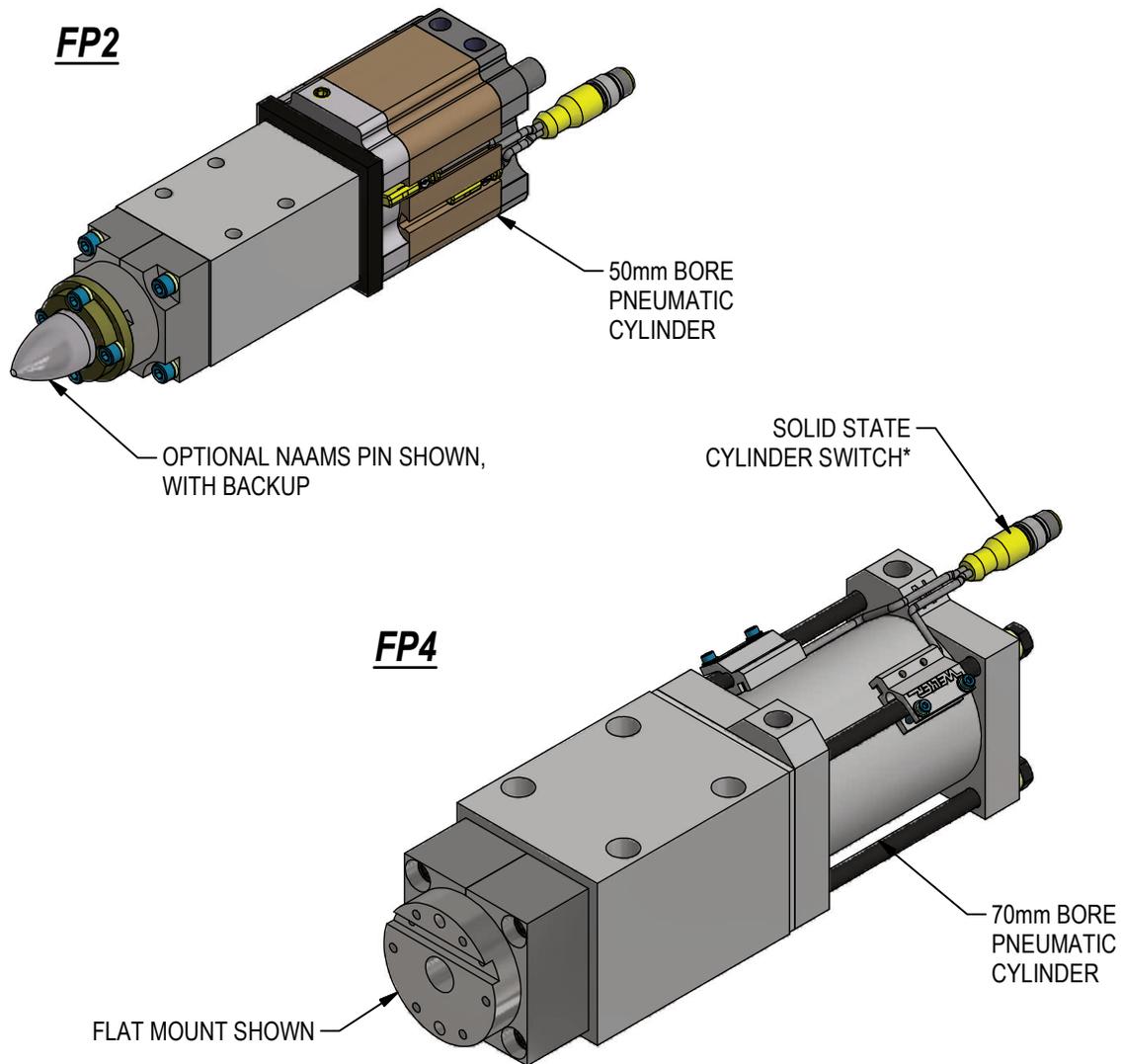


MAINTENANCE MANUAL FLOATING PINS FP2 & FP4



*OPTIONAL

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 REMOVED 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 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 or repair kit on hand.

