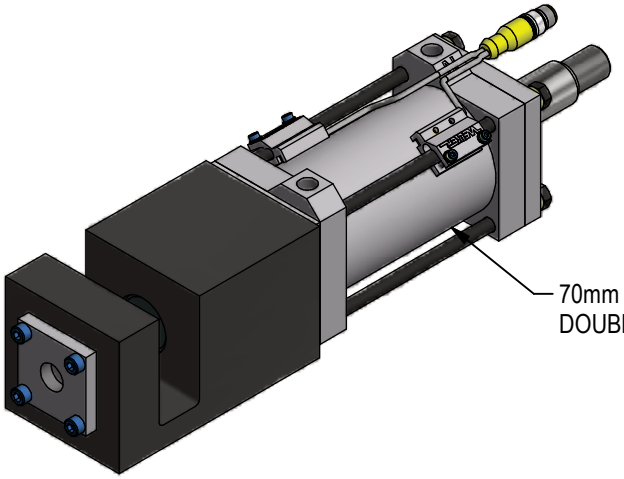
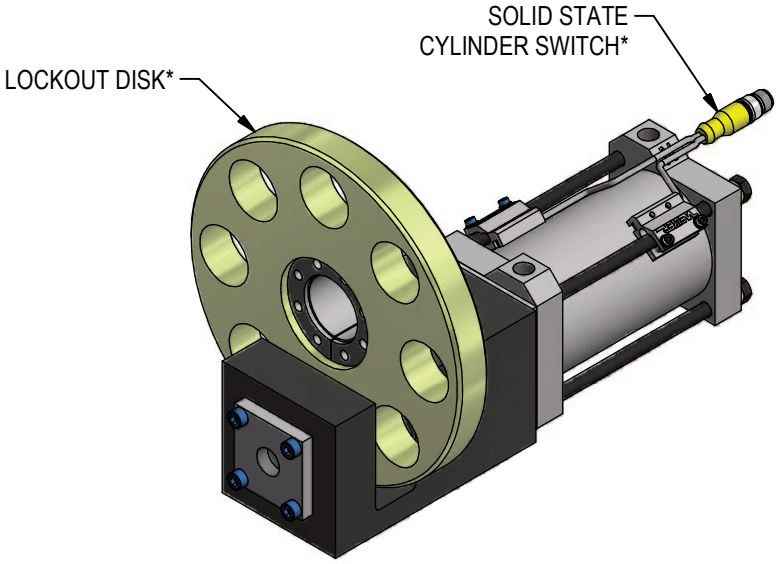
WELKER ENGINEERED PRODUCTS
ISO 9001 REGISTERED

MAINTENANCE MANUAL
DS3 DOUBLE SHEAR LOCKOUT UNIT





*OPTIONAL

Welker Engineered Products 1401 Piedmont Troy, MI 48083 (800) 229-0890 www.welkerproducts.com

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

SEE DS3 CATALOG FOR DISK REPLACEMENT PART NUMBERS.

QTY	STOCK*	DESCRIPTION	PART NUMBER
1	1	CYLINDER SEAL KIT	DS3-CSK
1	1	CYLINDER SWITCH	SEE CHART BELOW
1		SPRING	3187
1		FOOT PEDAL VALVE	NM2FA4520G00000

* RECOMMENDED SPARE PARTS TO KEEP IN STOCK

Reorder #	Mfr. Part Number	Manufacturer	Description
SWITCH L3	SWITCH L3 Weld field immune, comparable to World Switches	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

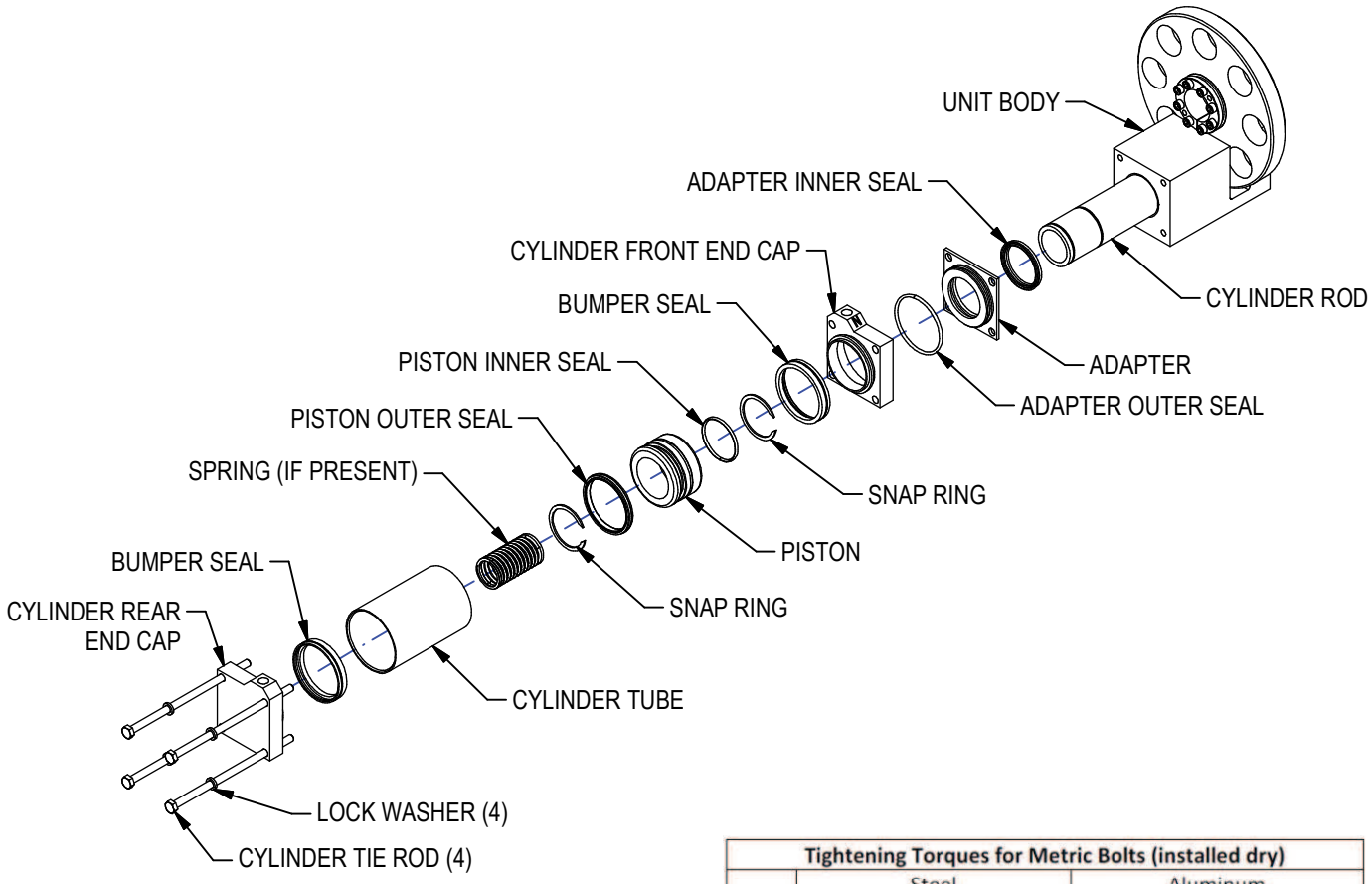
Standard Switch Option - All other options may affect price and delivery

