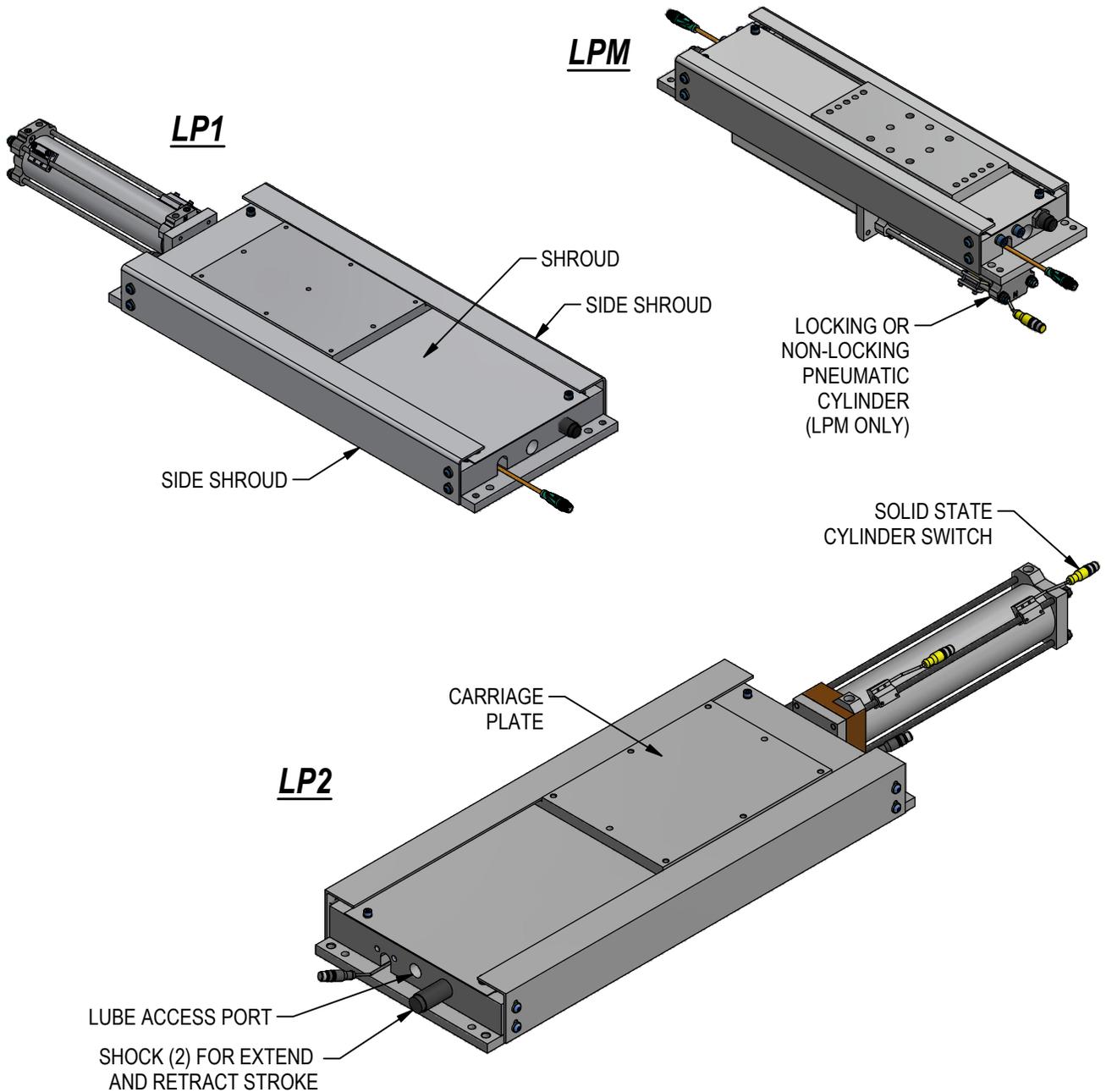


## **MAINTENANCE MANUAL**

## **LP SERIES RAIL SLIDES**



# **MAINTENANCE**

## **SAFETY FIRST!**

MAINTENANCE SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONNEL. PROPER SAFETY GEAR AND PROCEDURES MUST BE USED AT ALL TIMES.

BEFORE PERFORMING MAINTENANCE, CUT OFF AIR SUPPLY TO THE UNIT, ENSURE THAT ALL AIR IS EXHAUSTED FROM THE SYSTEM AND THAT THERE ARE NO "TRAPPED AIR" CONDITIONS.

