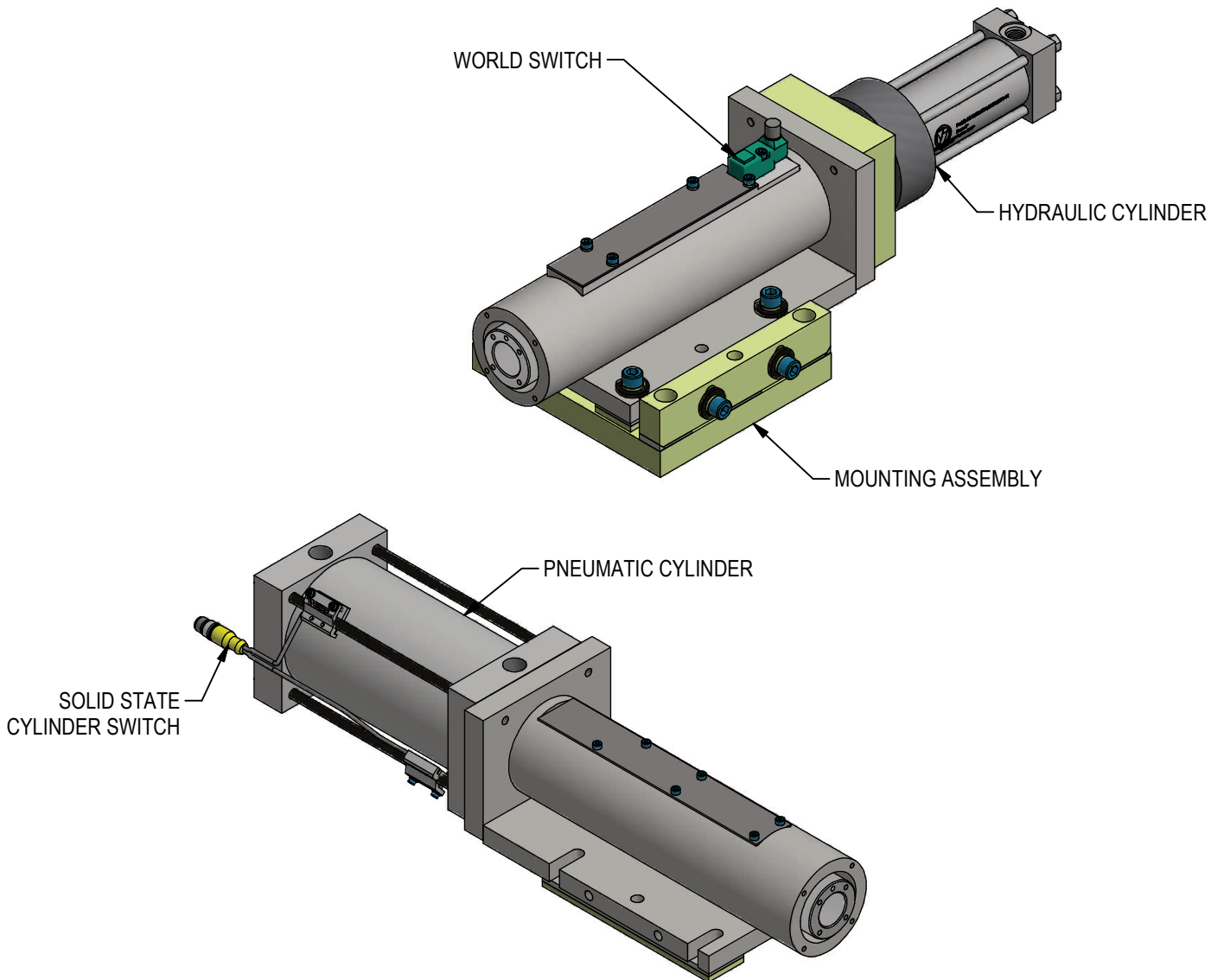


## HP5 BULL PIN MAINTENANCE MANUAL



# 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.

PNEUMATIC CYLINDER: 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 on hand.

