

LTR Series Actuators

Maintenance Instructions & Parts List

Provide Model Number and Serial Number When Ordering Spare Parts.

The LTR Series Actuators will provide superior performance in heavy duty pneumatic and medium duty hydraulic applications. The LTR Series "Wear-Pak" piston sealing configurations and anti-friction ball bearings are used to guarantee low breakaway pressure and eliminate erratic motion at low speeds.

In the event that maintenance is required, the following steps should be used as a guide. It is recommended that a suitable oil or O-ring lubrication compatible with the operating media, such as Parker Lube-A-Cyl, be used on all seals and mating parts to facilitate assembly.

A. Inspection & Replacement of Piston Seal, #10, Wear Rings, #15, and O-Ring End Cap, #12.

1. Remove Tie Rod Nuts, #17 from Tie Rods, #8.
2. Pull End Cap, #16 free from Cylinder Tube, #14.
3. Pull Cylinder Tube, #14 free from Housing, #13.
4. Push Piston, #11 free from Cylinder Tube, #14.
5. Inspect and/or replace Piston Seal, #10, Wear Rings, #15, and O-Ring End Cap, #12.
6. Inspect and/or replace O-Ring Cylinder, #7 (for LTR Models only).
7. Reassemble as shown in figure and torque Tie Rod Nuts, #17 per Torque Table.

B. Inspection & Replacement of Bearing, #2.

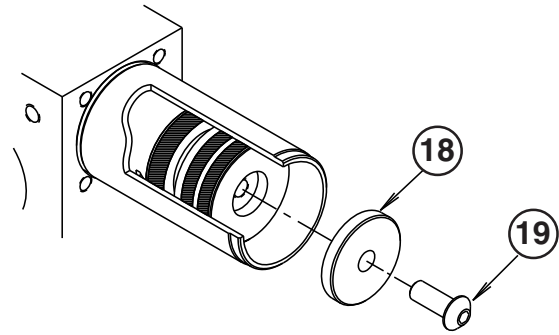
1. Remove Retaining Ring, #1.
2. Press Pinion, #3, and Bearing #2 from housing, #13.
3. Press Bearing, #2 free from Pinion, #3.
4. Inspect or replace Bearing, #2.
5. Press new Bearing, #2 into Housing, #13.
6. Replace Pinion, #3 into Housing, #13.
7. Press remaining new Bearing, #2 onto Pinion, #3.
8. Replace Retaining Ring, #1.

NOTE:

Prior to assembly of an LTR Series actuator, the rack and pinion are coated with a molycoat GN paste and a moly grease containing a minimum MSO₂ content of 3%, such as Texaco Molytex EP2.

ITEM NO.	DESCRIPTION	QUANTITY	
		SINGLE RACK	DOUBLE RACK
1	RETAINING RING	2	2
2	BEARING	2	2
3	PINION	1	1
4	NAME PLATE	1	1
6	PLUG	1	1
7*	O-RING, CYLINDER TUBE ¹	2	4
8	TIE ROD	8	16
9	RACK	1	2
10*	PISTON SEAL	2	4
11	PISTON	2	4
12*	O-RING, END CAP	2	4
13	HOUSING	1	1
14	CYLINDER TUBE	2	4
15*	WEAR RING	4	8
16	END CAP	2	4
17	TIE ROD NUT	8	16
18	BUMPER	1x	1x
19	BUMPER BOLT	1x	1x