PREVENTATIVE MAINTENANCE: Regularly inspect unit to verify proper operation. Check for debris build up and clean as needed. Inspect all pneumatic, electrical, and mounting connections, making sure all connections are tight and secure. Routine replacement of cylinder seals is recommended.

CYLINDER: Welker pneumatic cylinders are lube free and require very little maintenance. Check rod and cylinder surfaces for abnormal wear or damage. Plant air supply to the cylinder should be free of contaminants, filtered to a minimum of 50micron and have a water separator. Be sure fittings are in good condition. Seals are subject to wear under normal operating conditions. It is recommended to keep a spare cylinder seal kit on hand.

LOCKING CYLINDERS: Consult cylinder manufacturer's documentation for maintenance and repair information. For actuator options 03/04, cylinder make/model is SMC (smcusa.com) series C(D)NA2. For actuator 05/06, cylinder make/model is CKD (ckdusa.com) series JSG.

STOPS: Shims (if applicable) may require adjustments; be sure to make adjustments to each location equally under operating pressure. Welker Smart Stop requires replacement upon failure. Welker Smart Stops use standard NAAMS (3) hole shims and spacers.

SHROUDS: Inspect for damage and debris. Replace when damaged.

BEARING ASSEMBLY & RAIL: Inspect rails for damage and debris. Rail bearings must be lubricated on a scheduled basis. Lubrication access port is located on extended end of slide unit.

## **TROUBLESHOOTING**

FAILURE	POSSIBLE CAUSE	SOLUTION
Slide carriage does not move or does not fully extend/retract	Cylinder/actuator failure	Check plant air supply for proper pressure; too little will result in lack of cylinder movement. Seals may be worn, damaged or deteriorating. Replace as needed. If cylinder has been serviced, be sure tie rod nuts have been tightened to torque specifications.
	Debris/contamination in slide	Inspect unit for dirt/debris. Clean, remove debris. Inspect shroud, replace if damaged.
	Stray metal parts in slide	Remove.
Bent, broken, or worn cylinder rod	Misaligned load or load in excess of capacity	Make sure load is properly aligned and within design limits.
Rail damage	Bearing failure Contaminants inside bearing assembly	Replace bearing assembly (includes 1 rail and 2 carriages)
Rail noise	Lack of bearing lubrication	Lubricate bearings.
Welker Smart Stop LEDs do not light up	Cylinder/actuator stroke not completing	Inspect unit for debris blocking full cylinder stroke. Clean, remove debris. Check cylinder operation.
	Switch failure	Check switch for proper operation and secure connection. Replace if required.

# REPLACEMENT PARTS

**NOTE A:** When ordering replacement cylinders and bearing assemblies, please have the Welker Job Number available and/or the cylinder model & serial number (from the unit's identification tag).

**NOTE B:** For locking cylinders, consult cylinder manufacturer's documentation for maintenance and repair information. For actuator options 03/04, cylinder make/model is SMC (smcusa.com) series C(D)NA2. For actuator 05/06, cylinder make/model is CKD (ckdusa.com) series JSG.

ITEM	QTY	STOCK*	DESCRIPTION	PART NUMBER
1	1	1	LP1 CYLINDER SEAL KIT: ACTUATOR 01, 02	WCW2148-CSK
1	1	1	LP1 CYLINDER SEAL KIT: ACTUATOR 03, 04	LP1-03-CSK
1	1	1	LP1 CYLINDER SEAL KIT: ACTUATOR 05, 06	LP1-05-CSK
1	1	1	LP2 CYLINDER SEAL KIT: ACTUATOR 01, 02	LP2-CSK
1	1	1	LP2 CYLINDER SEAL KIT: ACTUATOR 03, 04	LP2-03-CSK
1	1	1	LP2 CYLINDER SEAL KIT: ACTUATOR 05, 06	LP2-05-CSK
1	1	1	LPM CYLINDER SEAL KIT: ACTUATOR 01, 02	WCW2148-CSK
1	1	1	LPM CYLINDER SEAL KIT: ACTUATOR 03, 04	LP1-03-CSK
1	1	1	LPM CYLINDER SEAL KIT: ACTUATOR 05, 06	LP1-05-CSK
1	1		REPLACEMENT CYLINDER WITH COUPLER	SEE CHART BELOW
2	2	2	CYLINDER SWITCH	SEE CHART BELOW
3	2	1	LPM, LP1 SHOCK (NOT REQ'D FOR 75mm STROKE)	SC300-9M
3	2	1	LP2 SHOCK (NOT REQ'D FOR 75mm STROKE)	SC650M-9
4	2	1	WELKER SMART STOP	ASC020-PD
5	2		LP1 BEARING(2) & RAIL(1) ASSEMBLY	LP1-RAILASSM-(265+STROKE)
5	2		LP2 BEARING(2) & RAIL(1) ASSEMBLY	LP2-RAILASSM-(325+STROKE)
5	2		LPM BEARING(2) & RAIL(1) ASSEMBLY	LPM-RAILASSM-(265+STROKE)

