

Service Manual

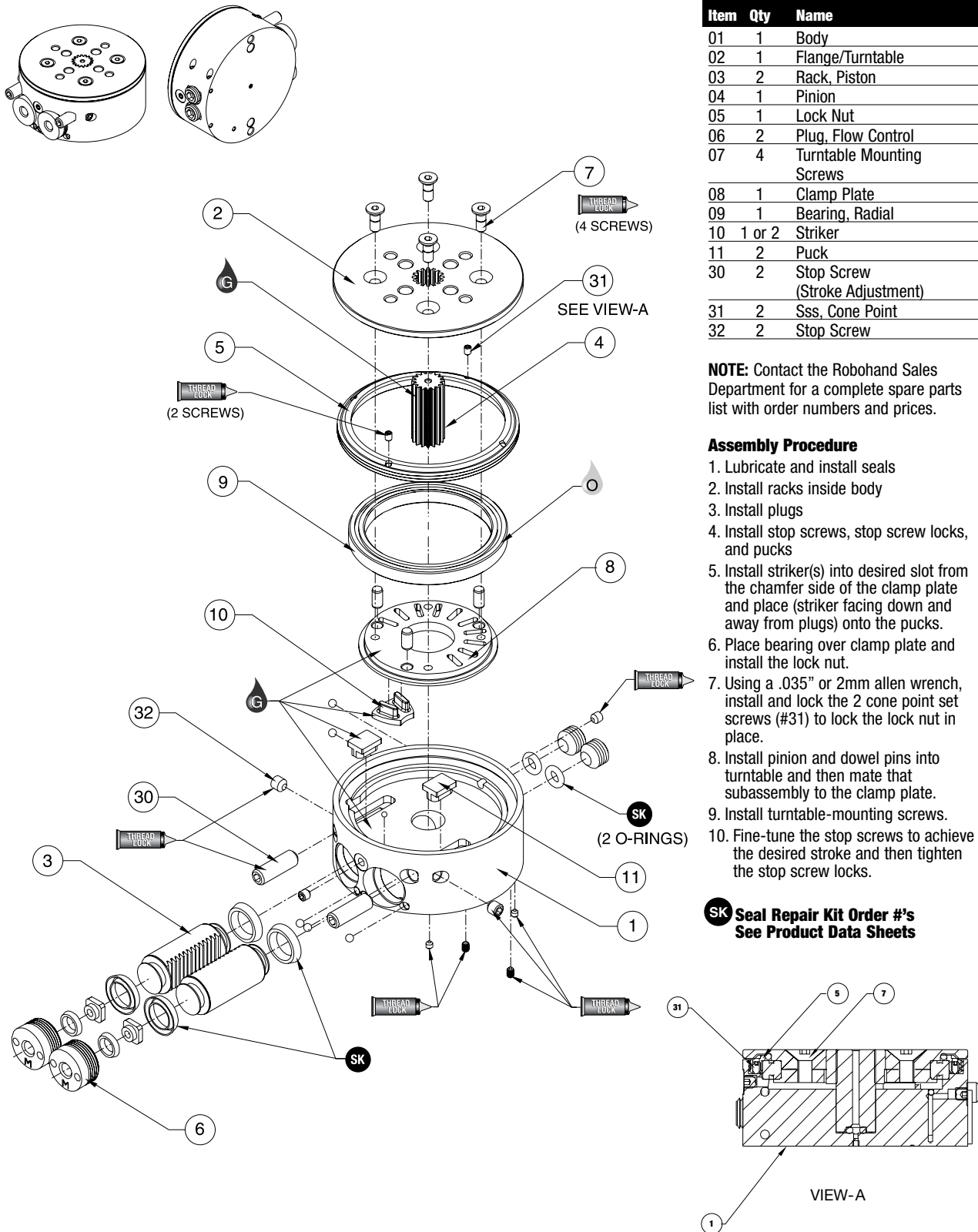
ROBOHAND | RR Series



WARNING: This is a controlled document. It is your responsibility to deliver this information to the end user of the Destaco Robohand product. Failure to deliver this could result in your liability for injury to the user or damage to the machine. For copies of this manual, call your Customer Service Representative at 1.248.836.6700

RR-18, 28 SERIES

Rotary Actuators | Maintenance and Assembly Procedure



Item	Qty	Name
01	1	Body
02	1	Flange/Turntable
03	2	Rack, Piston
04	1	Pinion
05	1	Lock Nut
06	2	Plug, Flow Control
07	4	Turntable Mounting Screws
08	1	Clamp Plate
09	1	Bearing, Radial
10	1 or 2	Striker
11	2	Puck
30	2	Stop Screw (Stroke Adjustment)
31	2	Sss, Cone Point
32	2	Stop Screw

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

Assembly Procedure

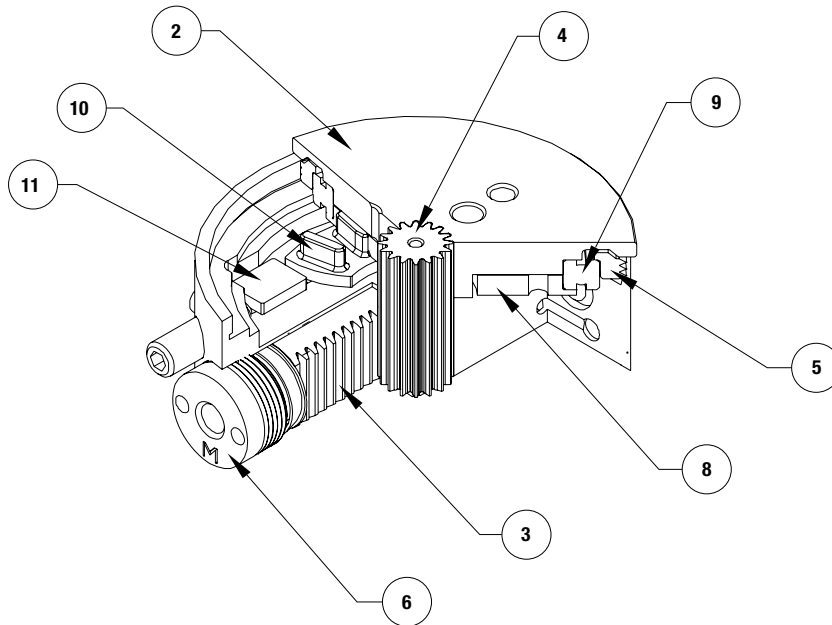
1. Lubricate and install seals
2. Install racks inside body
3. Install plugs
4. Install stop screws, stop screw locks, and pucks
5. Install striker(s) into desired slot from the chamfer side of the clamp plate and place (striker facing down and away from plugs) onto the pucks.
6. Place bearing over clamp plate and install the lock nut.
7. Using a .035" or 2mm allen wrench, install and lock the 2 cone point set screws (#31) to lock the lock nut in place.
8. Install pinion and dowel pins into turntable and then mate that subassembly to the clamp plate.
9. Install turntable-mounting screws.
10. Fine-tune the stop screws to achieve the desired stroke and then tighten the stop screw locks.

SK Seal Repair Kit Order #'s See Product Data Sheets

SK Seal Kit Items	 Thread Locker	 Krytox™ Lubricant	 Lightweight Machine Oil	 Teflon® Based Grease	 Super Bonder	 Third Angle Projection
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RR-18, 28 SERIES

Rotary Actuators | Maintenance and Assembly Procedure



Item	Qty	Name
02	1	Flange/Turntable
03	2	Rack, Piston
04	1	Pinion
05	1	Lock Nut
06	2	Plug, Flow Control
08	1	Clamp Plate
09	1	Bearing, Radial
10	1 or 2	Striker
11	2	Puck
15	1 or 2	Sensor
21	1 or 2	Push-in Fitting
22	1 or 2	Barb Fitting
25	1	Sensor Coupler

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

Accessory Installation & Adjustment Instructions

Installation

For each sensor.

