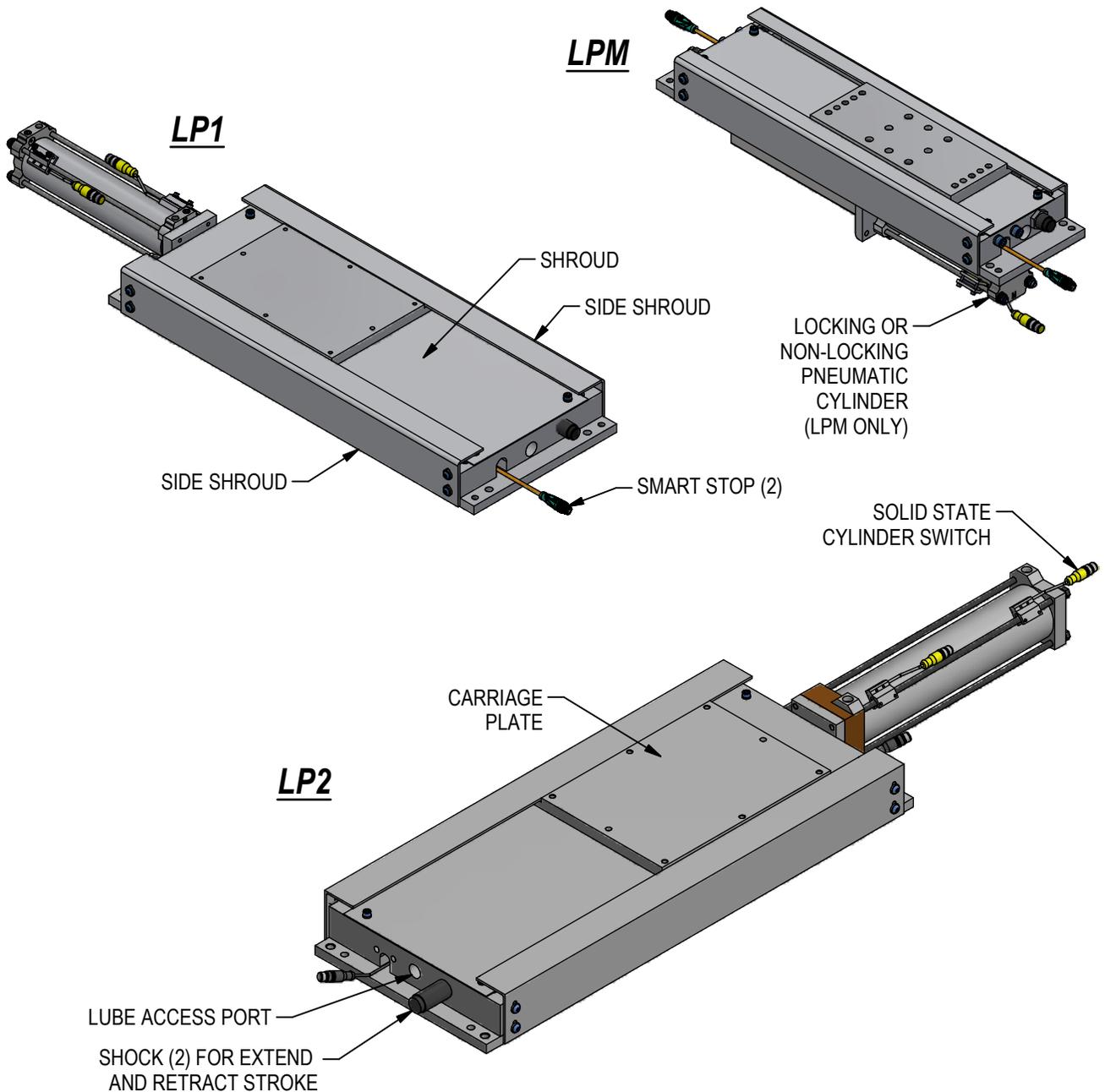


MAINTENANCE MANUAL

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.

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).