\* RECOMMENDED SPARE PARTS TO KEEP IN STOCK

REPLACEMENT CYLINDER WITH COUPLER			
SERIES	ACTUATOR	PORT	PART NUMBER
LP1	01	N	LP1-{UNIT STROKE}-N
LP1	02	G	LP1-{UNIT STROKE}-G
LP1	03	N	LP1-{UNIT STROKE}-03
LP1	04	G	LP1-{UNIT STROKE}-04
LP1	05	N	LP1-{UNIT STROKE}-05
LP1	06	G	LP1-{UNIT STROKE}-06
LP2	01	N	LP2-{UNIT STROKE}-N
LP2	02	G	LP2-{UNIT STROKE}-G
LP2	03	N	LP2-{UNIT STROKE}-03
LP2	04	G	LP2-{UNIT STROKE}-04
LP2	05	N	LP2-{UNIT STROKE}-05
LP2	06	G	LP2-{UNIT STROKE}-06
LPM	01	N	LPM-{UNIT STROKE}-01
LPM	02	G	LPM-{UNIT STROKE}-02
LPM	03	N	LPM-{UNIT STROKE}-03
LPM	04	G	LPM-{UNIT STROKE}-04
LPM	05	N	LPM-{UNIT STROKE}-05
LPM	06	G	LPM-{UNIT STROKE}-06

CYLINDER SWITCHES			
Reorder #	Mfr Part #	Mfr	Description
<b>SWITCH L3S</b>	SWITCH L3S	Welker	4-Wire, 4-Pin (PNP)*
<b>SWITCH L5</b>	MK5113	ifm Efector	3-Wire, 4-Pin (NPN)*

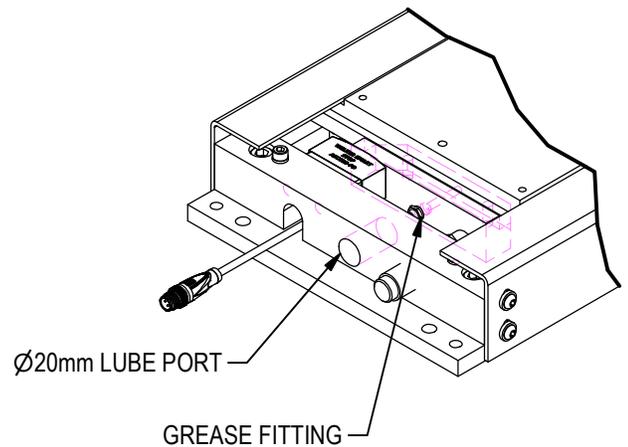
\*DC M12 X 1 Quick Disconnect

## RAIL BEARING LUBRICATION

Rail bearings require lubrication for long life, frequency depends upon usage and environment. Manual lubrication is recommended every six months.