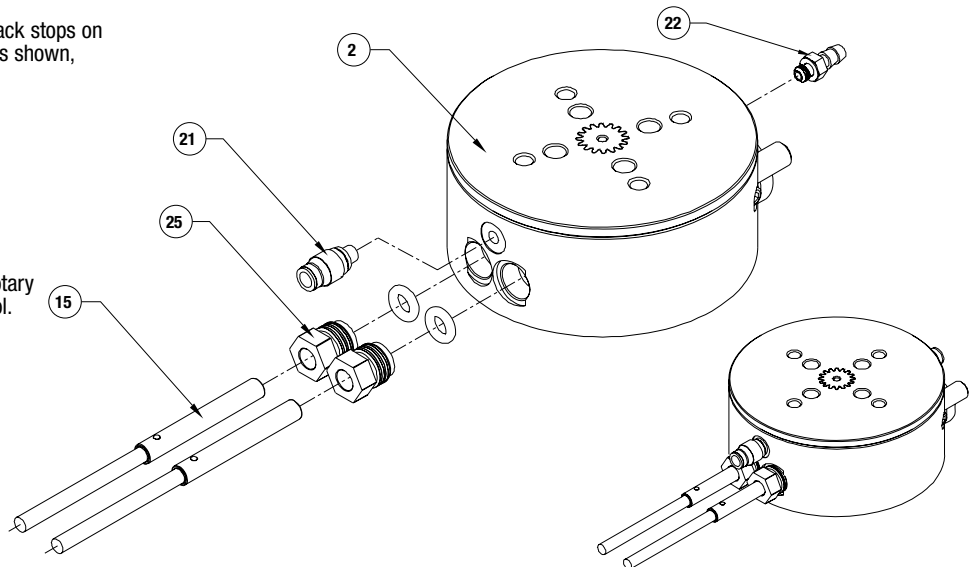
1. Rotate flange so piston rack stops on end stop. Install sensor as shown, pushing in until it stops.
2. Tighten nut.

Plumbing fittings:

Either the barb fitting or the push-in fitting can be used for any M3 port.

Flow controls (not shown) can be used for the main rotary airports as additional control.

Note: Sensors need to be readjusted when end stops are adjusted.



Seal Kit Items



Thread Locker



Krytox™ Lubricant



Lightweight Machine Oil



Teflon® Based Grease



Super Bonder



Third Angle Projection

RR-36, 46 SERIES

Rotary Actuators | Maintenance and Assembly Procedure

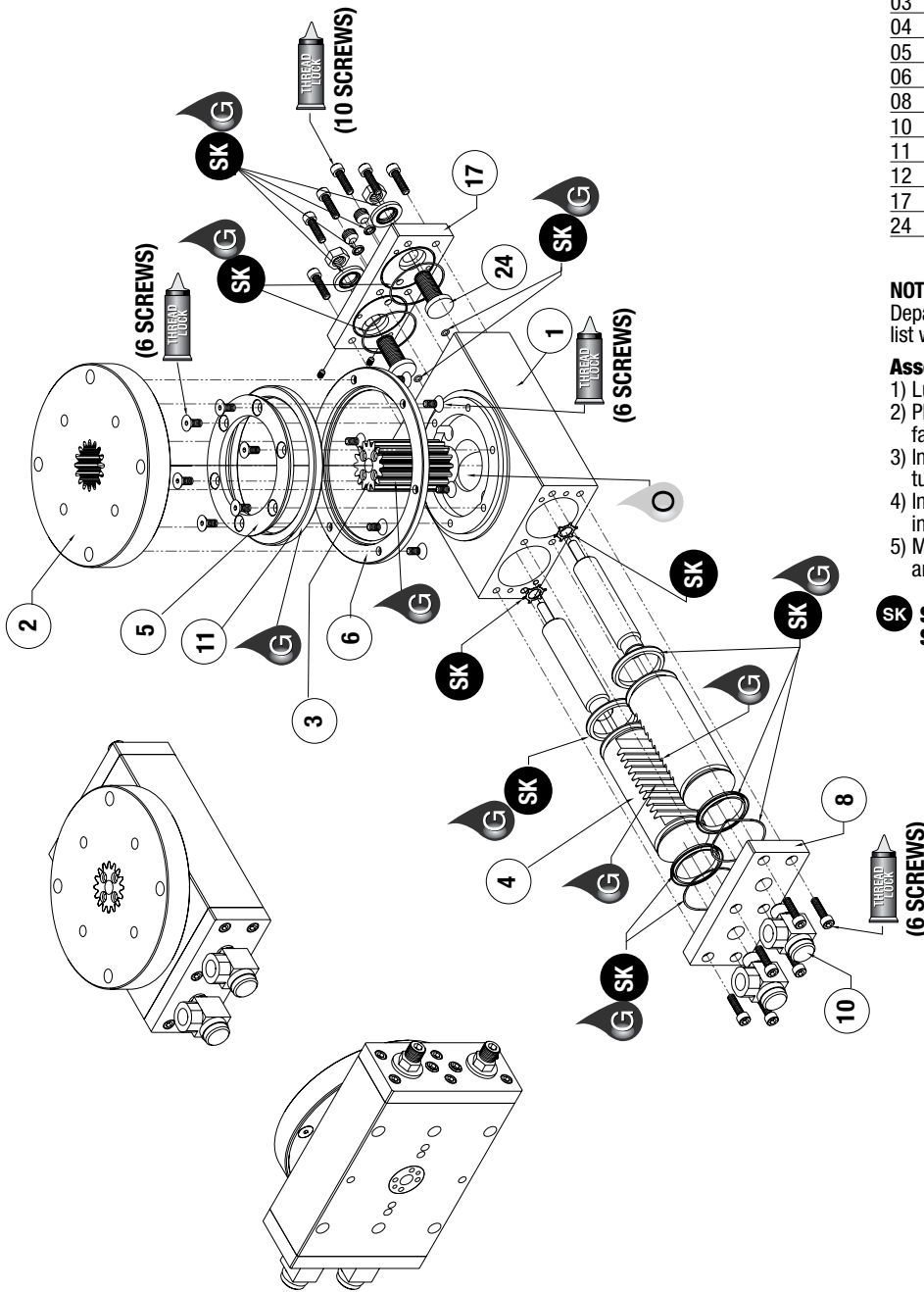
Item	Qty	Name
01	1	Body, Main
02	1	Turntable
03	1	Pinion
04	2	Rack, Piston
05	1	Inner Bearing Ring
06	1	Ring, Outer Bearing
08	1	Plate, Ported End
10	2	Flow Control
11	1	Bearing
12	1	Shock Absorber
17	1	Plate, End
24	2	Stop Adjustment Screws

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

Assembly Procedure

- 1) Lubricate and install seals.
- 2) Place outer ring and bearing on body, fasten inner ring to body.
- 3) Install outer bearing ring on turntable/pinion subassembly.
- 4) Install shocks in racks and install inside body.
- 5) Mount end plates, adjustable stops, and flow controls to body.