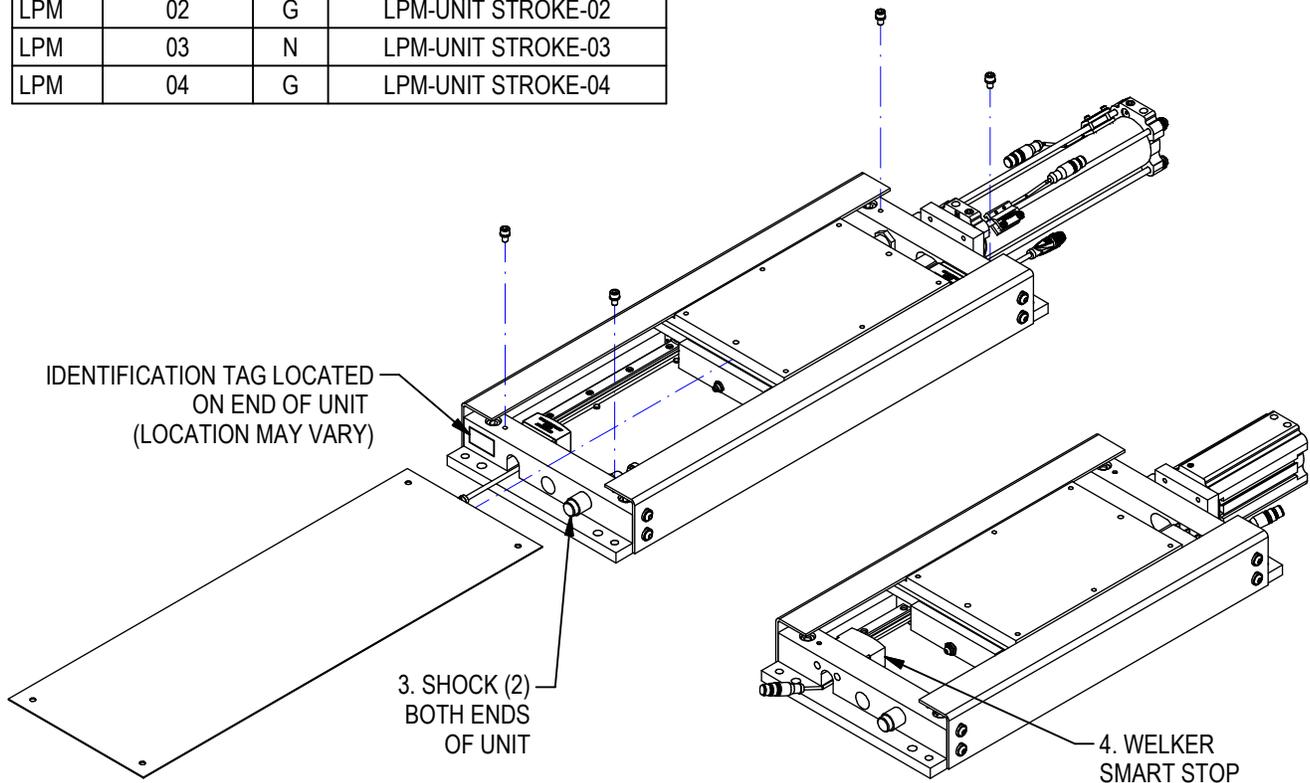
| ITEM | QTY | STOCK* | DESCRIPTION | PART NUMBER |
|------|-----|--------|--|---------------------------|
| 1 | 1 | 1 | LP1 CYLINDER SEAL KIT | LP1-CSK |
| 1 | 1 | 1 | LP2 CYLINDER SEAL KIT | LP2-CSK |
| 1 | 1 | 1 | LPM CYLINDER SEAL KIT: ACTUATOR 01, 02 | LPM-01-CSK |
| 1 | 1 | 1 | LPM CYLINDER SEAL KIT: ACTUATOR 03, 04 | LPM-03-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 |
| LP2 | 01 | N | LP2-UNIT STROKE-N |
| LP2 | 02 | G | LP2-UNIT STROKE-G |
| 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 |