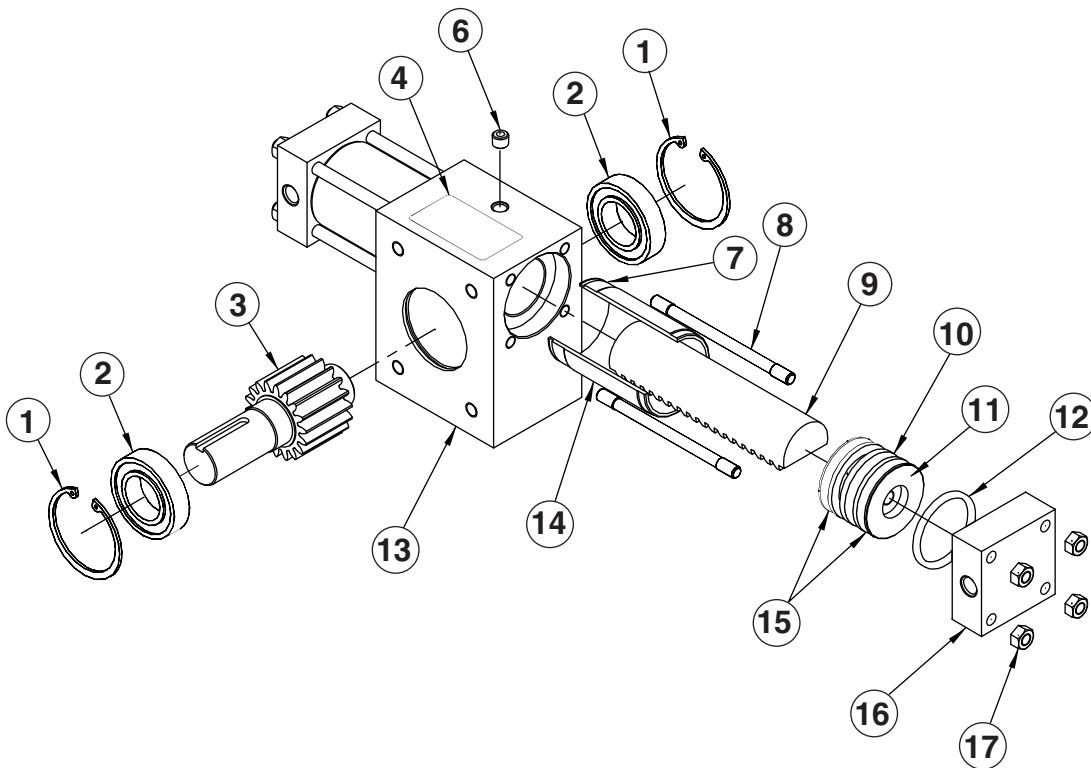
Bumper Option



Built in polyurethane bumper pads absorb shock and noise, thus permitting faster cycle times and increased production rates. Recommended torque value for Bumper Bolt, item #19, is shown in Torque Table.

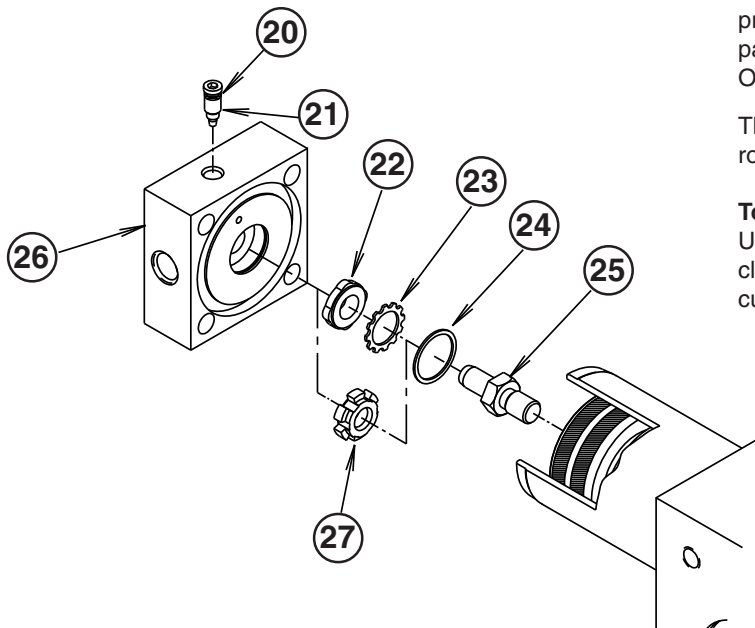
All items marked with an asterisk (*) are included in a complete seal kit.

- ¹ = Only used on units with steel cylinder tubes. (LTR units)
- x = Quantity as required per end cap option specified.