SK Seal Repair Kit Order #'s See Product Data Sheets

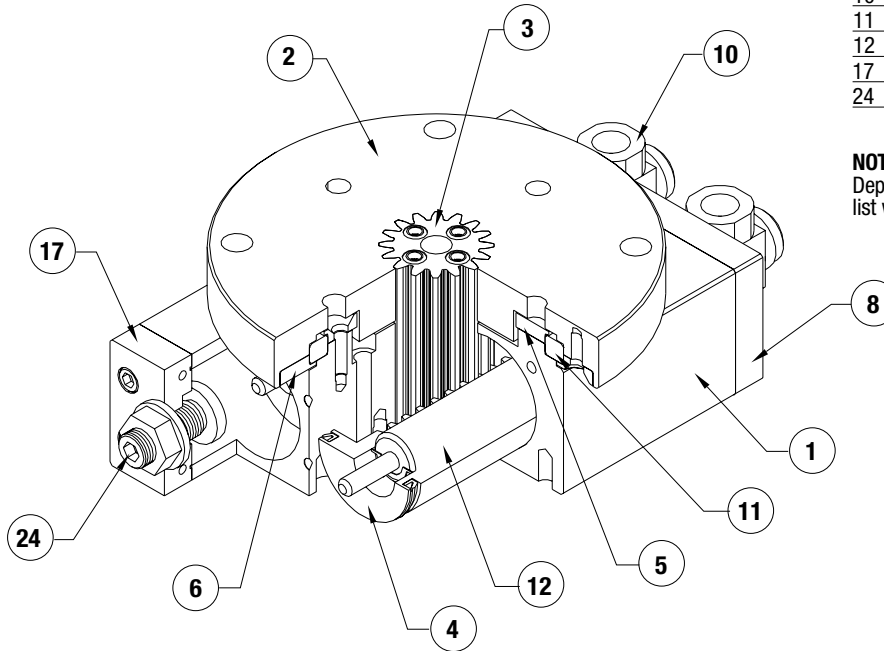


SK Seal Kit Items	THREAD LOCKER Thread Locker	KRYTOX Krytox™ Lubricant	O Lightweight Machine Oil	G Teflon® Based Grease	GLUE Super Bonder	Third Angle Projection
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RR-36, 46 SERIES

Rotary Actuators | Maintenance and Assembly Procedure

Item	Qty	Name
01	1	Body, Main
02	1	Turntable
03	1	Pinion
04	2	Rack, Piston
05	1	Inner Bearing Ring
06	1	Ring, Outer Bearing
08	1	Plate, Ported End
10	2	Flow Control
11	1	Bearing
12	1	Shock Absorber
17	1	Plate, End
24	2	Stop Adjustment Screws



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

Accessory Installation & Adjustment Instructions

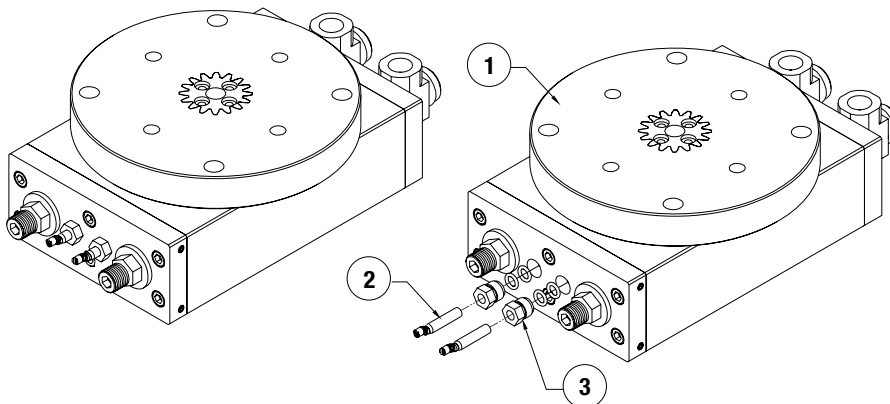
Installation

For Each Sensor:

1) Rotate flange so piston rack stops on end stop install sensor as shown, pushing sensor in until it stops.

2) Tighten nut.

Note: Sensors need to be readjusted when end stops are adjusted.



Seal Kit Items



Thread Locker



Krytox™ Lubricant



Lightweight Machine Oil



Teflon® Based Grease



Super Bonder



Third Angle Projection

RR-36, 46 OPTIONS SERIES

Rotary Actuators | Maintenance and Assembly Procedure

Item Qty Name

RR-36&46-S (Mid Position Stop Option)		
13	2	Piston, Midstop
16	1	Body, Midstop
30	2	Mid-Stop Adjustment Screws

RR-36&46-M (Rotary Manifold Option)		
09	1	Manifold, Rotary
15	1	Manifold
31	2	Dowel Pin
32	2	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 8 small o-rings. (4 in the pinion, 4 in the rotary manifold body).
- 2) Install 5 large O-rings on the rotary manifold.
- 3) Press dowel pin into rotary manifold
- 4) Install rotary manifold in manifold body.
- 5) Attach manifold assembly to rotary actuator body.

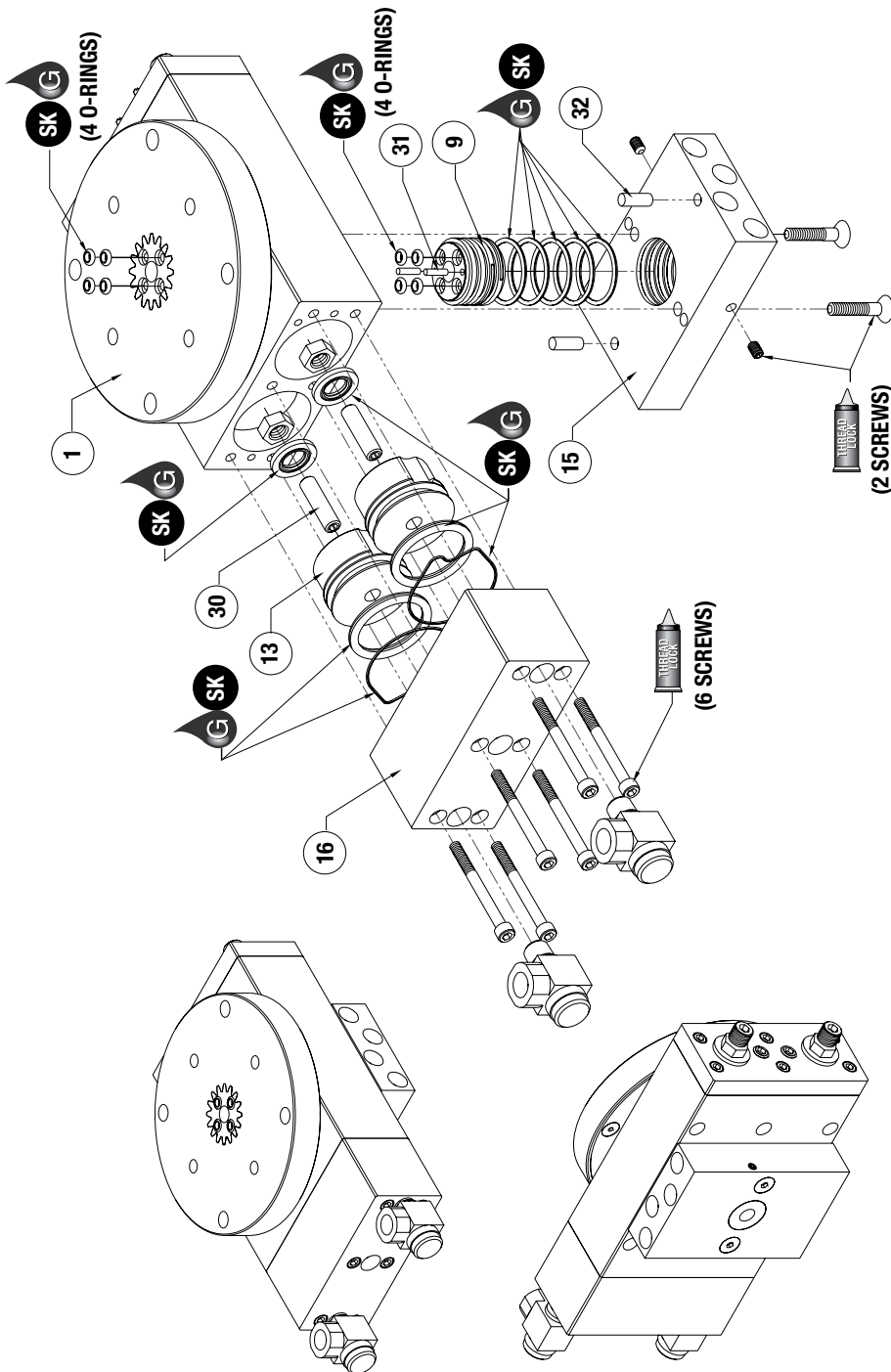
Mid-Stop Option Assembly Procedure

- 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 mid-stop body back onto actuator base.

