid-stop pistons from the mid-stop body and insert them into their respective cylinder bores in the actuator base.
- 3) Back off both mid-stop adjustment screws (#30) while pushing the mid-stop pistons firmly into the cylinder bores. the face of the pistons should seat against the actuator base. If not, then continue to back out the stop screws.
- 4) Turn the turntable to the desired position and advance the mid-stop adjustment screws until both screws touch the main piston faces.
- 5) Re-attach the two mid-stop pistons to the mid-stop body and fasten midstop body back onto actuator base.





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7	1	Plate, End
20	2	Shock Absorber

**NOTE:** Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.