HYDRAULIC CYLINDER: Contact Welker for hydraulic cylinders with model number, serial number, and Welker job number.

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

WIPER: Welker recommends annual changing of urethane wiper. Wipers are maintenance items and are not covered under standard product warranty.

## TROUBLESHOOTING

FAILURE	POSSIBLE CAUSE	SOLUTION
Unit does not extend/retract.	Pneumatic cylinder failure (Contact Welker for hydraulic cylinders)  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	WIPER	MCW 50 X 60 X 7
	1	PNEUMATIC CYLINDER SEAL KIT	HP5-P-CSK
		HYDRAULIC CYLINDER SEAL KIT	SEE NOTE A BELOW
1	1	CYLINDER SWITCH	SWITCH L3
1	1	WORLD SWITCH	SEE CHART BELOW

\* RECOMMENDED SPARE PARTS TO KEEP IN STOCK

**NOTE A:** FOR HYDRAULIC CYLINDERS PLEASE CALL WELKER WITH THE MODEL/SERIAL NUMBER OF THE CYLINDER AND/OR WELKER JOB NUMBER.

## **WORLD SWITCHES**

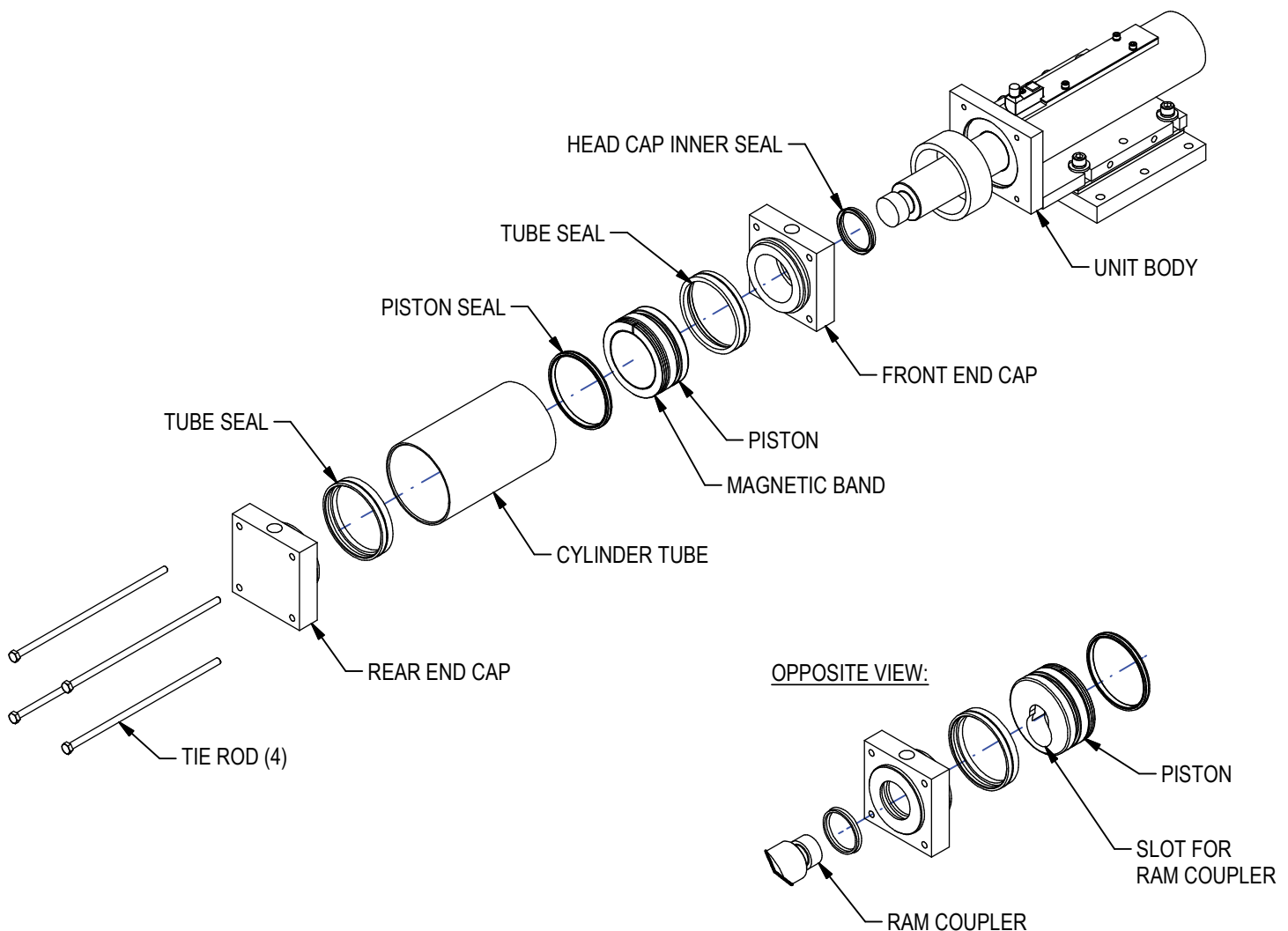
Original ordering part number	Replacement part number	Part Number	Manufacturer	Description
VE/ VR	SWITCH SWV	NBN2-F581-160S6-E8-V1	Pepperl & Fuchs	All switches Quick Disconnect 4-Wire, 4-Pin, DC M12 X 1 (PNP)
ZE/ ZR	SWITCH SWZ	WWS001A	WELKER	4-Wire, 4-Pin, DC M12 X 1 (PNP)