PTR/LTR MODEL	TIE ROD NUT #17		BUMPER BOLT #19	PISTON BOLT #36 CUSHION PLUG #25	SHAFT SEAL SCREW #50	FLANGE BOLT #46
	CYLINDER TUBE MATERIAL					
	ALUMINUM	STEEL				
101/102	1.5	—	3	3	3	5
151/152	3	5	6	6	3	10
201/202	6	11	20	20	3	17
251/252	6	11	20	20	3	40
321/322	15	20	50	50	3	130

Cushion Option



CAUTION:

Before making any adjustment, turn off the system pressure. Never adjust cushion adjustment screw out past flush with end cap or counterbore. **DO NOT OVERTIGHTEN.**

The standard cushions operate over the last 30° of rotation in either or both directions.

To Adjust:

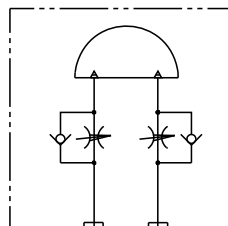
Using an Allen wrench, turn Adjustment Screw, #21, clockwise or more cushioning, counterclockwise for less cushioning.

ITEM	DESCRIPTION	QTY.
20	O-RING, ADJUSTMENT SCREW	1
21	CUSHION ADJUSTMENT SCREW	1
22	CUSHION SEAL	1
23	CUSHION SEAL WASHER ¹	1
24	RETAINING RING ¹	1
25	CUSHION PLUG	1
26	END CAP	1
27	CUSHION BUSHING ²	1
28	O-RING, ADJUSTMENT SCREW	1
29	FLOW CONTROL ADJ. SCREW	1
30	END CAP	1
31	PLUG	1
32	O-RING, PLUG	1
33	CHECK BALL	1
34	CHECK SPRING	1
35	CHECK PLUG	1

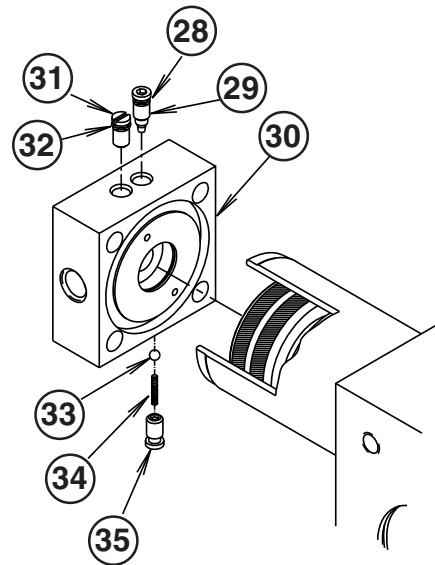
NOTE: Quantities shown are as required *per end cap option* specified.

- ¹ = Cushion seal configuration for use with pneumatic service.
- ² = Cushion bushing for use with hydraulic service.

Schematic



Port Flow Control Option



Built in meter-out flow controls provide for precise regulation of actuator speed and eliminate the cost and space of externally mounted components. A separate spring loaded ball check is used to provide free flow in the opposite direction.

When both cushions and port flow controls are specified they will be stamped "C" and "P" respectively.

To Adjust:

Using an Allen wrench, turn Adjustment Screw, #29, clockwise for slower speed; counterclockwise for more speed.

Stroke Adjust Options

Stroke adjusters will reduce the angle of rotation by 10° or 30° in either or both directions. Typical applications are for initial set up purposes where exact rotation requirements may change between various operations.

CAUTION: Before making any adjustments, turn off system pressure and ensure that no residual pressure exists in the actuator.

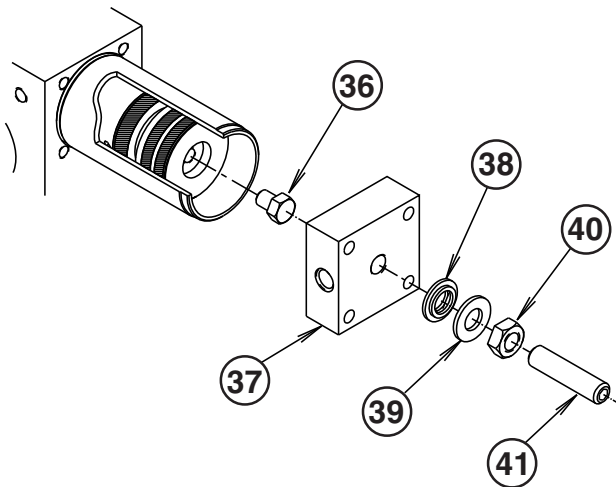
Standard cushions operate over the last 30° of rotation. Stroke adjusters will decrease the cushion length by the same amount. For example, reducing the rotation by 5° yields 25° cushion length.