**SK Seal Repair Kit Order #'s
See Product Data Sheets**



SK

Seal Kit
Items



Thread
Locker



Krytox™
Lubricant



Lightweight
Machine Oil



Teflon® Based
Grease



Super
Bonder



Third Angle
Projection

RR-36, 46 OPTIONS SERIES

Rotary Actuators | Maintenance and Assembly Procedure

Item Qty Name

RR-36&46-S

(Mid Position Stop Option)

13	2	Piston, Midstop
16	1	Body, Midstop
30	2	Mid-Stop Adjustment Screws

RR-36&46-M

(Rotary Manifold Option)

09	1	Manifold, Rotary
15	1	Manifold
31	2	Dowel Pin
32	2	Dowel Pin

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

Valve 1:

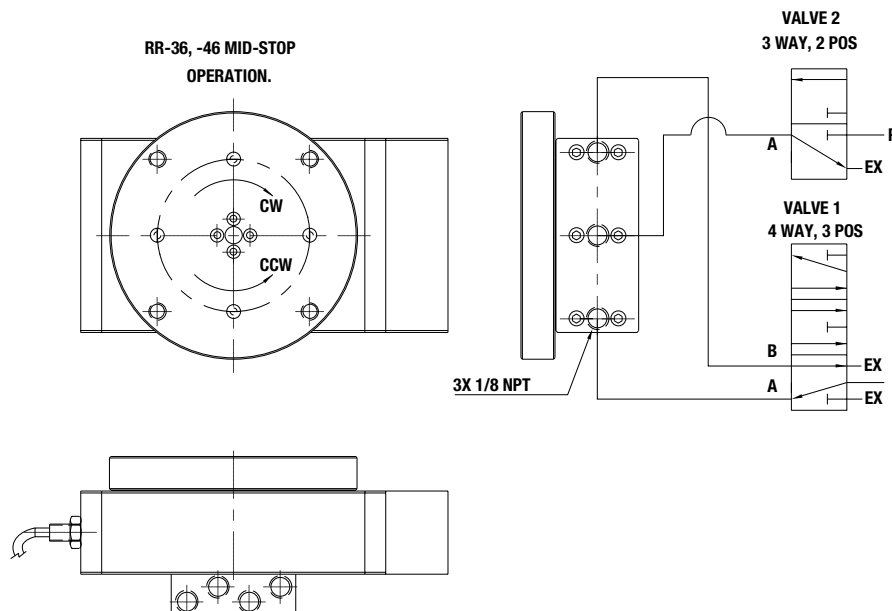
- Actuate Port A to Rotate CW.
- Actuate Port B to Rotate CCW.
- Neutral (Center) position when actuating Valve 2 for mid-position stop.

Valve 2:

Port A Open to Exhaust for Normal Operation.

Actuate Port A for Mid-Position Stop.

Valve1 Must be in Neutral (Center) Position



Seal Kit
Items



Thread
Locker



Krytox™
Lubricant



Lightweight
Machine Oil



Teflon® Based
Grease



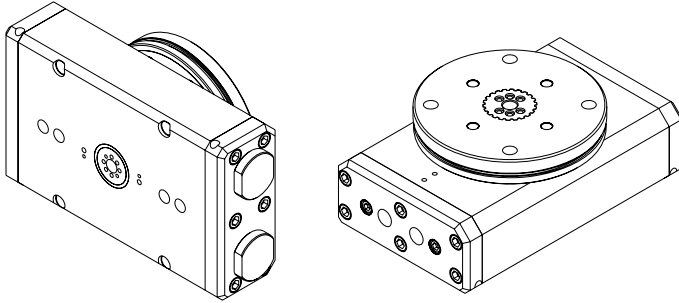
Super
Bonder



Third Angle
Projection

RR-56, 66 SERIES

Rotary Actuators | Maintenance and Assembly Procedure

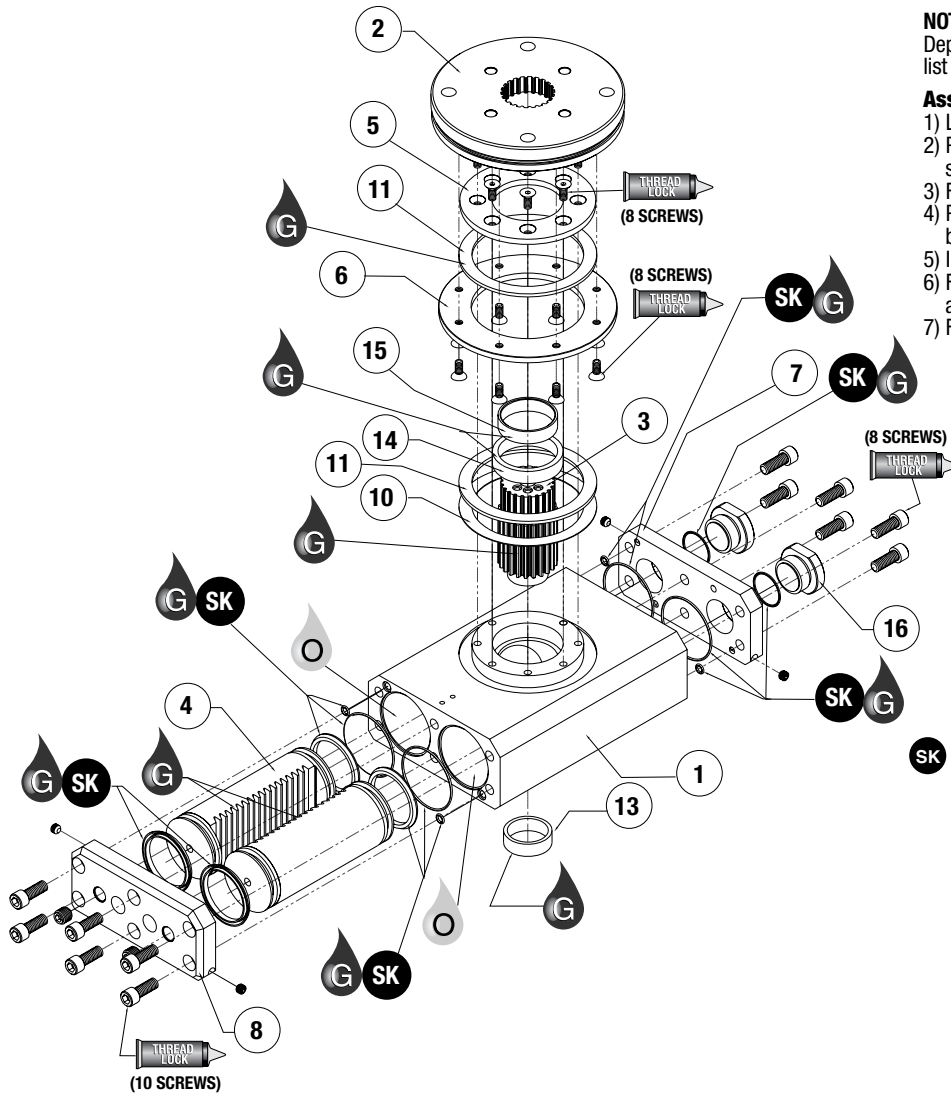


Item	Qty	Name
01	1	Body, Main
02	1	Flange
03	1	Pinion
04	2	Rack, Piston
05	1	Ring, Inner Bearing
06	1	Ring, Outer Bearing
07	1	End Plate
08	1	Ported End Plate
10	1	Washer, Thrust
11	2	Bearing, Thrust
13	1	Bearing, Needle
14	1	Bearing, Needle
16	1	Cap

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

Assembly Procedure

- 1) Lubricate and install seals
- 2) Place needle bearings, outer ring and spacers into body
- 3) Fasten inner ring to body.
- 4) Press radial bearing into underside of body.
- 5) Install racks into body.
- 6) Fasten outer ring to turntable/pinion assembly.
- 7) Fasten end plates and plugs.