SWITCH: Switches may fail and need replacement; it is recommended to keep a spare switch on hand.

TROUBLESHOOTING

FAILURE	POSSIBLE CAUSE	SOLUTION
Unit does not extend/retract.	Cylinder failure Switch failure	Inspect unit for dirt/debris. 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. Check switch for proper operation. Replace as needed.

REPLACEMENT PARTS

QTY	STOCK*	DESCRIPTION	PART NUMBER
1	1	FP2 CYLINDER SEAL KIT	WCW2148-CSK
1	1	FP4 CYLINDER SEAL KIT	DS3-CSK
1	1	CYLINDER SWITCH	SEE CHART BELOW
1		FP4 SPRING	3187

* RECOMMENDED SPARE PARTS TO KEEP IN STOCK

Reorder #	Mfr. Part Number	Manufacturer	Description
SWITCH L3	SWITCH L3 Weld field immune*, comparable to World Sw itches	Welker	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect
SWITCH L5	MK5113	ifm Efector	3-Wire, 4-Pin, DC M12 X 1 (NPN) Quick Disconnect

Standard Switch Option - All other options may affect price and delivery

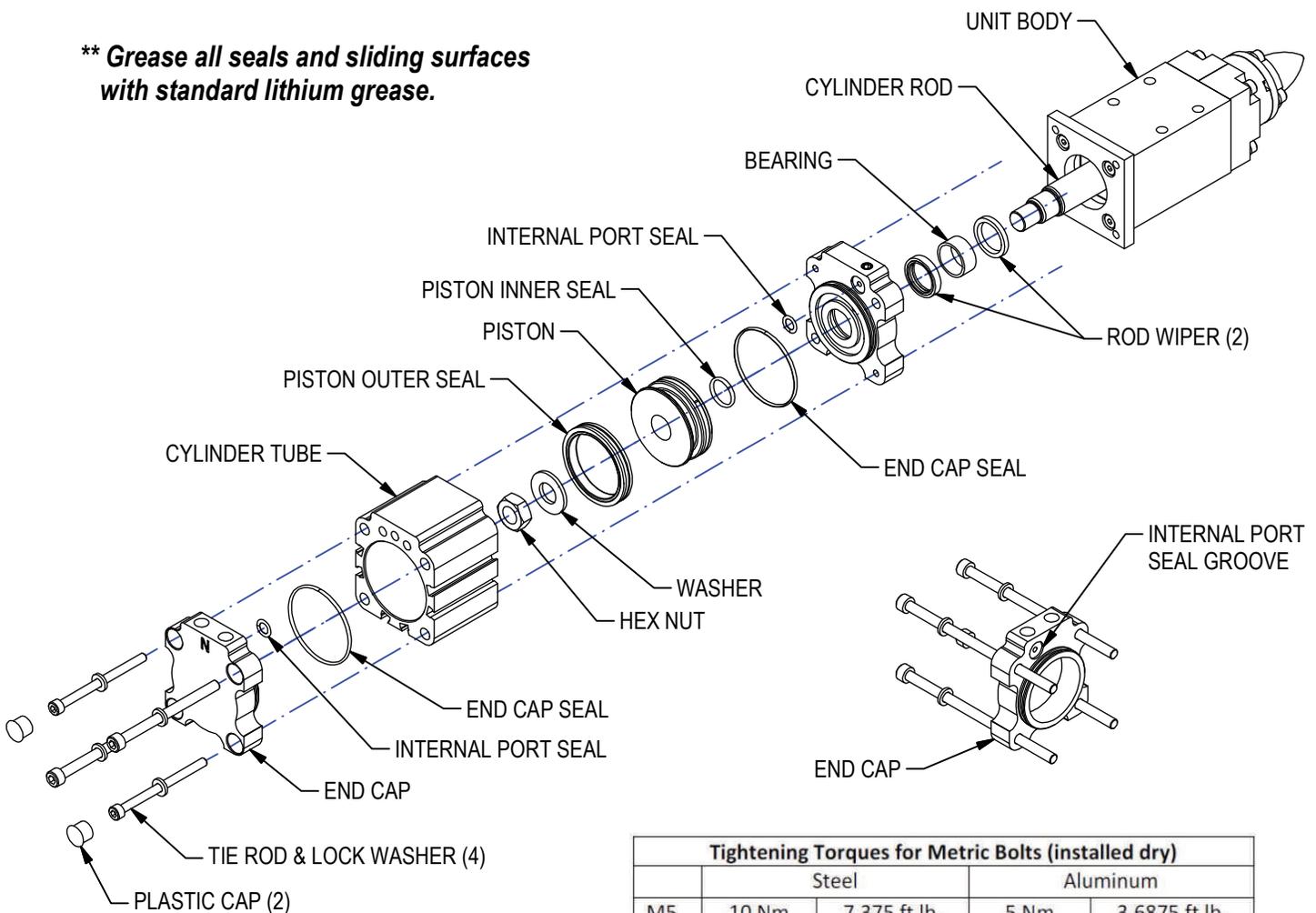
*Note that some mid and low frequency DC resistance applications (i.e. aluminum resistance welding applications) may cause a fault. In these applications, it is recommended that the sensor be ignored/bypassed during the welding cycle.