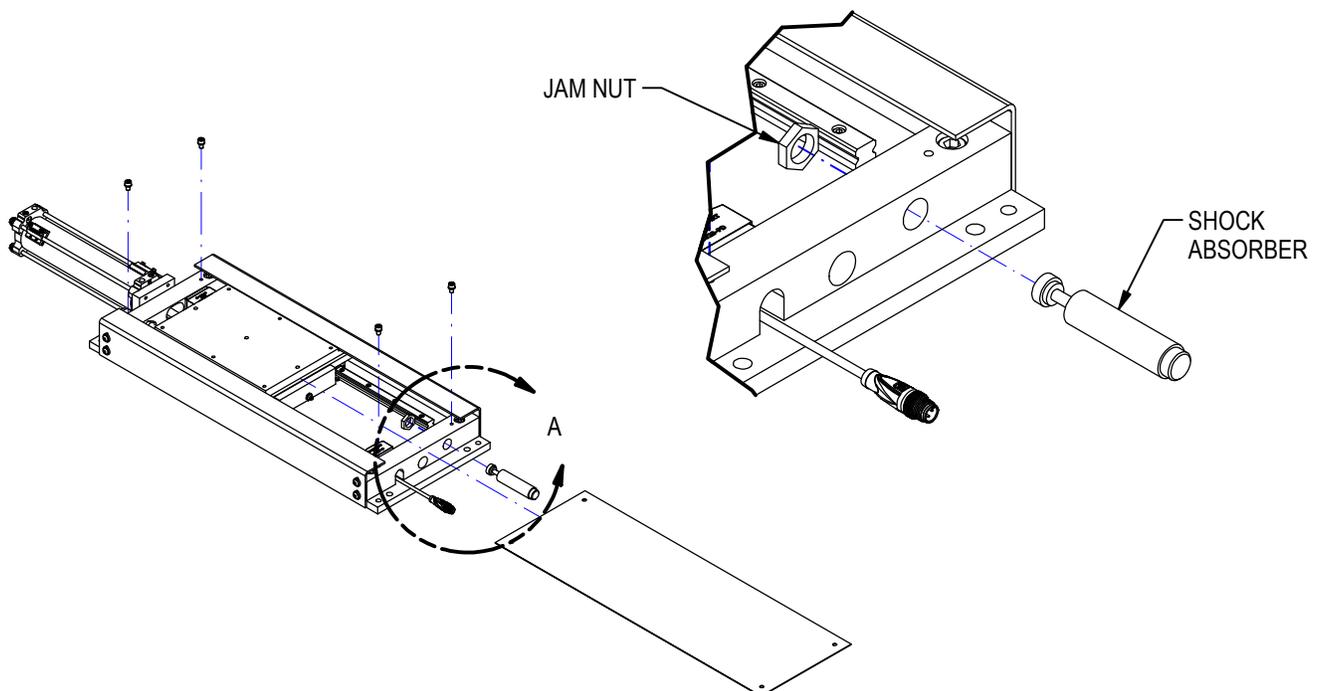
1. Extend cylinder so carriage is positioned near lube port.
2. A 1/8" NPT grease fitting is provided, accessible via lube port.
3. Apply 1.1 cubic centimeters of grease.  
Mobil XHP 222 is recommended.

(UNIT SHROUD NOT SHOWN FOR CLARITY)



## REPLACING SHOCK

1. Extend or retract cylinder so carriage plate is opposite of shock to be replaced.
2. Remove fasteners & lock washers securing metal shroud. Slide shroud out to remove.
3. Remove jam nut from shock absorber.
4. Unscrew shock from unit.
5. Install new shock absorber. Set the shock absorber so that it is fully compressed when the slide is against it then back it off 1/32".
6. Tighten jam nut.



# LP1/LPM CYLINDER SEAL MAINTENANCE

(ACTUATORS 01, 02)

Please note cylinder tube style before cylinder maintenance: round or extrusion.

Disconnect air lines to cylinder, release any trapped air conditions.

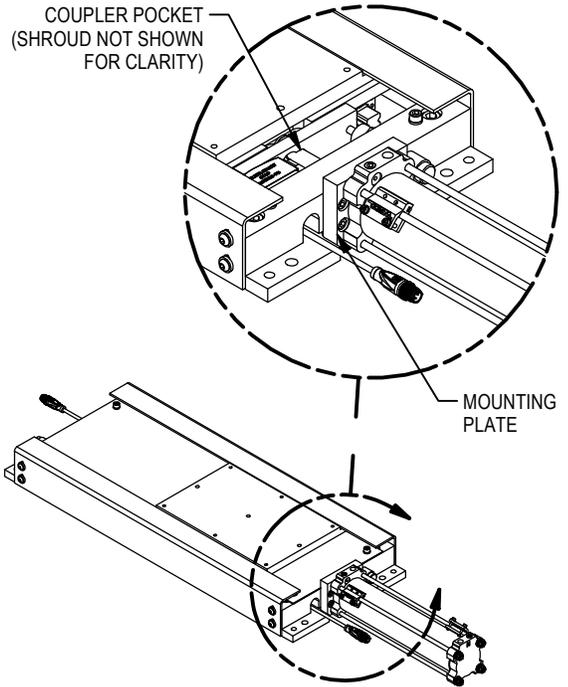
Note: Spacer is loose! It mounts to end of coupler.

**For units with extrusion style cylinder tube:** Remove cylinder tie rods (2, without plastic plug) to free cylinder from mounting plate. Pull cylinder back to extend rod out. Slide unit to left to release cylinder rod coupling from pocket. Remove cylinder. Remove plastic plugs (2). Loosen screws enough to release tube/end cap assembly.