SK Seal Repair Kit Order #'s See Product Data Sheets

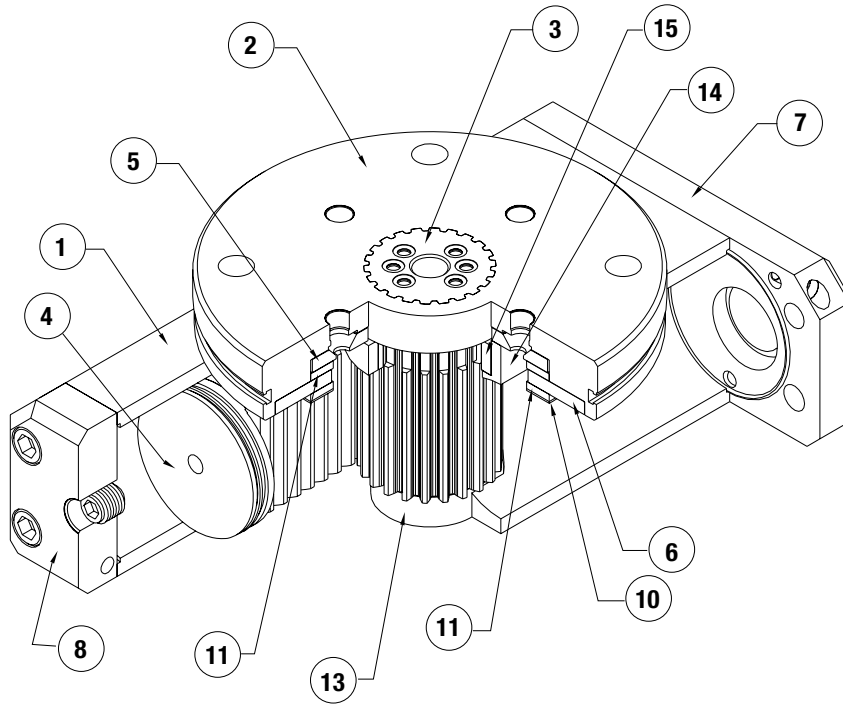
SK Seal Kit Items	THREAD LOCKER Thread Locker	KRYTOX Krytox™ Lubricant	O Lightweight Machine Oil	G Teflon® Based Grease	GLUE Super Bonder	Third Angle Projection
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RR-56, 66 SERIES

Rotary Actuators | Maintenance and Assembly Procedure

Item Qty Name

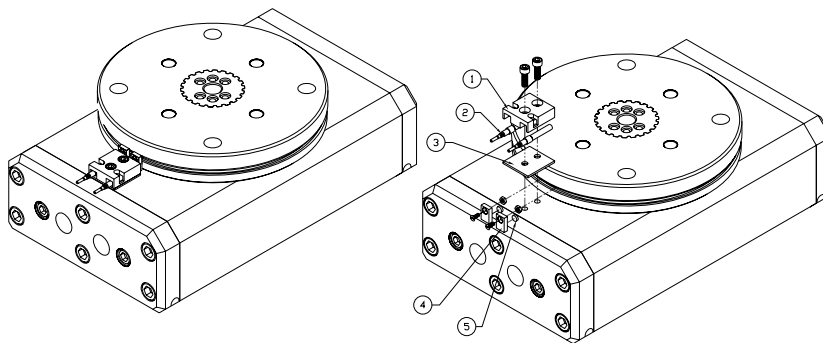
01	1	Body, Main
02	1	Flange
03	1	Pinion
04	2	Rack, Piston
05	1	Ring, Inner Bearing
06	1	Ring, Outer Bearing
07	1	End Plate
08	1	Ported End Plate
10	1	Washer, Thrust
11	2	Bearing, Thrust
13	1	Bearing, Needle
14	1	Bearing, Needle
16	1	Cap



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

Accessory Installation & Adjustment Instructions

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



SK

Seal Kit
Items

**THREAD
LOCK**

Thread
Locker

KRYTOX

Krytox™
Lubricant

O

Lightweight
Machine Oil

G

Teflon® Based
Grease

GLUE

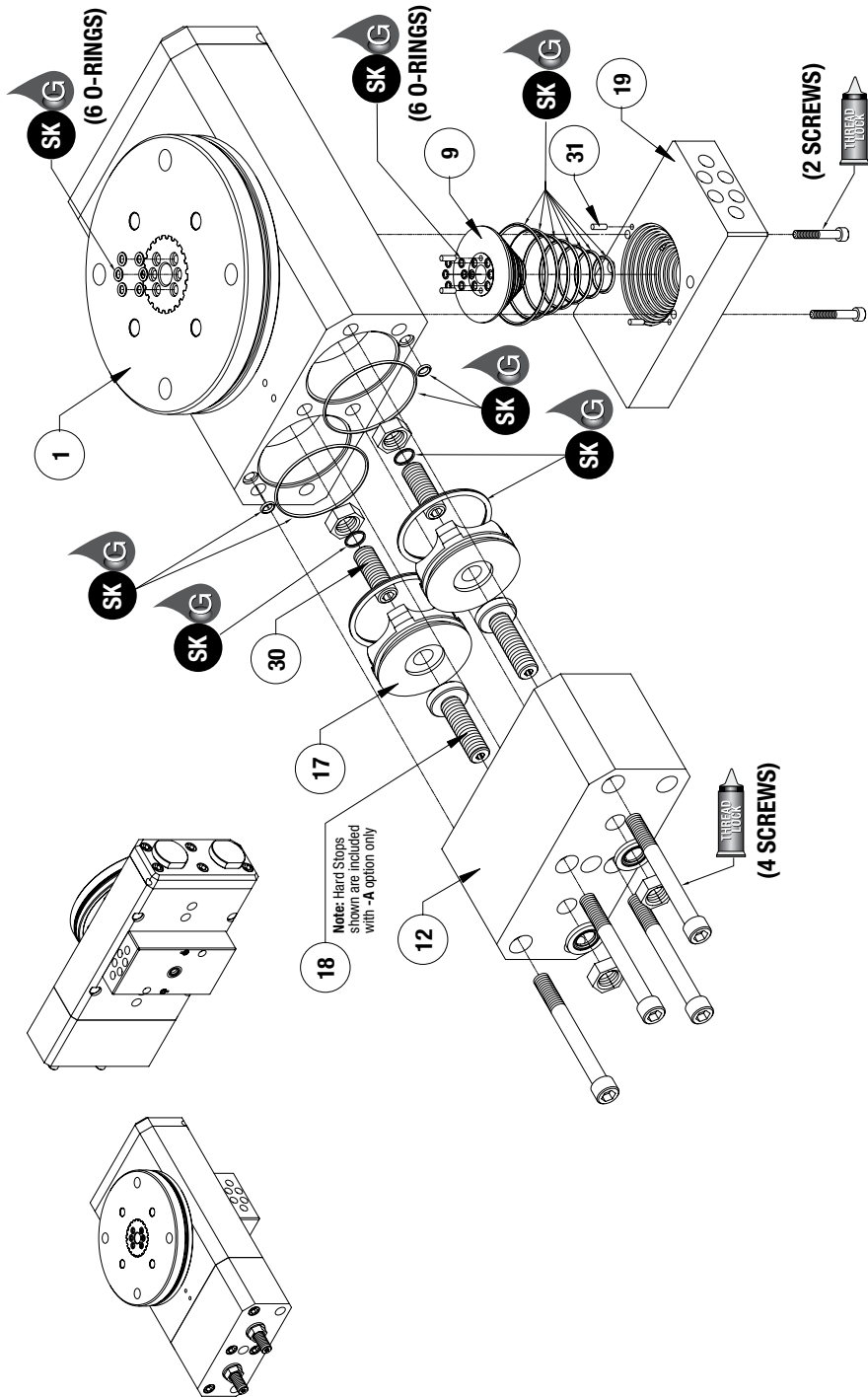
Super
Bonder

**Third Angle
Projection**

Third Angle
Projection

RR-56, 66 OPTIONS SERIES

Rotary Actuators | Maintenance and Assembly Procedure



Item Qty Name

RR-56 & 66-S (Midstop)		
12	1	Body, Mid-Stop
17	2	Piston, Mid-Stop
30	2	Mid-Stop Adjustment Screws

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

- 1) 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.
- 3) Press 1/8" dia. dowel pin into manifold.
- 4) Install rotary manifold in manifold block.
- 5) Attach manifold block to rotary actuator body.