To Adjust:

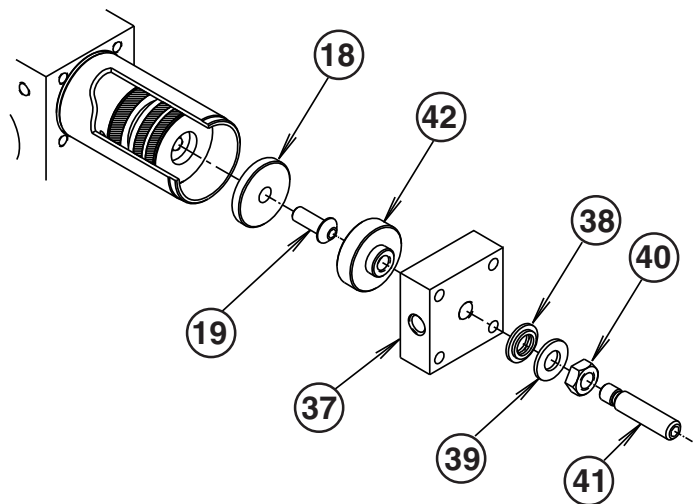
1. Loosen Jam Nut, #40.
2. Turn Stroke Adjuster, #41 clockwise to reduce stroke, counterclockwise to increase stroke.
3. Tighten Jam Nut, #40.
4. Resume system pressure.

PTR/LTR MODEL	ONE COMPLETE TURN OF ADJUSTER CAUSES SPECIFIED CHANGE IN ROTATION
101/102	4.0°
151/152	4.6°
201/202	3.2°
251/252	3.2°
321/322	2.4°

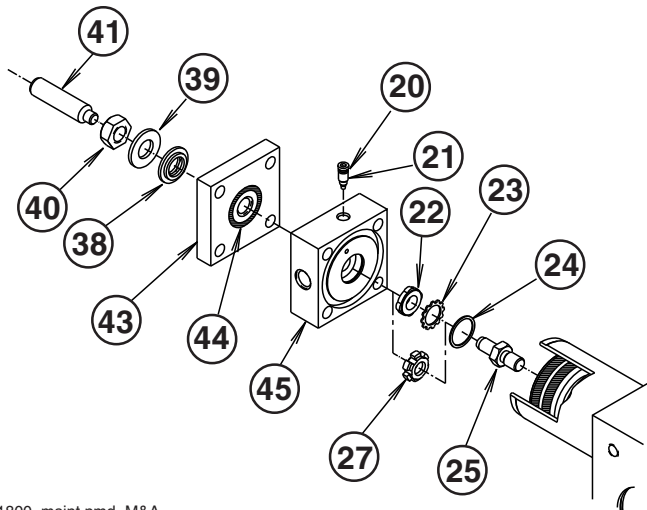
30° Stroke Adjust Option



30° Stroke Adjust Option with Bumper



10° Stroke Adjustment with Cushion Option
 (Single Rack Units Only)



ITEM	DESCRIPTION	QTY.
36	PISTON BOLT	1
37	END CAP	1
38	THREAD SEAL	1
39	LOCK WASHER	1
40	JAM NUT	1
41	STROKE ADJUSTER	1
42	STROKE ADJUST HEAD	1
43	STROKE ADJUST BLOCK	1
44	O-RING, STROKE ADJUST BLOCK	1
45	END CAP	1

NOTE: Quantities shown are as required *per end cap* option specified.

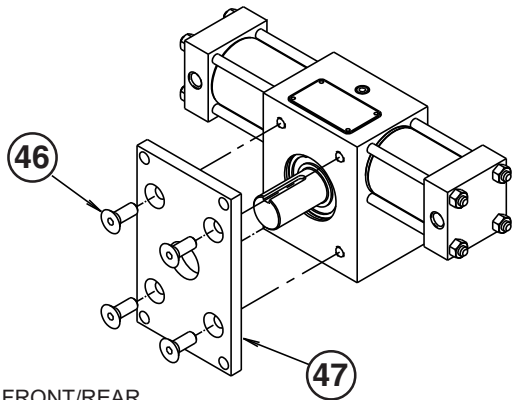
Mounting Options

Mounting options utilize existing face and base mounting holes.