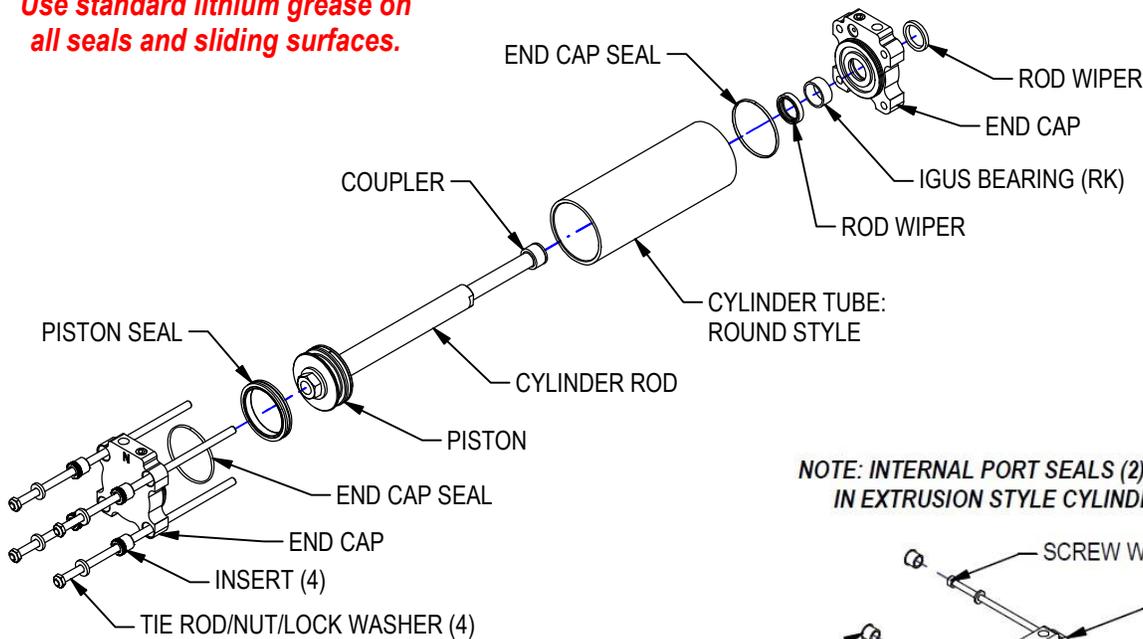
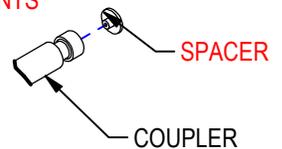
**For units with round style cylinder tube:** Loosen cylinder tie rods (4) to free cylinder from mounting plate. NOTE: THIS WILL DISASSEMBLE CYLINDER. Carefully pull cylinder back to extend rod out. Slide unit to left to release cylinder rod coupling from pocket. Remove cylinder. Loosen screws enough to release tube/end cap assembly. Note inserts between lock washers and end cap are loose.

1. Replace end cap seals (2).
2. Replace piston seal, noting orientation of seal.
3. Replace internal port seals (2) on extrusion style cylinder tube unit.
4. Replace Igus bearing and rod wipers. Note wiper direction.
5. Reassemble unit making sure ALL seals are in place and cylinder tube is aligned correctly. Use permanent thread locker on cylinder hex nuts. Using torque wrench tighten cylinder fasteners to 14 ft.lb.
6. Install plastic plugs (extrusion style cylinder tube).
7. Install air lines, making sure they are free of contaminants.

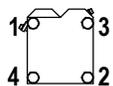
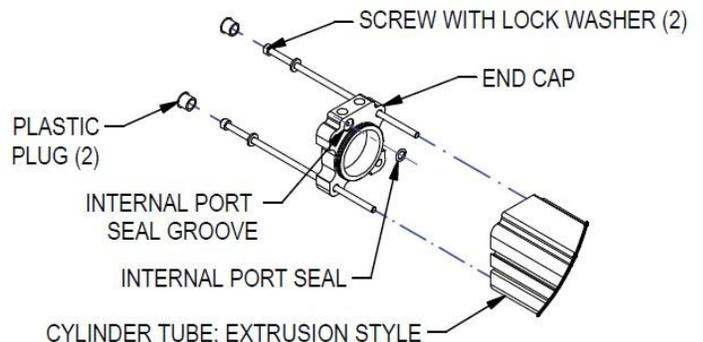
**Use standard lithium grease on all seals and sliding surfaces.**