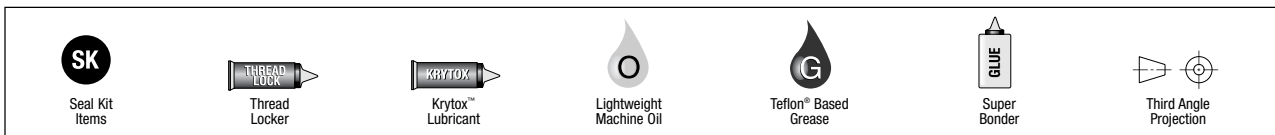
Mid-Stop Option Assembly Procedure

- 1) Lubricate and install o-rings.
- 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 mid-stop body back onto actuator base.

**SK Seal Repair Kit Order #'s
See Product Data Sheets**

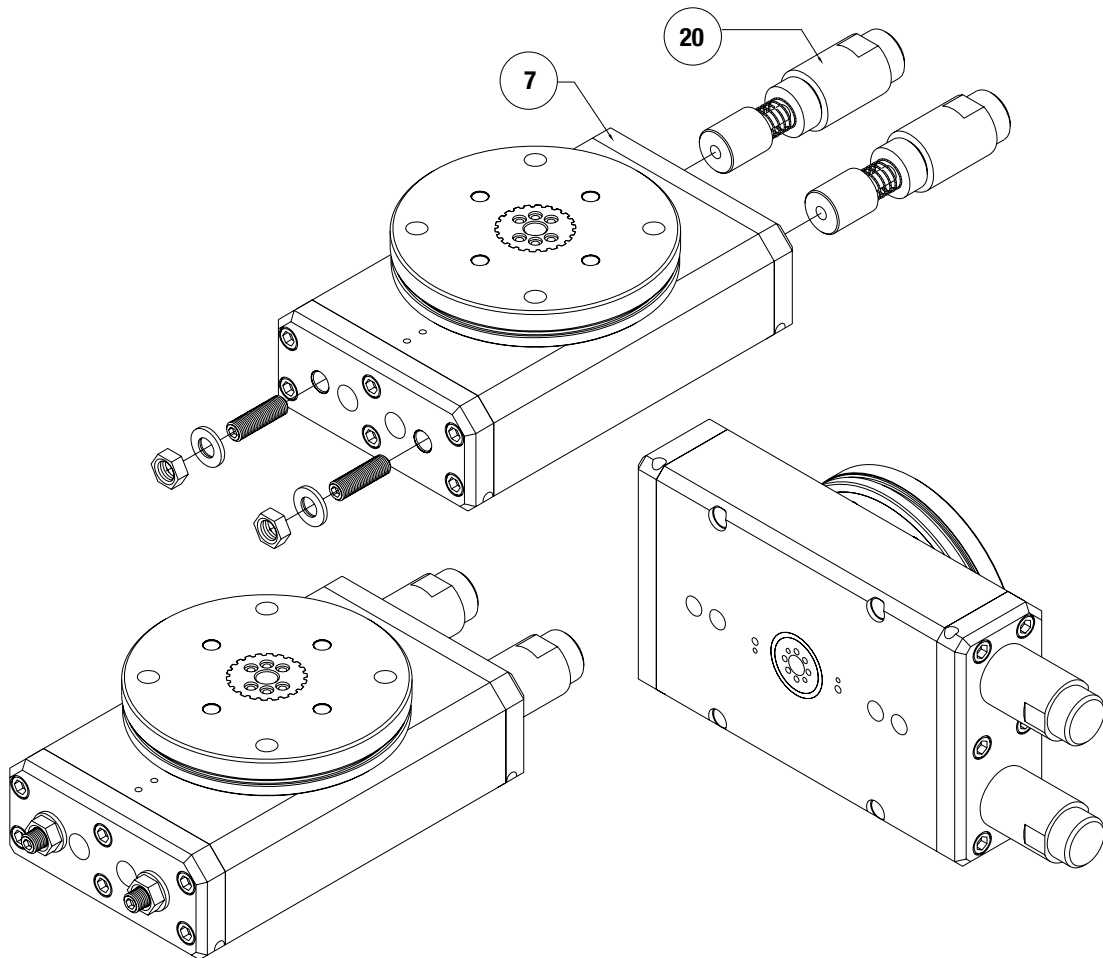









RR-56, 66 OPTIONS SERIES

Rotary Actuators | Maintenance and Assembly Procedure

Item	Qty	Name
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.



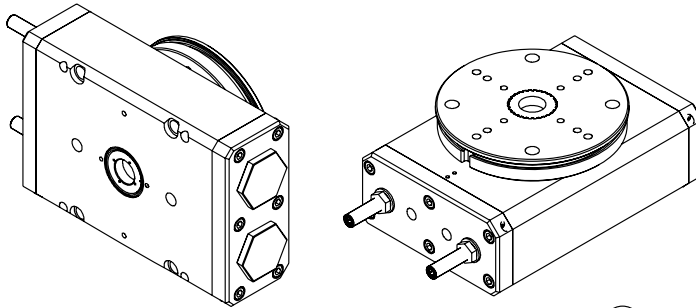
 <p>SK Seal Kit Items</p>	 <p>THREAD LOCKER Thread Locker</p>	 <p>KRYTOX Lubricant</p>	 <p>O Lightweight Machine Oil</p>	 <p>G Teflon® Based Grease</p>	 <p>GLUE Super Bonder</p>	 <p>Third Angle Projection</p>
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RR-76 SERIES

Rotary Actuators | Maintenance and Assembly Procedure

Item Qty Name

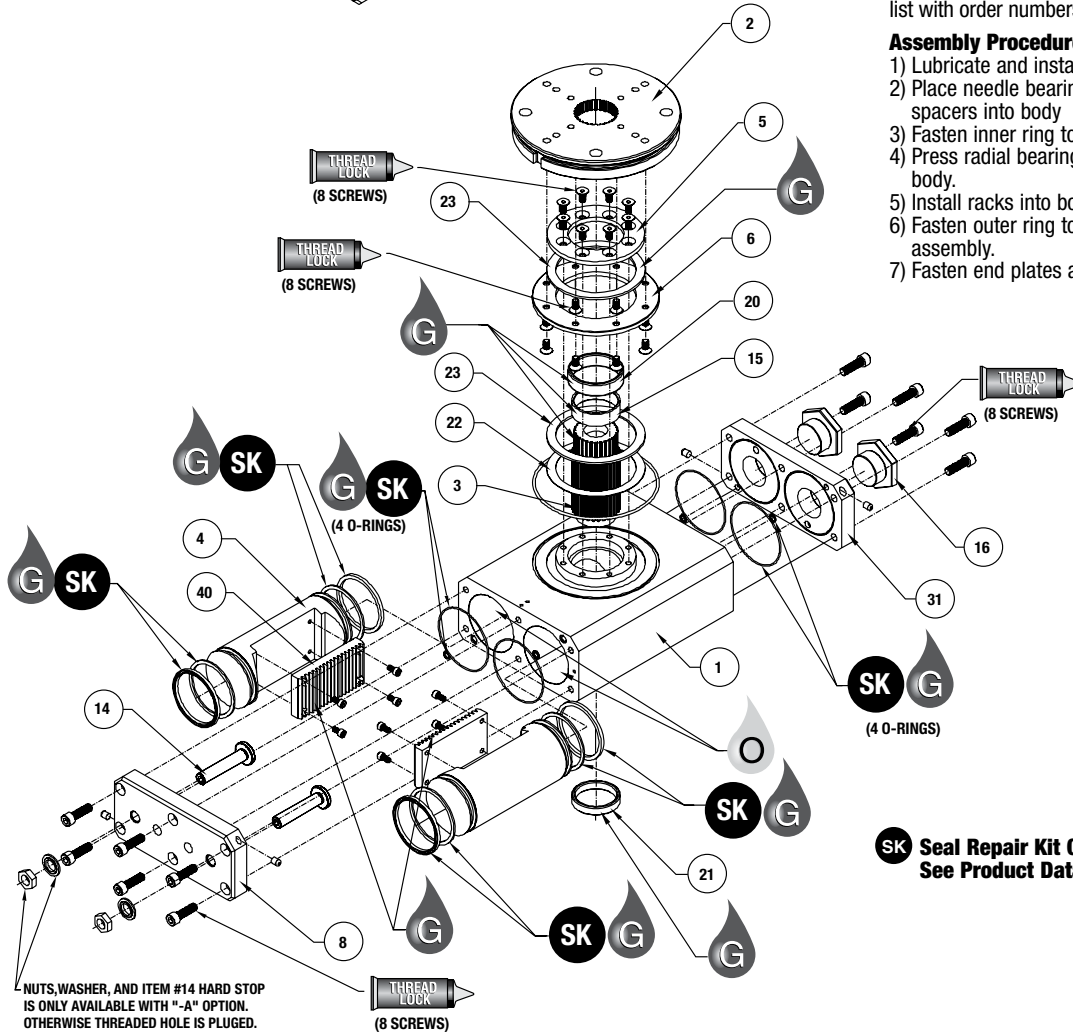
01	1	Body, Main
02	1	Flange
03	1	Pinion
04	2	Rack, Piston
05	1	Ring, Inner Bearing
06	1	Ring, Outer Bearing
08	1	End Plate
16	1	Plug
20	1	Bearing, Needle
21	1	Bearing, Needle
22	1	Washer, Thrust
23	2	Bearing, Thrust
31	1	Ported End Plate