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

*DC M12 X 1 Quick Disconnect

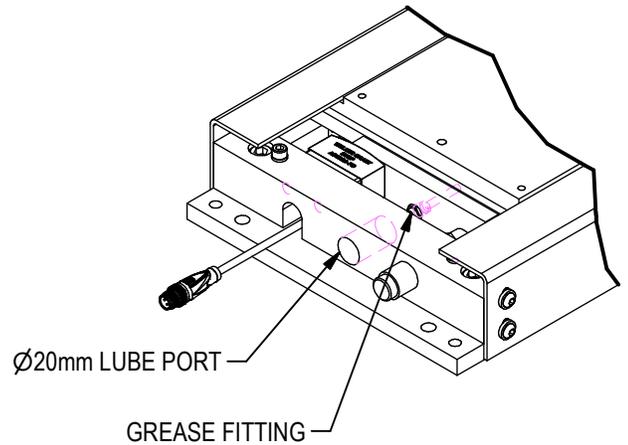


RAIL BEARING LUBRICATION

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

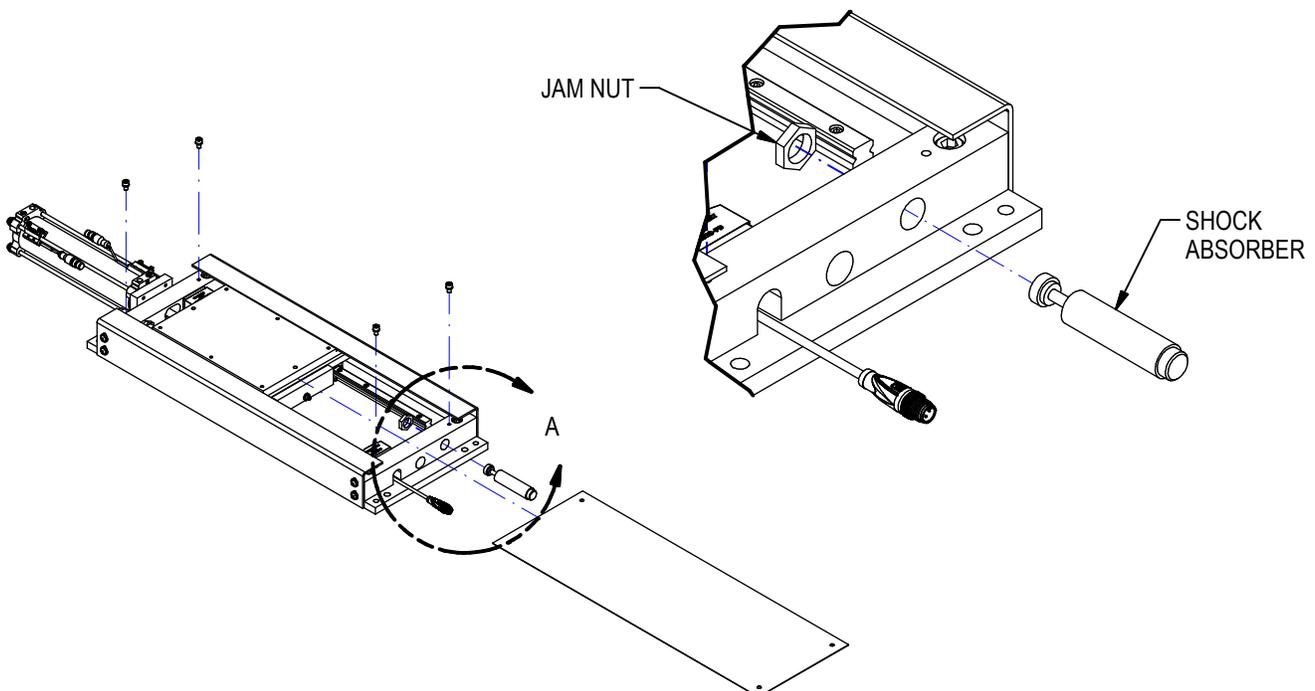
1. Extend cylinder so carriage is positioned near lube port.
2. A 1/8" NPT grease fitting is provided, accessible via lube port.
3. Apply 1.1 cubic centimeters of grease.
Mobil XHP 222 is recommended.