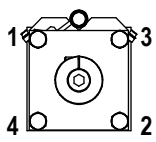
CYLINDER SEAL MAINTENANCE/SPRING REPLACEMENT

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.
2. Remove cylinder switch if applicable, noting sensor locations on tie rods.
3. Remove the cylinder tie rods & lock washers. Remove end cap & tube noting port position.
4. Remove bumper seal. Clean seal groove thoroughly. Replace bumper seal.**
5. Remove spring from cylinder rod, if present. Clean spring pocket. Replace spring if needed.
6. Remove snap ring. Remove piston. Remove second snap ring.
7. Remove piston outer seal using plastic or brass tool. Remove piston inner seal. NOTE ORIENTATION OF SEALS. Inspect parts for wear. Clean piston and install new seals.**
8. Remove front end cap, noting port position. Remove bumper seal. Clean seal groove thoroughly. Replace bumper seal.**
9. Remove adapter. Remove inner and outer seal. Clean seal grooves thoroughly. Replace seals.**
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.***





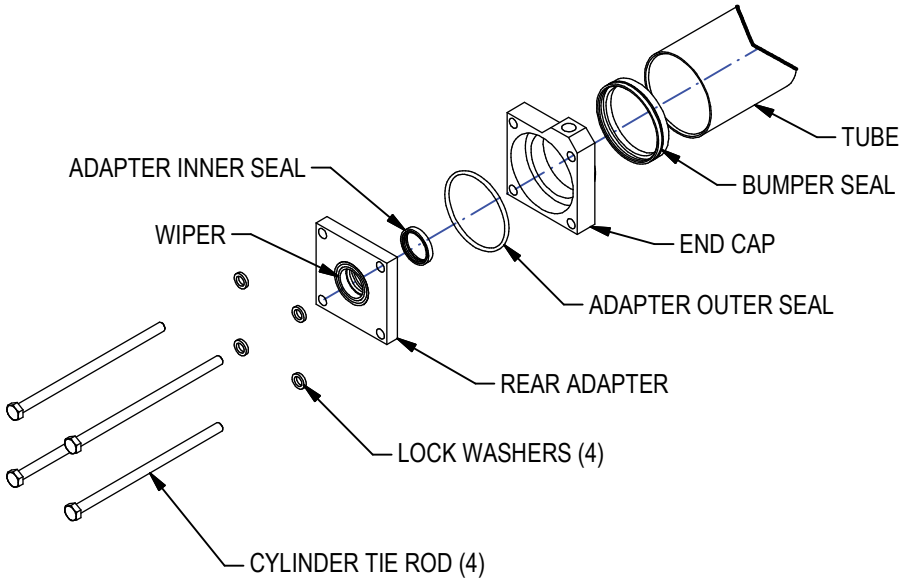
Tightening Torques for Metric Bolts (installed dry)				
	Steel		Aluminum	
M5	10 Nm	7.375 ft lb.	5 Nm	3.6875 ft lb.
M6	19 Nm	14.014 ft lb.	9.5 Nm	7.007 ft lb.
M8	45 Nm	33.19 ft lb.	22.5 Nm	16.595 ft lb.
M10	89 Nm	65.643 ft lb.	44.5 Nm	32.8215 ft lb.
M12	156 Nm	115.06 ft lb.	78 Nm	57.53 ft lb.

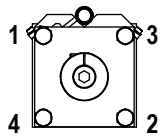
ADDITIONAL SEAL MAINTENANCE ~ DOUBLE ROD CYLINDERS

Two additional seals are included for double rod cylinders:

1. Disconnect air lines to cylinder. Release any trapped air conditions.
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, piston, and interior of cylinder tube with dielectric grease: super lube silicone lubricating grease #92016 or 92150 (available from Applied Material)**





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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.