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

Assembly Procedure

- 1) Lubricate and install seals
- 2) Place needle bearings, outer ring and spacers into body
- 3) Fasten inner ring to body.
- 4) Press radial bearing into underside of body.
- 5) Install racks into body.
- 6) Fasten outer ring to turntable/pinion assembly.
- 7) Fasten end plates and plugs.



SK Seal Repair Kit Order #'s See Product Data Sheets

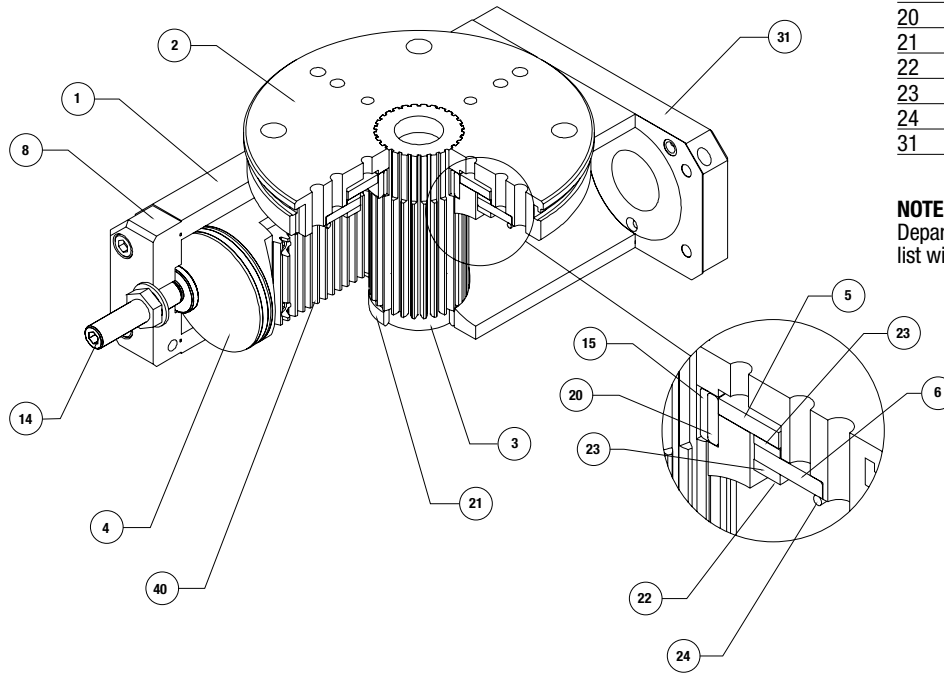
SK Seal Kit Items	 Thread Locker	 Krytox™ Lubricant	 Lightweight Machine Oil	 Teflon® Based Grease	 Super Bonder	 Third Angle Projection
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RR-76 SERIES

Rotary Actuators | Maintenance and Assembly Procedure

Item Qty Name

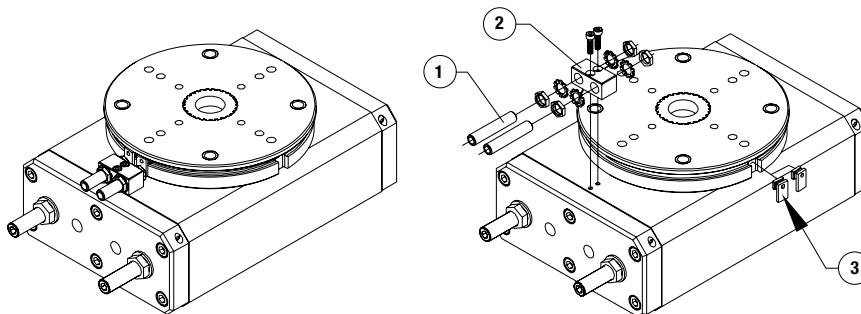
01	1	Body, Main
02	1	Flange
03	1	Pinion
04	2	Rack, Piston
05	1	Ring, Inner Bearing
06	1	Ring, Outer Bearing
07	1	End Plate
16	1	Plug
20	1	Bearing, Needle
21	1	Bearing, Needle
22	1	Washer, Thrust
23	2	Bearing, Thrust
24	1	O-Ring
31	1	Ported End Plate