(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 CYLINDER SEAL MAINTENANCE

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

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

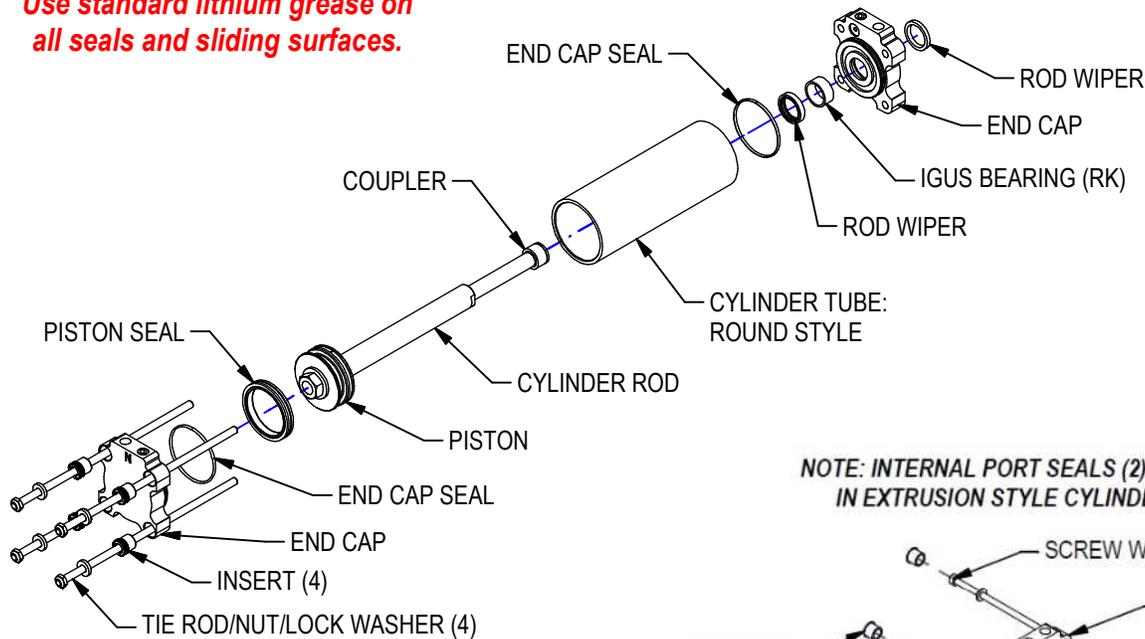
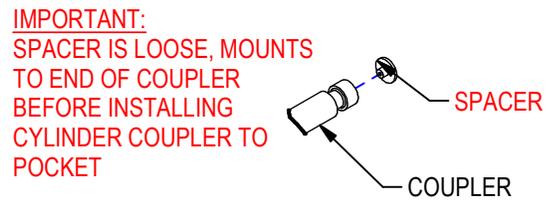
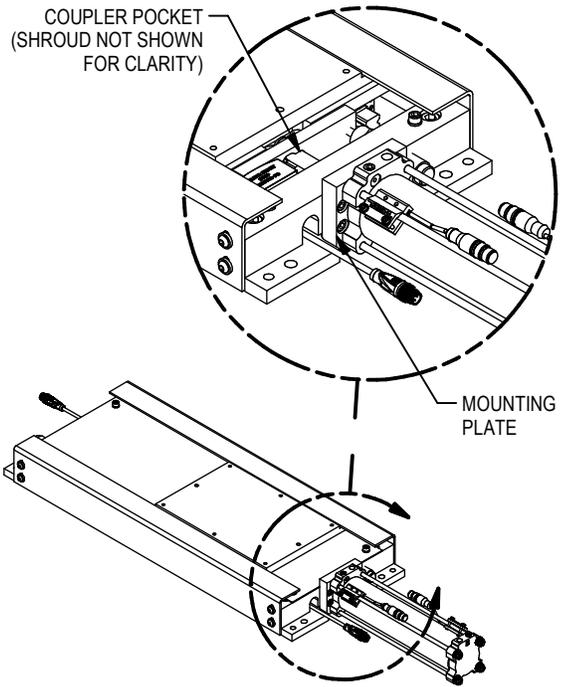
Note: Spacer is loose! It mounts to end of coupler.