FP2 CYLINDER SEAL MAINTENANCE

Cylinder seal kit (CSK) includes: End cap seals, rod wipers (2), piston seal. Seals should be replaced routinely to avoid cylinder failure.

1. Disconnect air lines to cylinder, release any trapped air conditions.
2. Remove plastic caps (2). Loosen tie rods enough to release tube/end cap assembly.
3. Replace end cap seals. Replace piston seal. Replace internal port seals.**
4. To replace piston inner seal, remove hex nut. Hex nut is affixed to cylinder rod with permanent Loctite. To remove, first extend the cylinder rod to move the nut away from unit body. Then apply heat to the nut to soften the thread locker. Use caution so as not to overheat the piston or seals! Remove hex nut.
5. Piston inner seal is located inside piston. Remove piston from rod and replace seal**. Reinstall hex jam nut to cylinder rod using permanent Loctite.
6. Reassemble unit making sure internal port seal is in place and cylinder tube is aligned correctly. Using torque wrench tighten cylinder tie rods to torque shown.
7. Install air lines, making sure they are free of contaminants.

**** Grease all seals and sliding surfaces with standard lithium grease.**



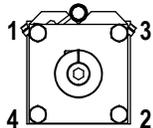
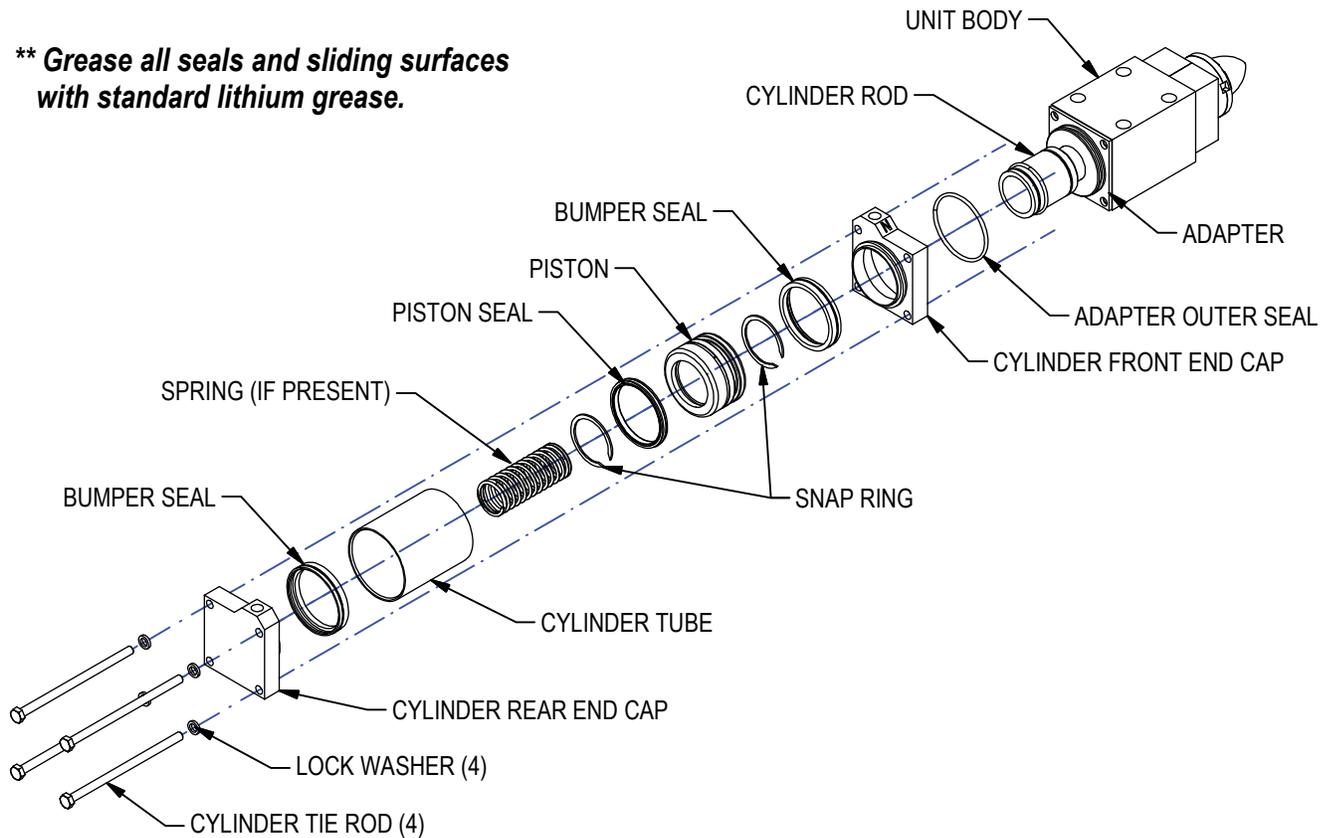
Tightening Torques for Metric Bolts (installed dry)				
	Steel		Aluminum	
M5	10 Nm	7.375 ft lb.	5 Nm	3.6875 ft lb.
M6	19 Nm	14.014 ft lb.	9.5 Nm	7.007 ft lb.
M8	45 Nm	33.19 ft lb.	22.5 Nm	16.595 ft lb.
M10	89 Nm	65.643 ft lb.	44.5 Nm	32.8215 ft lb.
M12	156 Nm	115.06 ft lb.	78 Nm	57.53 ft lb.