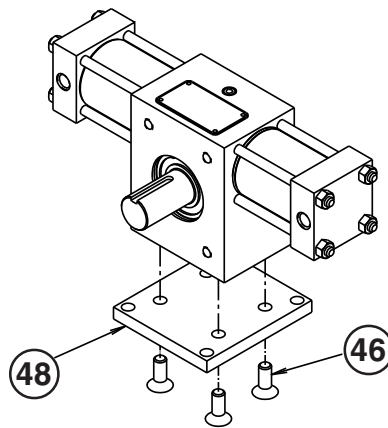
Shaft seal covers are designed to prolong bearing life by isolating them from external contamination and pressure.

NOTE: ¹ = Quantity is 2 if double-end shaft extension is specified.
² = Quantity is 0 if double-end shaft extension is specified.

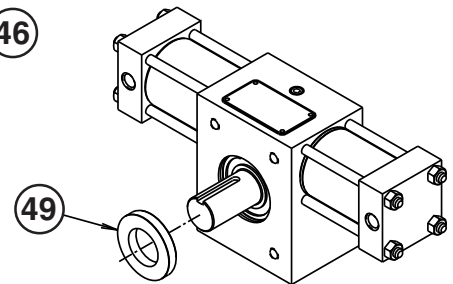
ITEM	DESCRIPTION	QTY.
46	FLANGE BOLT	4
47	FRONT FLANGE	1
48	FOOT FLANGE	1
49	PILOT RING	1
50	SHAFT SEAL COVER SCREW	6
51	SHAFT SEAL	1 ¹
52	O-RING	2
53	SHAFT SEAL COVER WITH HOLE	1 ¹
54	SHAFT SEAL COVER, SOLID	1 ²



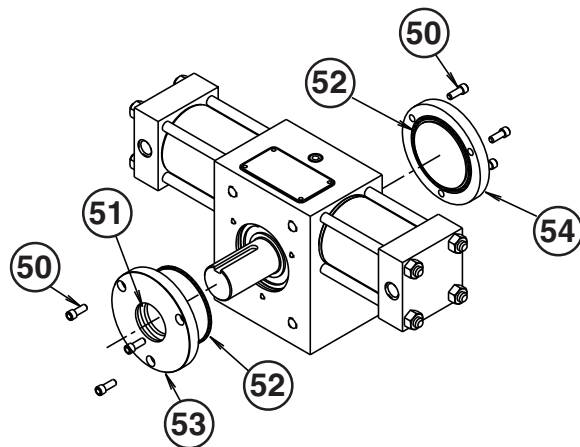
FRONT/REAR
 FLANGE MTG.



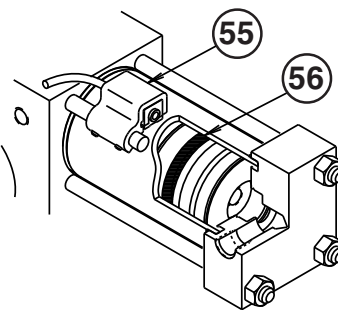
FOOT
 FLANGE MTG.



PILOT RING MTG.