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.

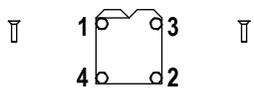
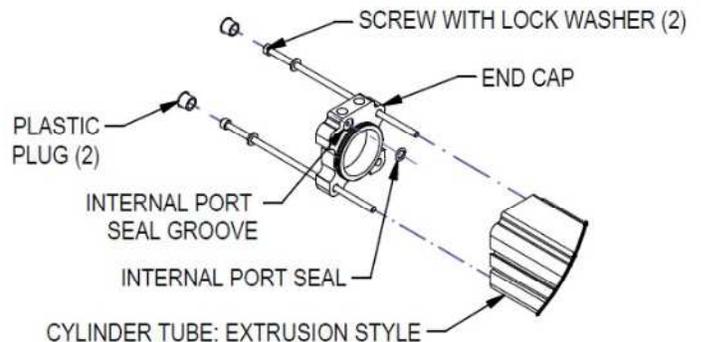
For units with round style cylinder tube: Loosen cylinder tie rods (4) to free cylinder from mounting plate. NOTE: THIS WILL DISASSEMBLE CYLINDER. Carefully pull cylinder back to extend rod out. Slide unit to left to release cylinder rod coupling from pocket. Remove cylinder. Loosen screws enough to 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.



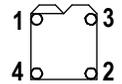
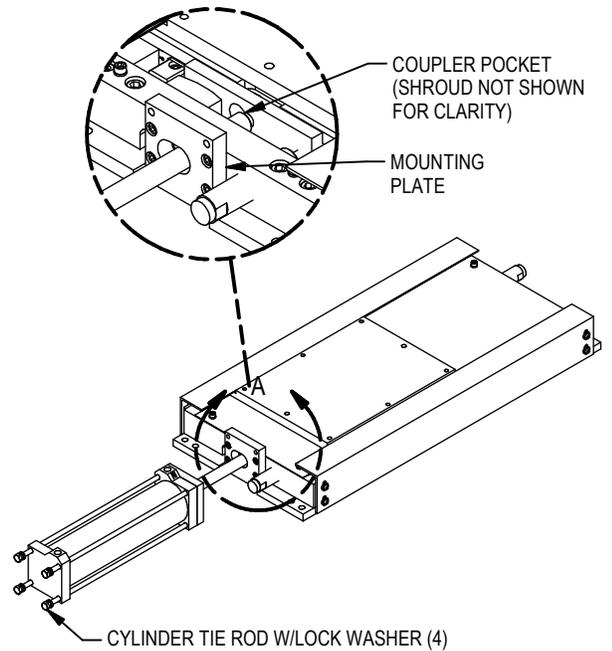
NOTE: INTERNAL PORT SEALS (2) INSTALLED IN EXTRUSION STYLE CYLINDER ONLY