# HP5 PNEUMATIC CYLINDER SEAL MAINTENANCE (100mm BORE)

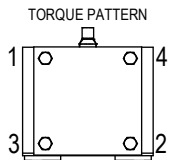
HP5-P-CSK seal kit includes tube seals (2), piston seal and front cap inner seal.

NOTE: Use Magna lube or equivalent on all seals and wear rings.

1. Disengage plant air from unit.
2. Remove tie rods from rear end cap. Remove end cap noting port orientation. Remove cylinder tube & tube seals noting seal orientation.
3. Remove piston from ram coupler noting orientation. Replace piston seal.
4. Remove front end cap noting port orientation. Replace inner seal.
5. Install front end cap with front tube seal.
6. Install piston to ram at coupler.
7. Install cylinder tube and rear end cap. Be sure tube seals are properly seated. Secure with tie rods. Tighten to torque shown.
8. Engage plant air, making sure lines are free of contaminants.

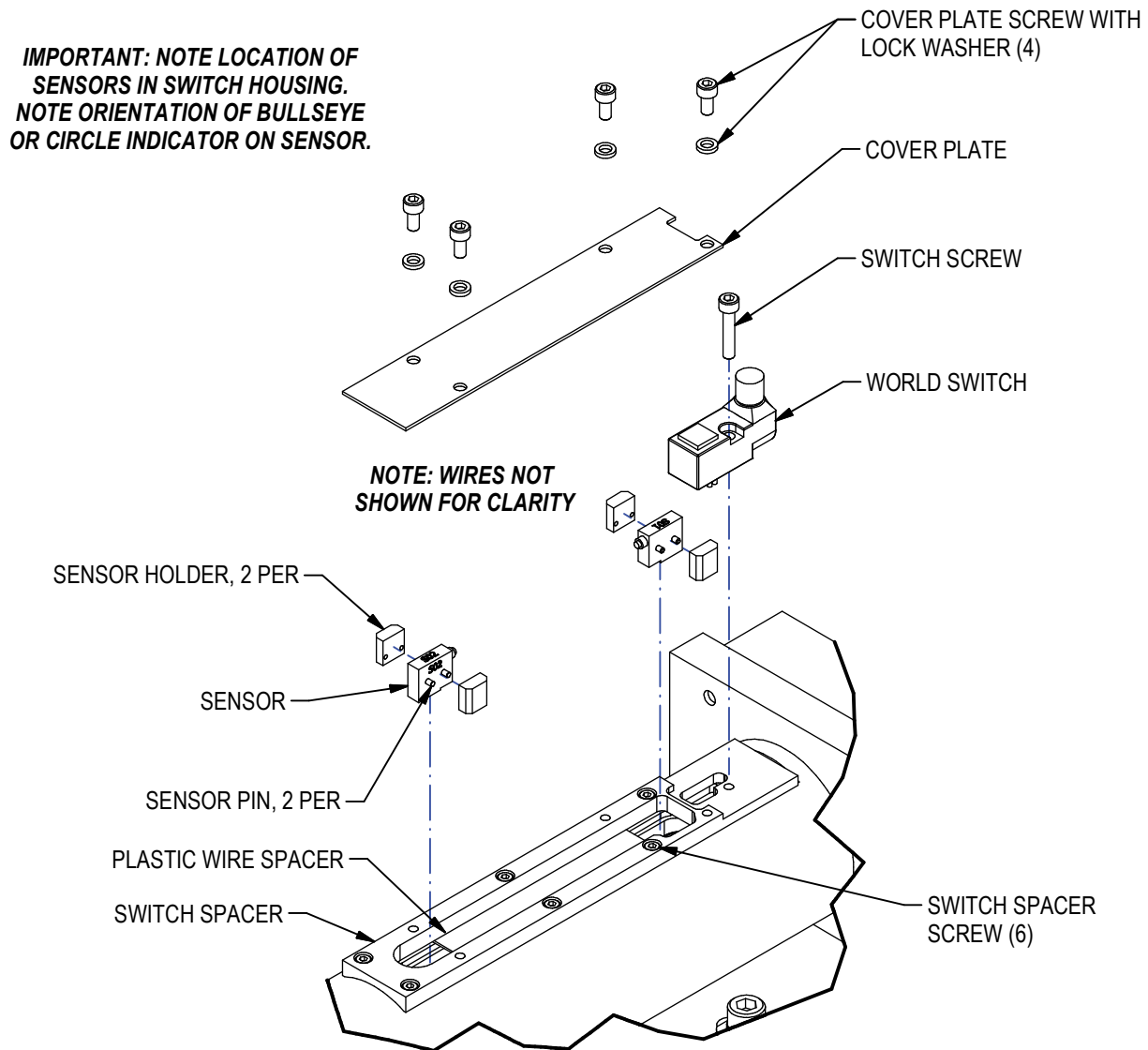


Tie Rod Torque Specifications			
TIE ROD THREAD	FT LB	INCH LB	N-m
5/16-24"	12	144	16.3