FP4 CYLINDER SEAL MAINTENANCE/SPRING REPLACEMENT

Seals should be replaced routinely to avoid cylinder failure. Please have cylinder model information and/or Welker job number ready when ordering seal kits or repair kits. This information is located on the unit's tag and on the cylinder.

1. Remove air lines from the cylinder. Remove unit from mount. Remove cylinder switch if applicable, noting sensor locations on tie rods.
2. Remove the cylinder tie rods & lock washers. Remove end cap & tube noting port position.
3. Remove bumper seal.
4. Clean seal groove thoroughly. Replace bumper seal.**
5. Remove spring from cylinder rod, if present. Clean spring pocket. Replace spring if needed.
6. Remove piston seal using plastic or brass tool. NOTE ORIENTATION OF SEALS. Inspect parts for wear. Clean piston and install new seal.**
7. To access front bumper seal and adapter seals, remove shunt assembly. Slide unit body off cylinder rod. Remove adapter. Remove inner and outer seal. Clean seal grooves thoroughly. Replace seals.**
8. Remove front end cap & bumper seal noting port position. Clean seal groove thoroughly. Install new bumper seal.**
9. Remove adapter outer seal. Clean seal groove thoroughly. Install new seal.**
10. Reassemble unit with cylinder tie rods & lock washers. Be sure cylinder ports are in proper position. Using torque wrench tighten bolts to pattern shown. Tighten bolts to torque & pattern shown.
11. Install cylinder switch if applicable. Install unit to mount. Install air lines, making sure they are free of contaminants.