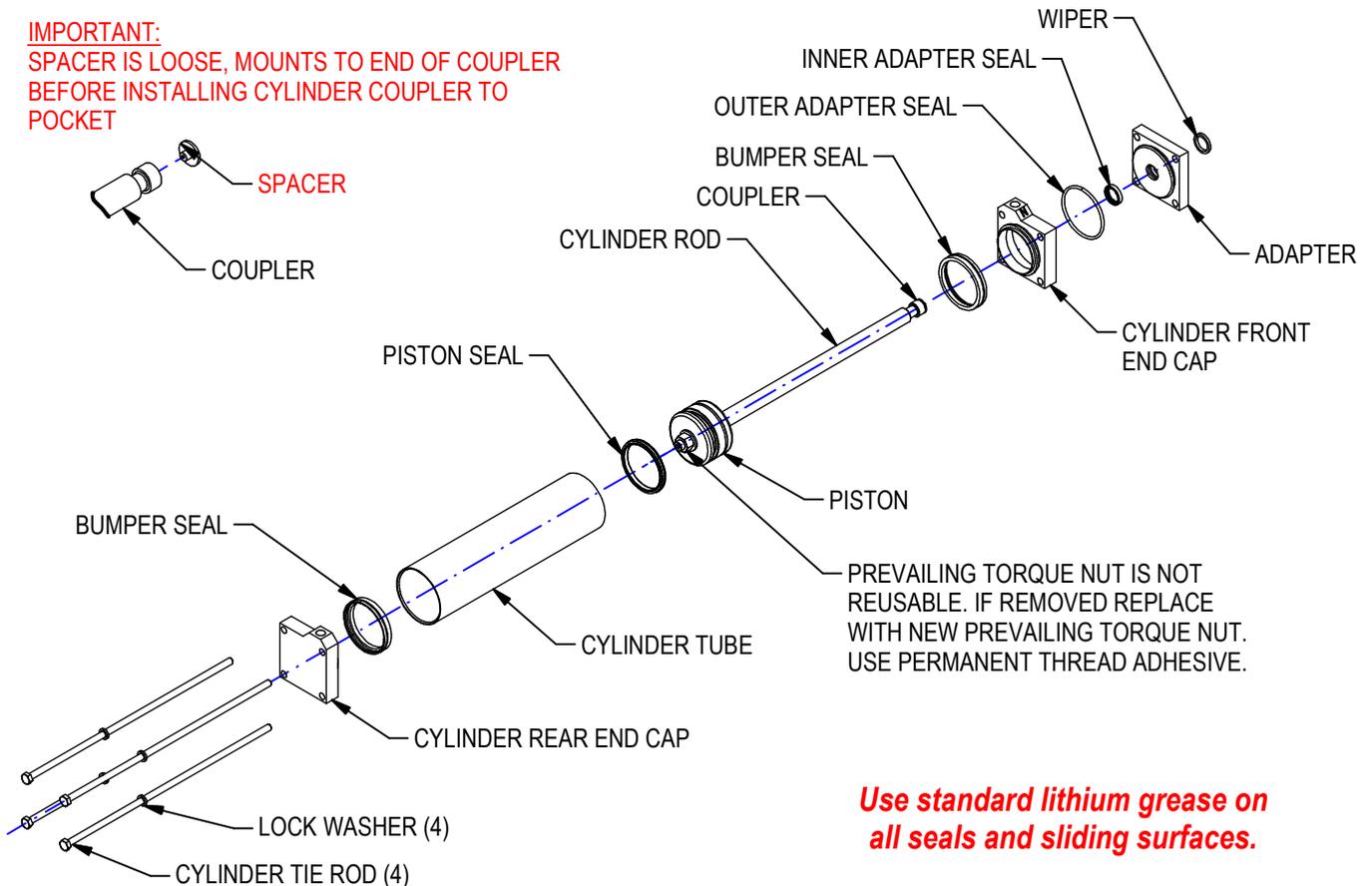
TORQUE PATTERN FOR ROUND STYLE CYLINDER

LP2 CYLINDER SEAL MAINTENANCE

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



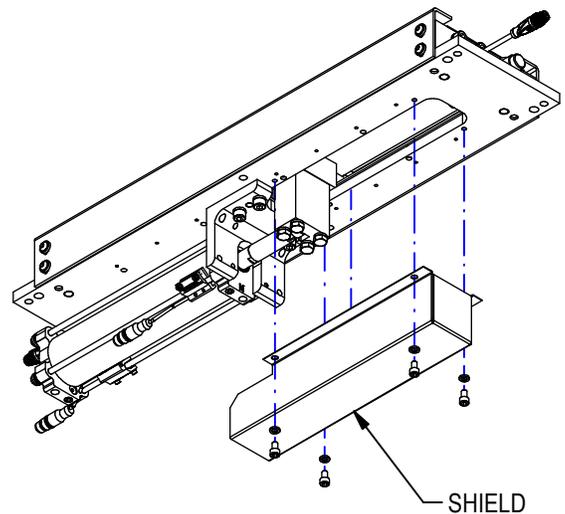
Use standard lithium grease on all seals and sliding surfaces.