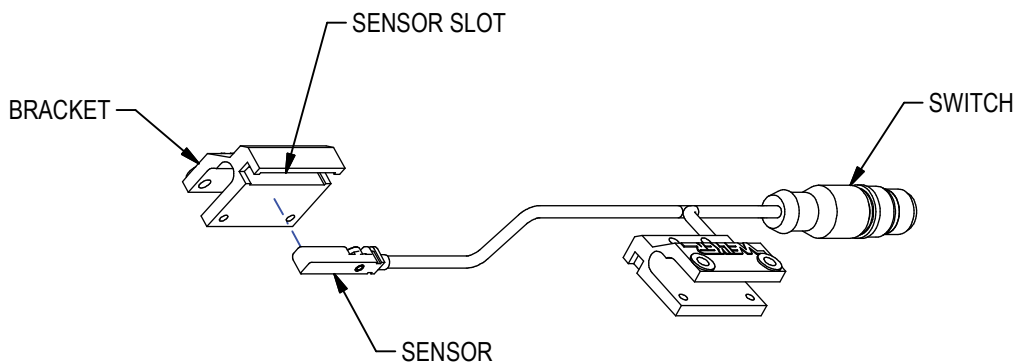
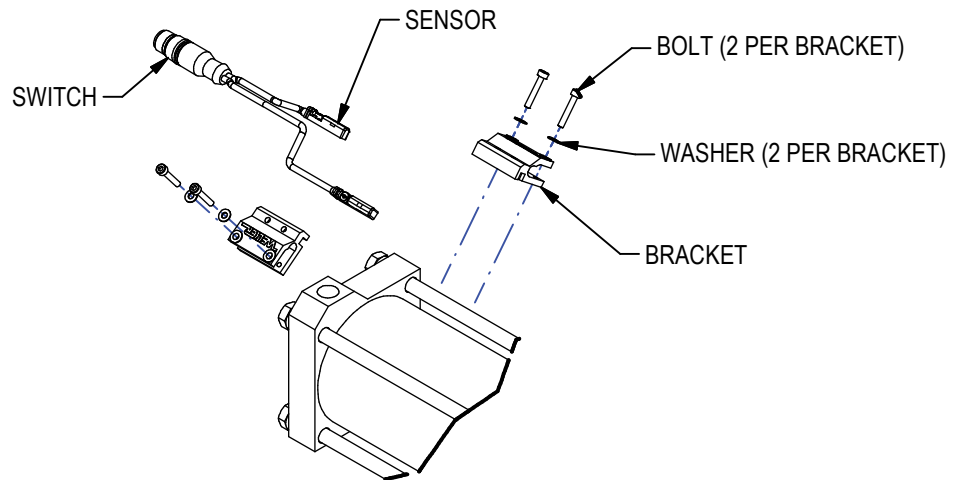
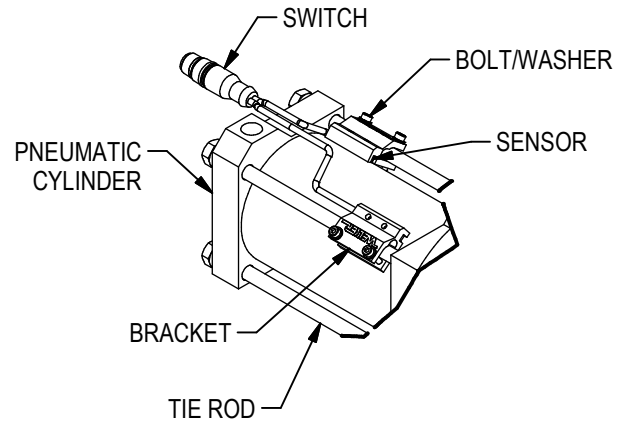
# WORLD SWITCH REPLACEMENT

1. Disengage plant air from unit. Disconnect M12 connector.
2. Remove cover plate screws and lock washers(4). Remove cover.
3. Remove switch spacer screws (6) and switch screws. Remove switch spacer and sensors noting sensor location in unit body. Sensors are marked S1 and S2 or S01 and S02.
4. NOTE ORIENTATION OF BULLSEYE OR CIRCLE INDICATOR ON SENSOR. (TAKE PHOTO FOR REFERENCE)
5. Separate sensor holders and sensor pins from sensor and pull through switch spacer.
6. Feed new switches through switch spacer and assemble new sensors to holders with pins and install into body.
7. Be sure plastic wire spacer is in place. Call Welker if missing.
8. Secure switch to switch spacer and switch spacer to unit.
9. Place cover plate on unit and secure with screws & washers (4).
10. Connect M12 connector and engage air supply.
11. Test unit to check new switches and sensor position.