**IMPORTANT:**  
SPACER IS LOOSE, MOUNTS TO END OF COUPLER BEFORE INSTALLING CYLINDER COUPLER TO POCKET



**NOTE: INTERNAL PORT SEALS (2) INSTALLED IN EXTRUSION STYLE CYLINDER ONLY**

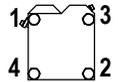
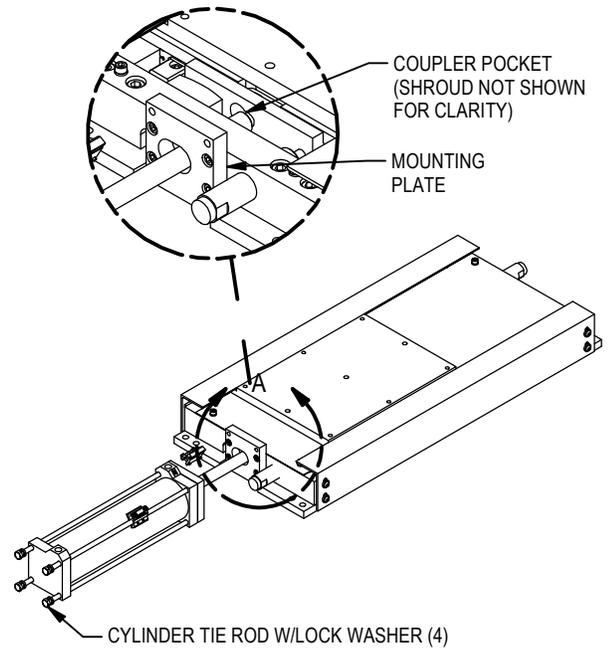