**** Grease all seals and sliding surfaces with standard lithium grease.**



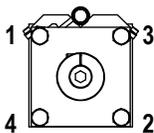
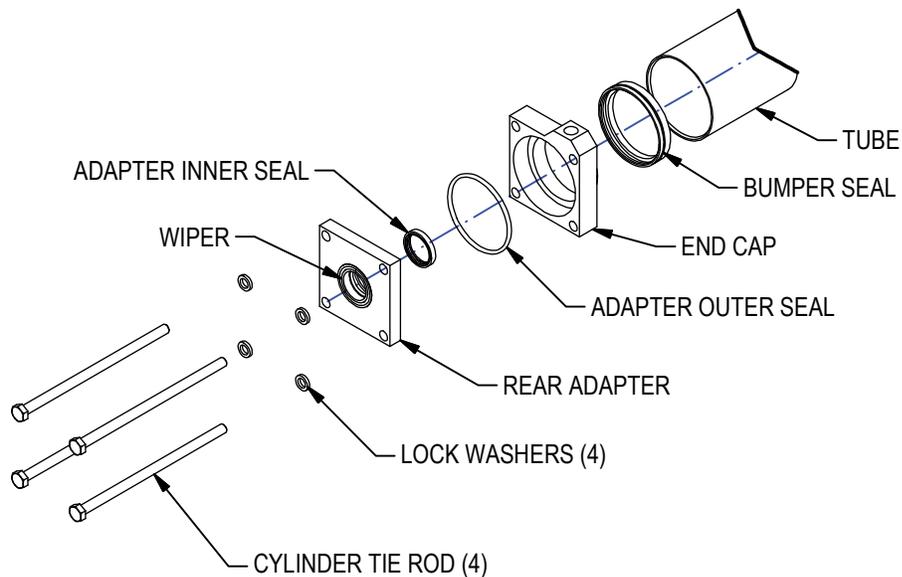
Tightening Torques for Metric Bolts (installed dry)				
	Steel		Aluminum	
M5	10 Nm	7.375 ft lb.	5 Nm	3.6875 ft lb.
M6	19 Nm	14.014 ft lb.	9.5 Nm	7.007 ft lb.
M8	45 Nm	33.19 ft lb.	22.5 Nm	16.595 ft lb.
M10	89 Nm	65.643 ft lb.	44.5 Nm	32.8215 ft lb.
M12	156 Nm	115.06 ft lb.	78 Nm	57.53 ft lb.

ADDITIONAL SEAL MAINTENANCE ~ DOUBLE ROD CYLINDERS

Two additional seals are included for double rod cylinders:

1. Remove air lines from the cylinder. Release any trapped air conditions. Remove unit from mount. Remove cylinder switch if applicable, noting sensor locations on tie rods.
2. Remove the cylinder tie rods & washers. Remove rear adapter.
3. Remove adapter inner and outer seals.** Clean seal grooves. Install new seals.
4. Align adapters, end caps, tube, bumper seals on cylinder rod and install to unit body with cylinder tie rods & lock washers. Be sure cylinder ports are in proper position. Install switch bracket. Using torque wrench tighten bolts to torque and pattern shown.
5. Install unit to mount. Install air lines, making sure they are free of contaminants.