LPM CYLINDER REMOVAL

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

To access the cylinder:

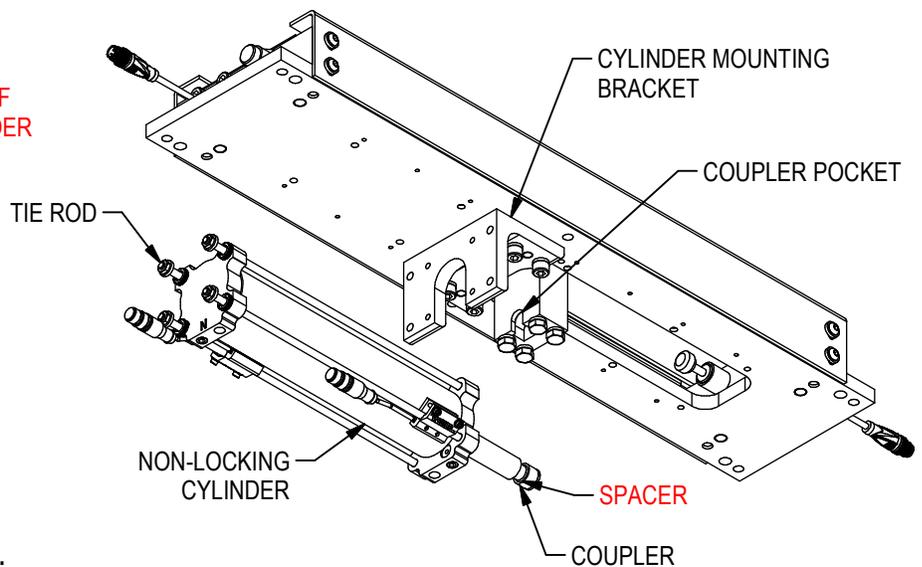
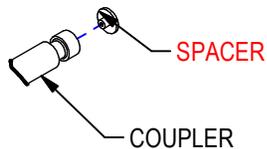
1. Remove screws & lock washers securing shield to slide base.
2. Remove shield.



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

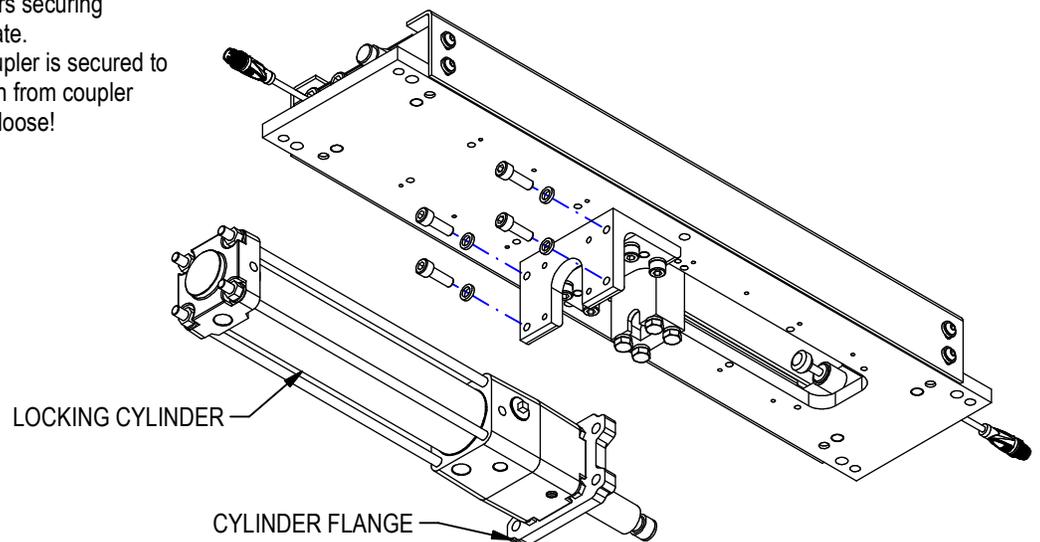
1. Loosen cylinder tie rods (4) approx 13mm to free cylinder from mounting plate. NOTE: THIS WILL DISASSEMBLE CYLINDER
2. Lower cylinder to remove. Coupler is secured to cylinder rod and will drop down from coupler pocket, with spacer. Spacer is loose!
3. See sheet 5 for cylinder seal maintenance.

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



To remove locking cylinder, Option 03/04:

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.