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

Accessory Installation & Adjustment Instructions

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



SK

Seal Kit
Items

**THREAD
LOCK**

Thread
Locker

KRYTOX

Krytox™
Lubricant

O

Lightweight
Machine Oil

G

Teflon® Based
Grease

GLUE

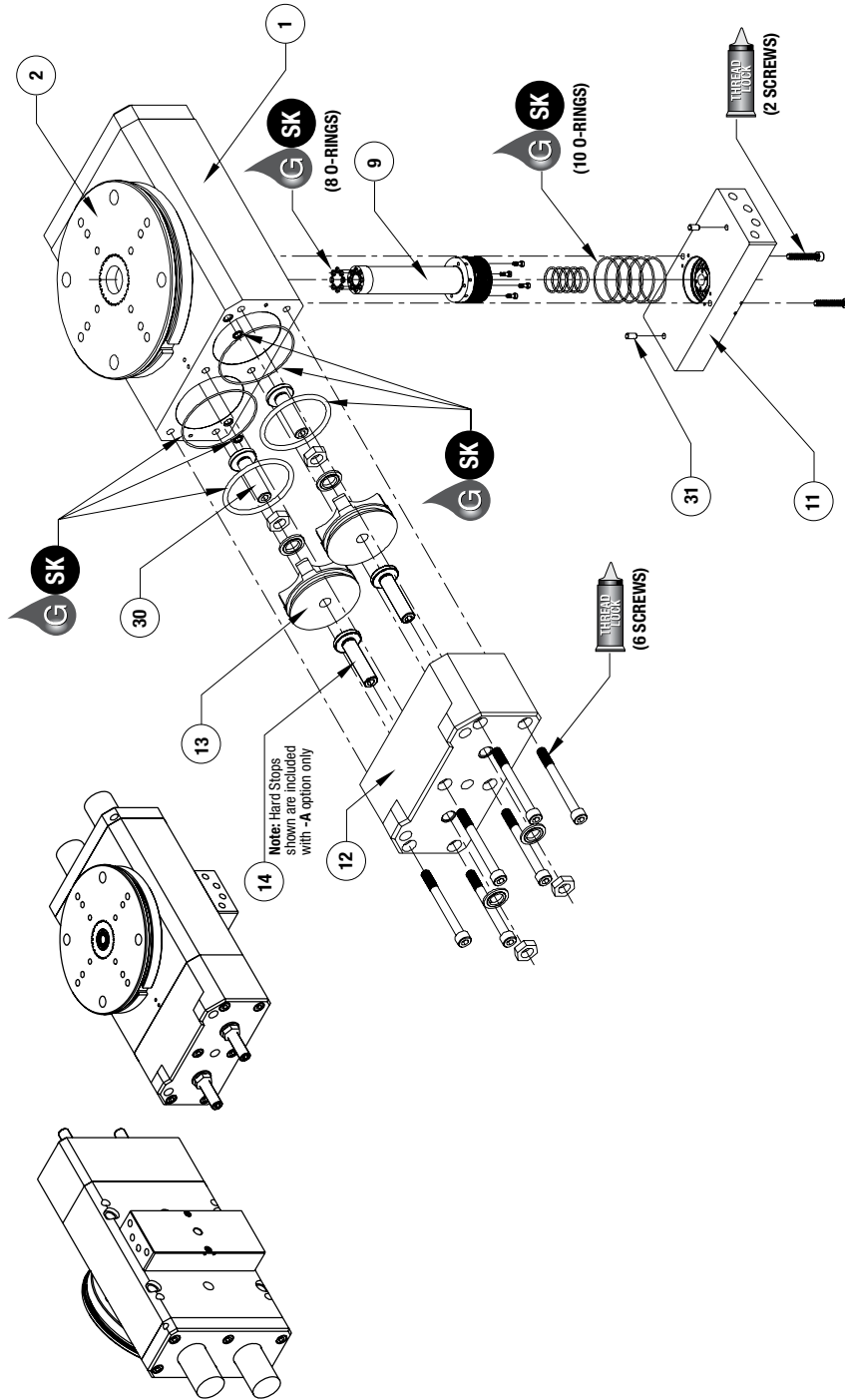
Super
Bonder

**Third
Angle
Projection**

Third Angle
Projection

RR-76 OPTIONS SERIES

Rotary Actuators | Maintenance and Assembly Procedure



Item Qty Name

RR-56 & 66-S (Midstop)		
12	1	Body, Mid-Stop
13	2	Piston, Mid-Stop
30	2	Mid-Stop 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.

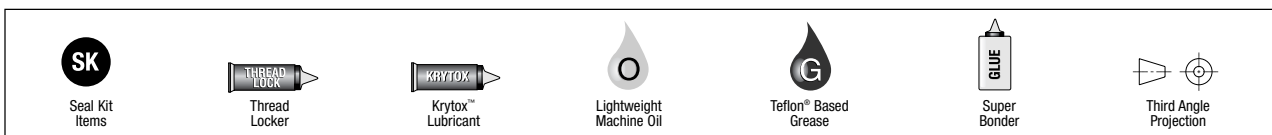
Mid-Stop Option Assembly Procedure

- 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 mid-stop body back onto actuator base.

**SK Seal Repair Kit Order #'s
See Product Data Sheets**

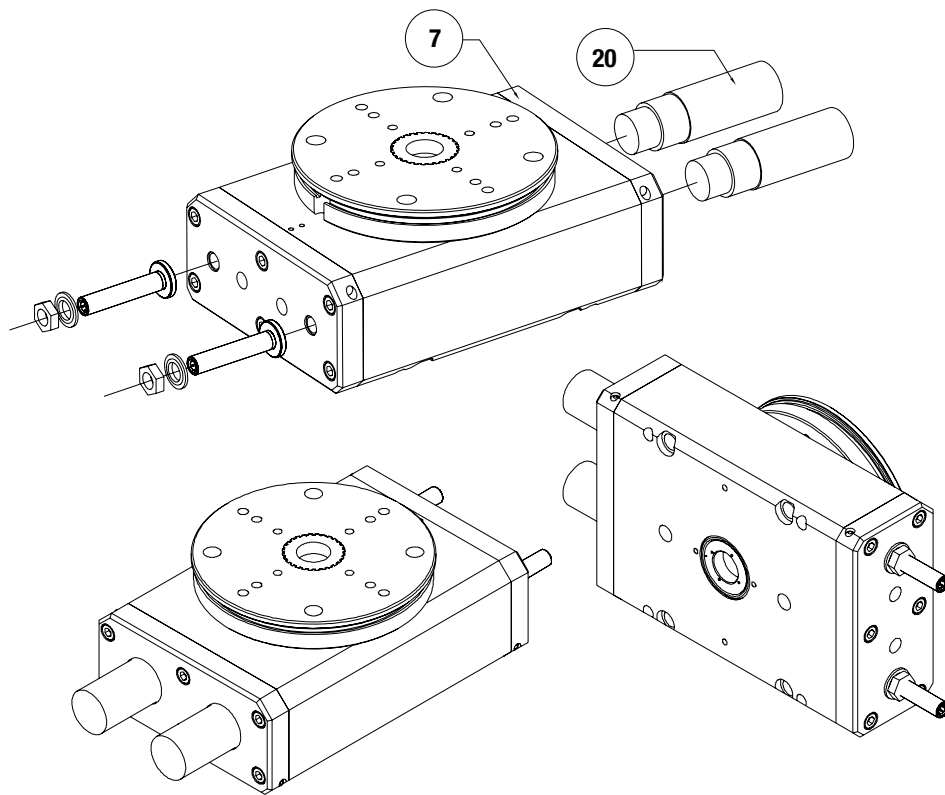









RR-76 OPTIONS SERIES

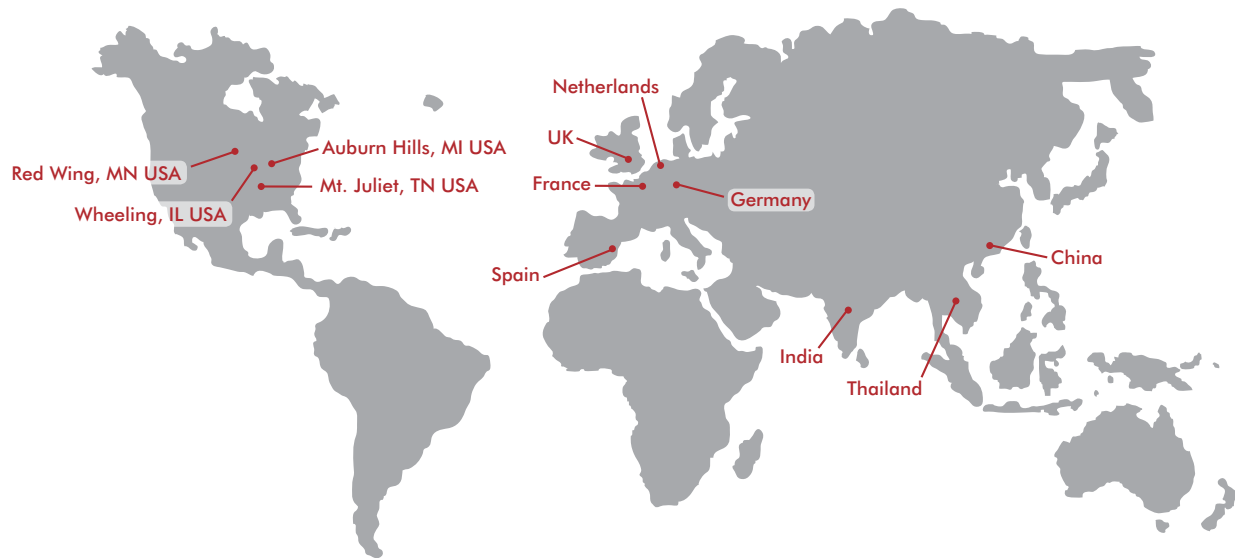
Rotary Actuators | Maintenance and Assembly Procedure

Item	Qty	Name
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.



 SK Seal Kit Items	 THREAD LOCKER Thread Locker	 KRYTOX Krytox™ Lubricant	 O Lightweight Machine Oil	 G Teflon® Based Grease	 GLUE Super Bonder	 Third Angle Projection
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GLOBAL LOCATIONS

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