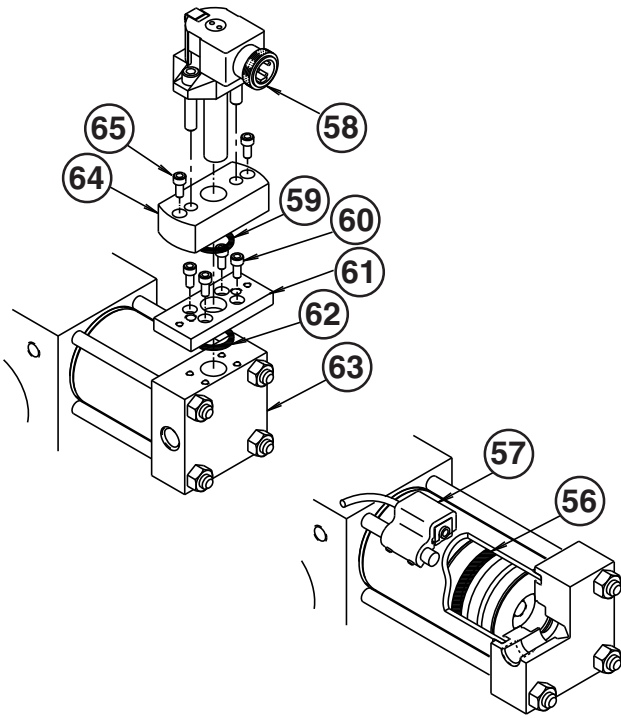


SHAFT SEAL COVER
 OPTIONS 'S'



See next page for details on Items 55 & 56.

MAGNET PISTON RING
 OPTION 'M' W/SWITCH
 (ORDER SWITCH SEPARATELY)



ITEM	DESCRIPTION	QTY.
55	REED SWITCH KIT (Lead Type or Quick Connect)	1
56	Magnet	2
57	HALL EFFECT SWITCH KIT (Lead Type or Quick Connect)	1
58	PROXIMITY SWITCH	1
59	O-RING, ADAPTER BLOCK	1
60	SCREW, SPACER BLOCK	4
61	SPACER BLOCK	1
62	O-RING, SPACER BLOCK	1
63	END CAP	1
64	ADAPTER BLOCK	1
65	SCREW, ADAPTER BLOCK	2

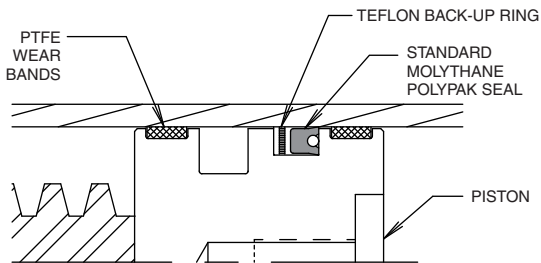
NOTE: Quantities shown are as required *per end cap* option specified.

Seal Kit Ordering Information

- Standard units are equipped with Nitrile seals.
- Optional seal compounds are available.
- See parts list for items contained in seal kit.
- Seal kit part numbers as shown:

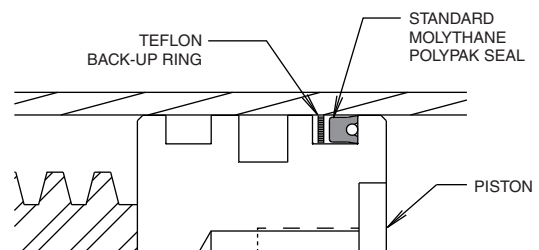
PSK Parker Seal Kit	—	LTR322 Base Model	V
			Omit - Standard V = Fluorocarbon Q = Quad Ring Piston Seals W = Carboxylated Nitrile Piston Seals

NOTE: This seal kit contains parts to reseal Design Series "A", "B" or "C" LTR Series rotary actuators. If your actuator is a "C" Design Series, use the seals and wear bands provided to assemble the pistons as shown below left. If your actuator is Design Series "A" or "B", only the piston seal is required, as there will not be grooves to accept wear bands on these pistons. Assemble the piston seal provided in the groove which will be closest to the fluid pressure when the piston is reinstalled, as shown below right. Although these pistons have two seal grooves, the superior design of the piston seals which are now being utilized allows for more efficient performance than possible with the old design. Contact the factory or your local representative for information on how to update "A" or "B" Design actuators.



Design Series "C"

LTR Series rotary actuators with Design Series suffix "C" at the end of the model number have the piston/piston sealing configuration illustrated above. Each piston is equipped with two non-metallic wear bands and one standard Molythane Polypak seal with backup ring for superior wear resistance.



Design Series "A" & "B"

LTR Series rotary actuators with Design Series suffix "A" or "B" at the end of the model number should be reassembled with the piston/piston sealing configuration illustrated above. These models were originally equipped with two standard pneumatic lip seals with Teflon backup rings; this configuration is replaced with one standard Molythane Polypak seal with Teflon backup ring.

1800_maint.pmd, M&A