TORQUE PATTERN FOR ROUND STYLE CYLINDER

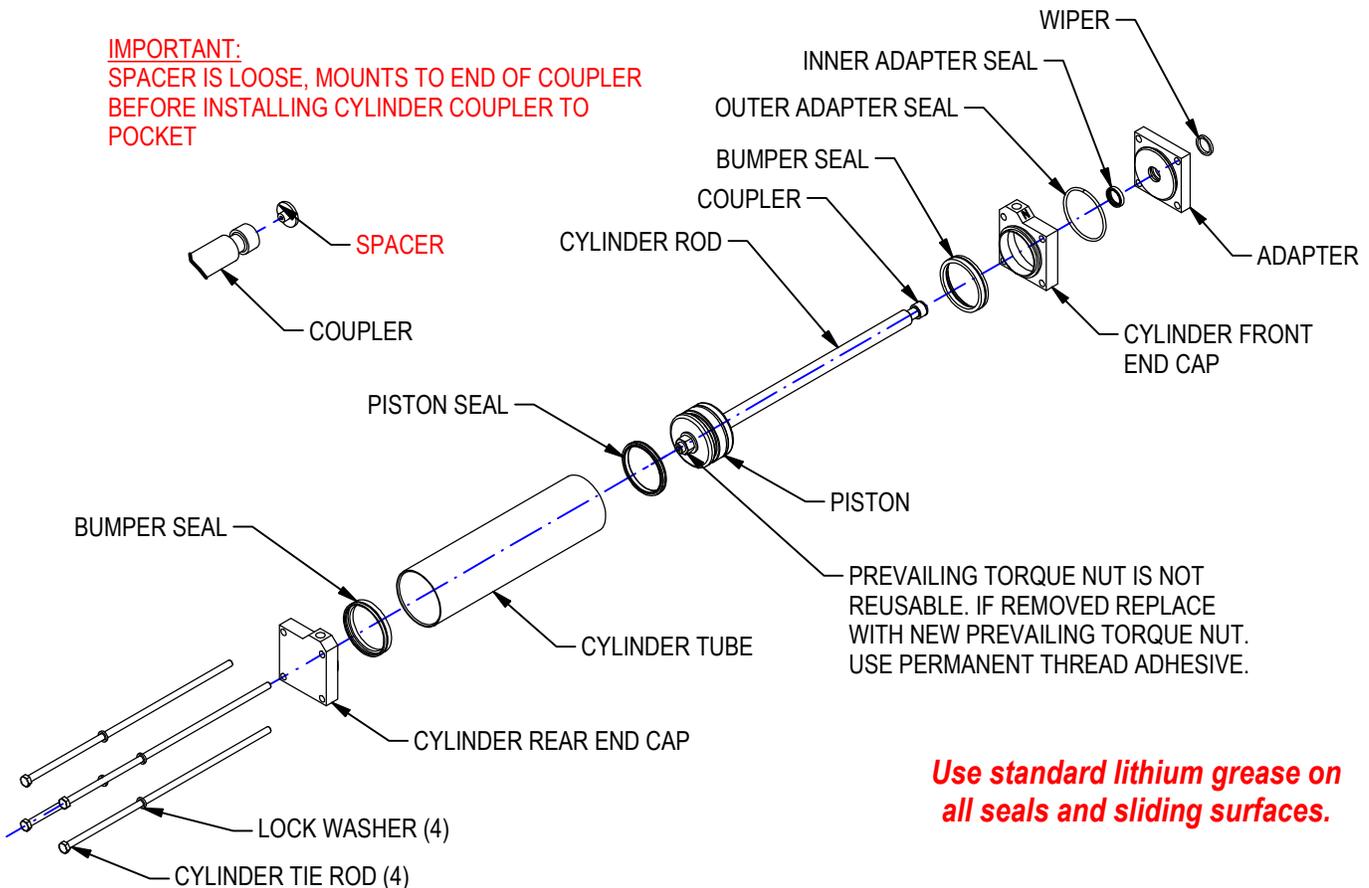
# LP2 CYLINDER SEAL MAINTENANCE

(ACTUATORS 01,02)

1. Disconnect air lines to cylinder, release any trapped air conditions. Remove cylinder switch if applicable.
2. Loosen cylinder tie rods about an inch, to free cylinder from mounting plate. Pull cylinder back to extend rod out. Slide unit to left to release cylinder rod coupling from pocket. Remove cylinder. Spacer is loose and mounts to end of coupler.
3. Remove cylinder tie rods & lock washers. Remove end caps, adapter & tube.
4. Remove piston seal using plastic or brass tool. NOTE ORIENTATION OF SEAL. Clean seal grooves thoroughly. Inspect parts for wear. Clean piston and install new seal. Replace bumper seals (2). Replace outer adapter seal. Use standard lithium grease on all seals and sliding surfaces.
5. Remove adapter plate, replace inner seal, greasing with standard lithium grease.
6. Align adapter, front end cap, bumper seals and rear end cap on cylinder rod and install to mounting plate with cylinder tie rods & lock washers. Be sure cylinder ports are in proper position. Using torque wrench tighten tie rods to pattern shown. Tighten to 15 ft.lbs.
7. Install cylinder switch if applicable. Install air lines, making sure they are free of contaminants.



**IMPORTANT:**  
SPACER IS LOOSE, MOUNTS TO END OF COUPLER BEFORE INSTALLING CYLINDER COUPLER TO POCKET



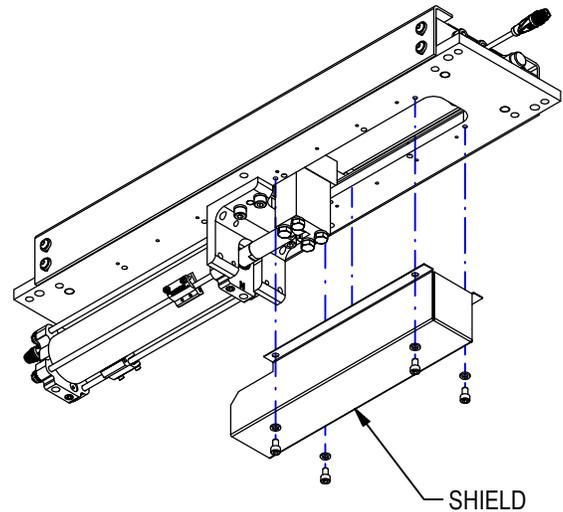
**Use standard lithium grease on all seals and sliding surfaces.**

# LPM CYLINDER REMOVAL

Disconnect air lines to cylinder, release any trapped air conditions.

## To access the cylinder:

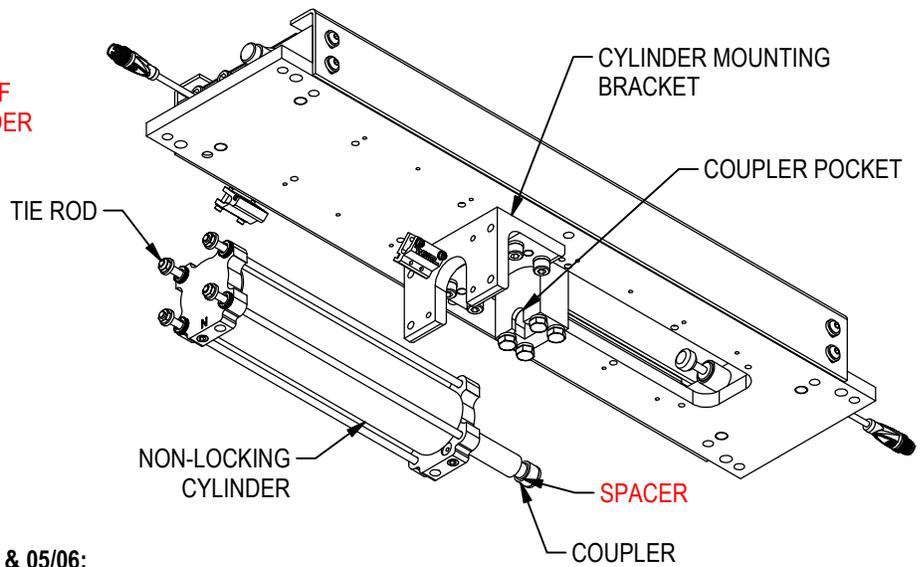
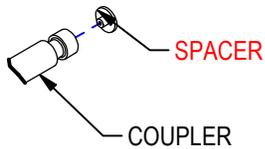
1. Remove screws & lock washers securing shield to slide base.
2. Remove shield.