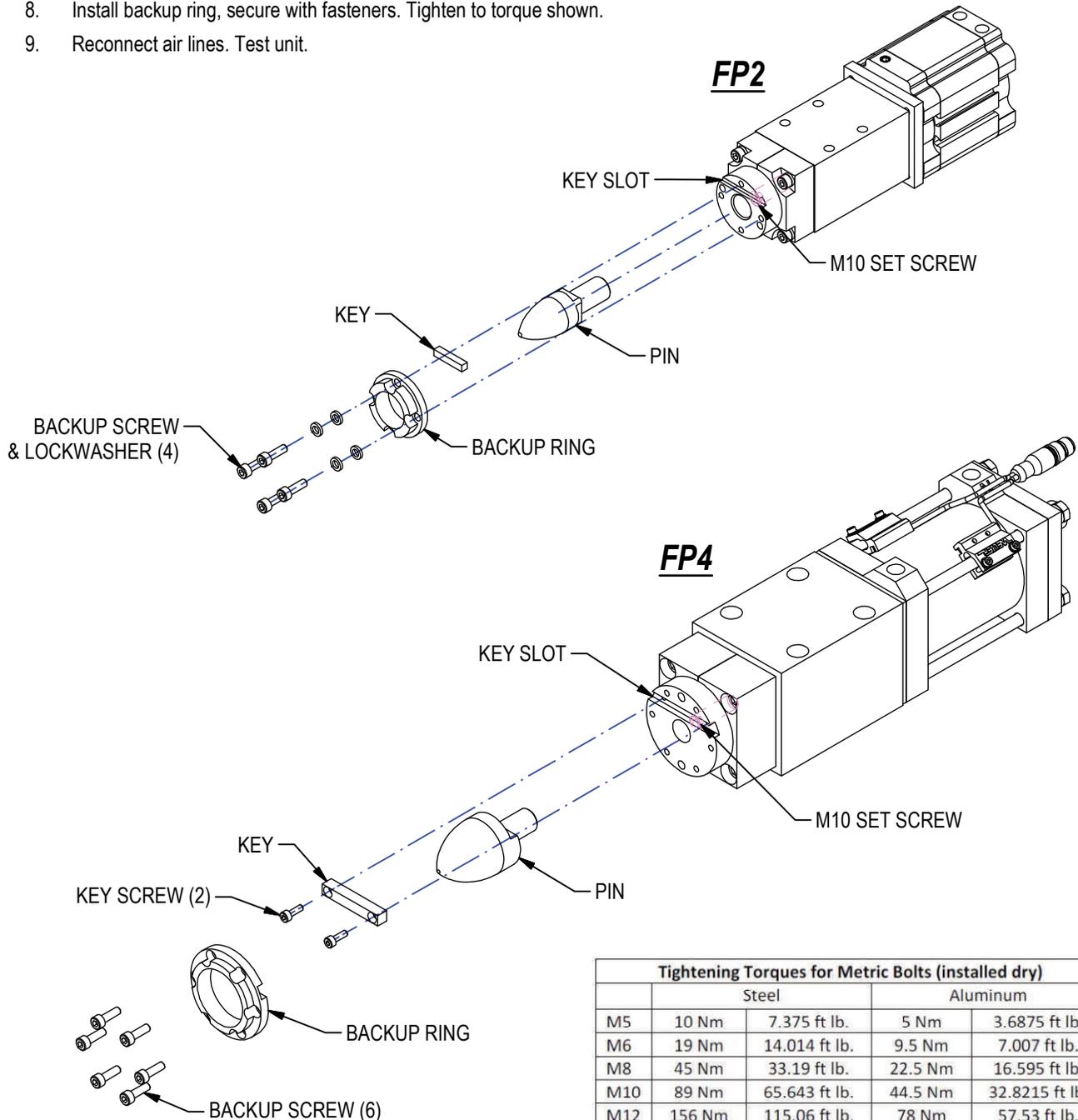
**** Grease all seals and sliding surfaces with standard lithium grease.**



Tightening Torques for Metric Bolts (installed dry)				
	Steel		Aluminum	
M5	10 Nm	7.375 ft lb.	5 Nm	3.6875 ft lb.
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M12	156 Nm	115.06 ft lb.	78 Nm	57.53 ft lb.

REPLACE PIN

1. Disconnect air lines to cylinder, release any trapped air conditions.
2. Remove fasteners from backup ring.
3. Remove backup ring.
4. Remove key. FP4 key is held in place with 2 screws.
5. Pin is installed to internal M10 set screw. Unscrew pin and remove.
6. Clean surfaces. Install new pin to internal M10 set screw, aligning pin flat to key slot. Do not use thread adhesive.
7. Install key. (FP4 key requires 2 screws)
8. Install backup ring, secure with fasteners. Tighten to torque shown.
9. Reconnect air lines. Test unit.



REPLACING TIE ROD CYLINDER SWITCH

1. BEFORE REMOVING OLD SWITCH: NOTE SENSOR PLACEMENT!
FOR SWITCHES WITH TWO SENSORS, EACH 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.