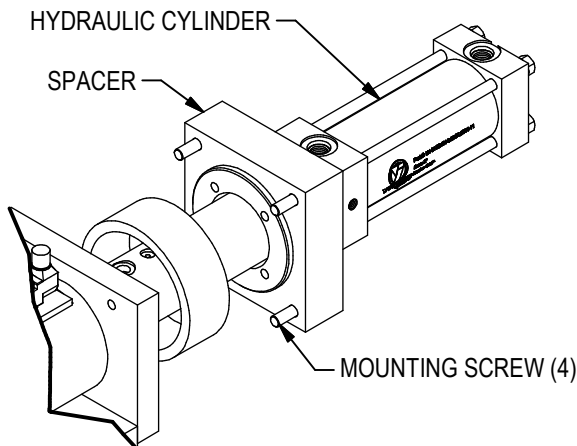
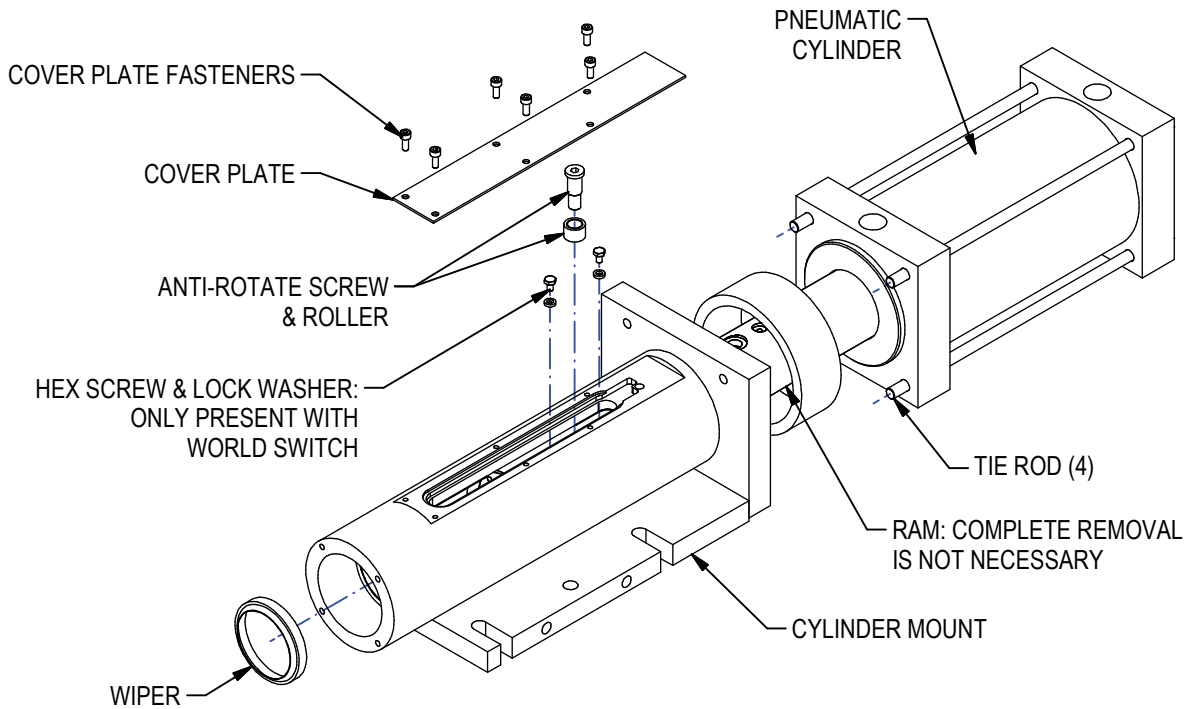
# REPLACING TIE ROD CYLINDER SWITCH

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.
6. Test new switch. Verify sensor placement.



# WIPER REPLACEMENT

1. For units with pneumatic cylinder: Loosen tie rods enough to separate cylinder from mounting.
2. For units with hydraulic cylinder: Loosen mounting screws enough to separate spacer from mounting.
3. Remove cover plate from unit body. If unit has a World Switch, remove according to switch replacement instructions.
4. Remove anti-rotate screw & roller.
5. If unit has a World Switch: remove hex screws & lock washers as shown.
6. Slide ram back from unit body to freely access wiper. Complete removal is not necessary.
7. Wiper is press fit into unit. Use appropriate tool to pry loose and remove, noting orientation.
8. Press fit new wiper into body. To service multiple units, Welker recommends creating a tool to ease installation, similar to example dimensioned below.
9. Reassemble unit. Torque screws/tie rods to chart shown on sheet 3. Test switch if present.



## SAMPLE WIPER INSTALLATION TOOL