## To remove non-locking cylinder, Option 01/02:

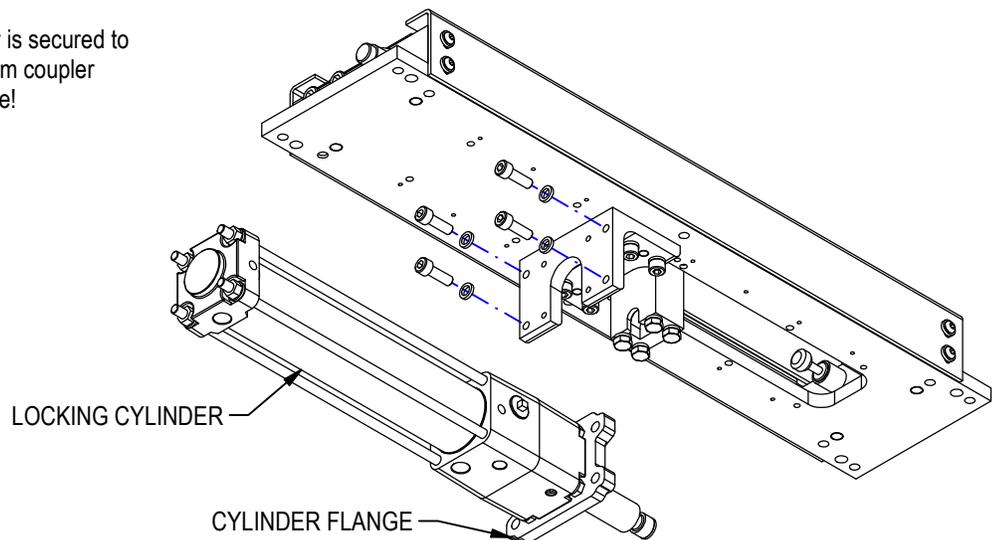
1. Loosen cylinder tie rods (4) approx 13mm to free cylinder from mounting plate. NOTE: THIS WILL DISASSEMBLE CYLINDER
2. Lower cylinder to remove. Coupler is secured to cylinder rod and will drop down from coupler pocket, with spacer. Spacer is loose!
3. See sheet 5 for cylinder seal maintenance.

**IMPORTANT:**  
SPACER IS LOOSE, MOUNTS TO END OF  
COUPLER BEFORE INSTALLING CYLINDER  
COUPLER TO POCKET



## To remove locking cylinder, Option 03/04 & 05/06:

1. Remove screws & lock washers securing cylinder flange to mounting plate.
2. Lower cylinder to remove. Coupler is secured to cylinder rod and will drop down from coupler pocket with spacer. Spacer is loose!



## REPLACING SWITCH (NON-LOCKING CYLINDERS)

1. BEFORE REMOVING OLD SWITCH: **NOTE SENSOR PLACEMENT!** EACH SENSOR WILL BE TAGGED WITH A BAND AROUND THE WIRE INDICATING S1 AND S2 (OR S01 AND S02).
2. TO REMOVE SWITCH, REMOVE BOLTS AND WASHERS FROM BRACKET. SLIDE BRACKET OUT FROM TIE ROD.
3. SENSOR IS SNAPPED INTO BRACKET. REMOVE.
4. INSTALL NEW SWITCH SENSOR FLUSH INTO BRACKET, BEING CAREFUL TO MATCH SENSOR CORRECTLY TO LOCATION ON CYLINDER.
5. LOCATE BRACKET TO CYLINDER, SLIDE ON TO TIE ROD. SECURE WITH BOLTS & WASHERS.

